

libquentier

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<b>1 libquentier</b>	<b>1</b>
1.1 What's this	1
1.1.1 WARNING: libquentier is in alpha state right now, neither API nor ABI can be considered stable yet!	1
1.2 How to build/install	1
1.3 How to contribute	1
<b>2 Hierarchical Index</b>	<b>3</b>
2.1 Class Hierarchy	3
<b>3 Class Index</b>	<b>7</b>
3.1 Class List	7
<b>4 File Index</b>	<b>11</b>
4.1 File List	11
<b>5 Class Documentation</b>	<b>15</b>
5.1 <a href="#">quentier::Account Class Reference</a>	15
5.1.1 Detailed Description	16
5.1.2 Member Function Documentation	17
5.1.2.1 <a href="#">displayName()</a>	17
5.1.2.2 <a href="#">evernoteAccountType()</a>	17
5.1.2.3 <a href="#">evernoteHost()</a>	17
5.1.2.4 <a href="#">id()</a>	17
5.1.2.5 <a href="#">isEmpty()</a>	18
5.1.2.6 <a href="#">name()</a>	18
5.1.2.7 <a href="#">print()</a>	18
5.1.2.8 <a href="#">setDisplayNames()</a>	18
5.1.2.9 <a href="#">shardId()</a>	18
5.1.2.10 <a href="#">type()</a>	19
5.2 <a href="#">quentier::utility::cancelers::AnyOfCanceler Class Reference</a>	19
5.2.1 Member Function Documentation	20
5.2.1.1 <a href="#">isCanceled()</a>	20
5.3 <a href="#">quentier::utility::ApplicationSettings Class Reference</a>	20
5.3.1 Detailed Description	21
5.3.2 Constructor & Destructor Documentation	21
5.3.2.1 <a href="#">ApplicationSettings()</a> [1/4]	21
5.3.2.2 <a href="#">ApplicationSettings()</a> [2/4]	22
5.3.2.3 <a href="#">ApplicationSettings()</a> [3/4]	22
5.3.2.4 <a href="#">ApplicationSettings()</a> [4/4]	22
5.3.2.5 <a href="#">~ApplicationSettings()</a>	23
5.3.3 Member Function Documentation	23
5.3.3.1 <a href="#">beginGroup()</a> [1/3]	23
5.3.3.2 <a href="#">beginGroup()</a> [2/3]	23

5.3.3.3 beginGroup() [3/3]	24
5.3.3.4 beginReadArray() [1/3]	24
5.3.3.5 beginReadArray() [2/3]	24
5.3.3.6 beginReadArray() [3/3]	25
5.3.3.7 beginWriteArray() [1/3]	25
5.3.3.8 beginWriteArray() [2/3]	25
5.3.3.9 beginWriteArray() [3/3]	26
5.3.3.10 contains() [1/3]	26
5.3.3.11 contains() [2/3]	27
5.3.3.12 contains() [3/3]	27
5.3.3.13 print()	27
5.3.3.14 remove() [1/3]	27
5.3.3.15 remove() [2/3]	28
5.3.3.16 remove() [3/3]	28
5.3.3.17 setValue() [1/3]	28
5.3.3.18 setValue() [2/3]	29
5.3.3.19 setValue() [3/3]	29
5.3.3.20 value() [1/3]	29
5.3.3.21 value() [2/3]	30
5.3.3.22 value() [3/3]	30
5.4 quantier::utility::ApplicationSettings::ArrayCloser Struct Reference	31
5.4.1 Detailed Description	31
5.5 quantier::synchronization::AuthenticationExpiredError Struct Reference	32
5.5.1 Detailed Description	32
5.6 quantier::synchronization::ISyncConflictResolver::ConflictResolution Struct Reference	32
5.6.1 Detailed Description	32
5.7 quantier::ErrorString Class Reference	33
5.7.1 Detailed Description	34
5.7.2 Member Function Documentation	34
5.7.2.1 print()	34
5.8 quantier::utility::EventLoopWithExitStatus Class Reference	35
5.9 quantier::utility::IKeychainService::Exception Class Reference	36
5.9.1 Detailed Description	37
5.9.2 Member Function Documentation	37
5.9.2.1 exceptionDisplayName()	37
5.10 quantier::utility::FileIOProcessorAsync Class Reference	37
5.10.1 Detailed Description	38
5.10.2 Member Function Documentation	39
5.10.2.1 onReadFileRequest	39
5.10.2.2 onWriteFileRequest	39
5.10.2.3 readFileRequestProcessed	39
5.10.2.4 setIdleTimePeriod()	40

5.10.2.5 writeFileRequestProcessed . . . . .	40
5.11 quantier::utility::FileSystemWatcher Class Reference . . . . .	41
5.12 quantier::utility::cancelers::FutureCanceler< T > Class Template Reference . . . . .	42
5.12.1 Detailed Description . . . . .	42
5.12.2 Member Function Documentation . . . . .	43
5.12.2.1 isCanceled() . . . . .	43
5.13 quantier::utility::ApplicationSettings::GroupCloser Struct Reference . . . . .	43
5.13.1 Detailed Description . . . . .	44
5.14 quantier::synchronization::IAuthenticationInfo Class Reference . . . . .	44
5.14.1 Detailed Description . . . . .	45
5.14.2 Member Function Documentation . . . . .	45
5.14.2.1 authenticationTime() . . . . .	45
5.14.2.2 authToken() . . . . .	45
5.14.2.3 authTokenExpirationTime() . . . . .	45
5.14.2.4 noteStoreUrl() . . . . .	45
5.14.2.5 shardId() . . . . .	46
5.14.2.6 userId() . . . . .	46
5.14.2.7 userStoreCookies() . . . . .	46
5.14.2.8 webApiUrlPrefix() . . . . .	46
5.15 quantier::synchronization::IAuthenticationInfoBuilder Class Reference . . . . .	46
5.16 quantier::synchronization::IAuthenticator Class Reference . . . . .	47
5.17 quantier::ResourceRecognitionIndexItem::IBarcodeItem Struct Reference . . . . .	47
5.18 quantier::utility::cancelers::ICanceler Class Reference . . . . .	47
5.18.1 Detailed Description . . . . .	48
5.19 quantier::enml::IConverter Class Reference . . . . .	48
5.19.1 Detailed Description . . . . .	49
5.19.2 Member Function Documentation . . . . .	49
5.19.2.1 convertEnmlToHtml() . . . . .	49
5.19.2.2 convertEnmlToPlainText() . . . . .	50
5.19.2.3 convertEnmlToWordsList() . . . . .	50
5.19.2.4 convertHtmlToDoc() . . . . .	50
5.19.2.5 convertHtmlToEnml() . . . . .	51
5.19.2.6 convertHtmlToXhtml() . . . . .	51
5.19.2.7 convertHtmlToXml() . . . . .	51
5.19.2.8 convertPlainTextToWordsList() . . . . .	52
5.19.2.9 exportNotesToEnex() . . . . .	52
5.19.2.10 importEnex() . . . . .	53
5.19.2.11 validateAndFixupEnml() . . . . .	53
5.19.2.12 validateEnml() . . . . .	53
5.20 quantier::enml::IDecryptedTextCache Class Reference . . . . .	54
5.21 quantier::synchronization::IDownloadNotesStatus Class Reference . . . . .	54
5.21.1 Detailed Description . . . . .	55

5.22	<a href="#">quentier::synchronization::IDownloadResourcesStatus Class Reference</a>	56
5.23	<a href="#">quentier::utility::IEncryptor Struct Reference</a>	57
5.23.1	<a href="#">Detailed Description</a>	57
5.23.2	<a href="#">Member Enumeration Documentation</a>	57
5.23.2.1	<a href="#">Cipher</a>	57
5.23.3	<a href="#">Member Function Documentation</a>	58
5.23.3.1	<a href="#">decrypt()</a>	58
5.23.3.2	<a href="#">encrypt()</a>	58
5.24	<a href="#">quentier::enml::IENMLTagsConverter Class Reference</a>	58
5.24.1	<a href="#">Detailed Description</a>	59
5.24.2	<a href="#">Member Function Documentation</a>	59
5.24.2.1	<a href="#">convertDecryptedText()</a>	59
5.24.2.2	<a href="#">convertEncryptedText()</a>	59
5.24.2.3	<a href="#">convertEnToDo()</a>	60
5.24.2.4	<a href="#">convertResource()</a>	60
5.25	<a href="#">quentier::synchronization::ISyncConflictResolver::ConflictResolution::IgnoreMine Struct Reference</a>	61
5.25.1	<a href="#">Detailed Description</a>	61
5.26	<a href="#">quentier::enml::IHtmlData Struct Reference</a>	61
5.26.1	<a href="#">Detailed Description</a>	62
5.26.2	<a href="#">Member Function Documentation</a>	62
5.26.2.1	<a href="#">html()</a>	62
5.26.2.2	<a href="#">numEnCryptNodes()</a>	62
5.26.2.3	<a href="#">numEnDecryptedNodes()</a>	63
5.26.2.4	<a href="#">numEnToDoNodes()</a>	63
5.26.2.5	<a href="#">numHyperlinkNodes()</a>	63
5.26.2.6	<a href="#">print()</a>	63
5.27	<a href="#">quentier::utility::IKeychainService Class Reference</a>	63
5.27.1	<a href="#">Detailed Description</a>	64
5.27.2	<a href="#">Member Enumeration Documentation</a>	64
5.27.2.1	<a href="#">ErrorCode</a>	64
5.27.3	<a href="#">Member Function Documentation</a>	65
5.27.3.1	<a href="#">deletePassword()</a>	65
5.27.3.2	<a href="#">readPassword()</a>	65
5.27.3.3	<a href="#">writePassword()</a>	65
5.28	<a href="#">quentier::local_storage::ILocalStorage Class Reference</a>	66
5.28.1	<a href="#">Member Enumeration Documentation</a>	70
5.28.1.1	<a href="#">Affiliation</a>	70
5.28.1.2	<a href="#">TagNotesRelation</a>	70
5.28.2	<a href="#">Member Function Documentation</a>	71
5.28.2.1	<a href="#">notifier()</a>	71
5.29	<a href="#">quentier::local_storage::ILocalStorageNotifier Class Reference</a>	71
5.30	<a href="#">quentier::INoteEditorBackend Class Reference</a>	73

5.31 <a href="#">quentier::synchronization::INoteStoreFactory Class Reference</a>	76
5.32 <a href="#">quentier::InvalidArgument Class Reference</a>	76
5.32.1 <a href="#">Member Function Documentation</a>	77
5.32.1.1 <a href="#">exceptionDisplayName()</a>	77
5.33 <a href="#">quentier::ResourceRecognitionIndexItem::IObjectItem Struct Reference</a>	77
5.34 <a href="#">quentier::local_storage::IPatch Class Reference</a>	78
5.34.1 <a href="#">Detailed Description</a>	78
5.34.2 <a href="#">Member Function Documentation</a>	78
5.34.2.1 <a href="#">apply()</a>	78
5.34.2.2 <a href="#">backupLocalStorage()</a>	78
5.34.2.3 <a href="#">fromVersion()</a>	79
5.34.2.4 <a href="#">patchLongDescription()</a>	79
5.34.2.5 <a href="#">patchShortDescription()</a>	79
5.34.2.6 <a href="#">removeLocalStorageBackup()</a>	79
5.34.2.7 <a href="#">restoreLocalStorageFromBackup()</a>	80
5.34.2.8 <a href="#">toVersion()</a>	80
5.35 <a href="#">quentier::IQuentierException Class Reference</a>	80
5.35.1 <a href="#">Detailed Description</a>	81
5.35.2 <a href="#">Member Function Documentation</a>	81
5.35.2.1 <a href="#">print()</a>	81
5.36 <a href="#">quentier::synchronization::ISendStatus Class Reference</a>	82
5.36.1 <a href="#">Detailed Description</a>	83
5.36.2 <a href="#">Member Function Documentation</a>	83
5.36.2.1 <a href="#">failedToSendNotebooks()</a>	83
5.36.2.2 <a href="#">failedToSendNotes()</a>	83
5.36.2.3 <a href="#">failedToSendSavedSearches()</a>	84
5.36.2.4 <a href="#">failedToSendTags()</a>	84
5.36.2.5 <a href="#">needToRepeatIncrementalSync()</a>	84
5.36.2.6 <a href="#">stopSynchronizationError()</a>	84
5.36.2.7 <a href="#">totalAttemptedToSendNotebooks()</a>	84
5.36.2.8 <a href="#">totalAttemptedToSendNotes()</a>	85
5.36.2.9 <a href="#">totalAttemptedToSendSavedSearches()</a>	85
5.36.2.10 <a href="#">totalAttemptedToSendTags()</a>	85
5.36.2.11 <a href="#">totalSuccessfullySentNotebooks()</a>	85
5.36.2.12 <a href="#">totalSuccessfullySentNotes()</a>	86
5.36.2.13 <a href="#">totalSuccessfullySentSavedSearches()</a>	86
5.36.2.14 <a href="#">totalSuccessfullySentTags()</a>	86
5.37 <a href="#">quentier::ResourceRecognitionIndexItem::IShapeItem Struct Reference</a>	86
5.38 <a href="#">quentier::enml::conversion_rules::ISkipRule Class Reference</a>	87
5.38.1 <a href="#">Detailed Description</a>	88
5.38.2 <a href="#">Member Enumeration Documentation</a>	88
5.38.2.1 <a href="#">Target</a>	88

5.38.3 Member Function Documentation	88
5.38.3.1 caseSensitivity()	88
5.38.3.2 includeContents()	88
5.38.3.3 matchMode()	89
5.38.3.4 print()	89
5.38.3.5 target()	89
5.38.3.6 value()	89
5.39 quantier::enml::conversion_rules::ISkipRuleBuilder Class Reference	89
5.40 quantier::synchronization::ISyncChunksDataCounters Struct Reference	90
5.40.1 Detailed Description	91
5.40.2 Member Function Documentation	91
5.40.2.1 addedLinkedNotebooks()	91
5.40.2.2 addedNotebooks()	91
5.40.2.3 addedSavedSearches()	91
5.40.2.4 addedTags()	92
5.40.2.5 expungedLinkedNotebooks()	92
5.40.2.6 expungedNotebooks()	92
5.40.2.7 expungedSavedSearches()	92
5.40.2.8 expungedTags()	92
5.40.2.9 totalExpungedLinkedNotebooks()	92
5.40.2.10 totalExpungedNotebooks()	92
5.40.2.11 totalExpungedSavedSearches()	93
5.40.2.12 totalExpungedTags()	93
5.40.2.13 totalLinkedNotebooks()	93
5.40.2.14 totalNotebooks()	93
5.40.2.15 totalSavedSearches()	93
5.40.2.16 totalTags()	93
5.40.2.17 updatedLinkedNotebooks()	93
5.40.2.18 updatedNotebooks()	94
5.40.2.19 updatedSavedSearches()	94
5.40.2.20 updatedTags()	94
5.41 quantier::synchronization::ISyncConflictResolver Class Reference	94
5.41.1 Detailed Description	95
5.42 quantier::synchronization::ISyncEventsNotifier Class Reference	95
5.42.1 Member Function Documentation	96
5.42.1.1 downloadFinished	96
5.42.1.2 linkedNotebookNotesDownloadProgress	97
5.42.1.3 linkedNotebookResourcesDownloadProgress	97
5.42.1.4 linkedNotebookSendStatusUpdate	97
5.42.1.5 linkedNotebookSyncChunksDataProcessingProgress	98
5.42.1.6 linkedNotebookSyncChunksDownloaded	98
5.42.1.7 linkedNotebookSyncChunksDownloadProgress	98



5.42.1.8 notesDownloadProgress	99
5.42.1.9 resourcesDownloadProgress	99
5.42.1.10 startLinkedNotebooksDataDownloading	99
5.42.1.11 syncChunksDataProcessingProgress	100
5.42.1.12 syncChunksDownloaded	100
5.42.1.13 syncChunksDownloadProgress	100
5.42.1.14 userOwnSendStatusUpdate	100
5.43 quantier::synchronization::ISynchronizer Class Reference	101
5.44 quantier::synchronization::ISyncOptions Class Reference	101
5.44.1 Detailed Description	102
5.44.2 Member Function Documentation	102
5.44.2.1 downloadNoteThumbnails()	102
5.44.2.2 inkNoteImagesStorageDir()	103
5.44.2.3 maxConcurrentNoteDownloads()	103
5.44.2.4 maxConcurrentResourceDownloads()	103
5.44.2.5 requestContext()	103
5.44.2.6 retryPolicy()	103
5.45 quantier::synchronization::ISyncOptionsBuilder Class Reference	104
5.46 quantier::synchronization::ISyncResult Class Reference	104
5.47 quantier::synchronization::ISyncState Class Reference	105
5.47.1 Detailed Description	106
5.48 quantier::synchronization::ISyncStateBuilder Class Reference	106
5.49 quantier::synchronization::ISyncStateStorage Class Reference	107
5.49.1 Detailed Description	108
5.49.2 Member Function Documentation	108
5.49.2.1 notifySyncStateUpdated	108
5.50 quantier::ResourceRecognitionIndexItem::ITextItem Struct Reference	108
5.51 quantier::synchronization::IUserStoreFactory Class Reference	108
5.52 quantier::local_storage::ILocalStorage::ListGuidsFilters Struct Reference	109
5.53 quantier::local_storage::ILocalStorage::ListLinkedNotebooksOptions Struct Reference	109
5.54 quantier::local_storage::ILocalStorage::ListNotebooksOptions Struct Reference	110
5.55 quantier::local_storage::ILocalStorage::ListNotesOptions Struct Reference	111
5.56 quantier::local_storage::ILocalStorage::ListObjectsFilters Struct Reference	112
5.57 quantier::local_storage::ILocalStorage::ListOptionsBase Struct Reference	113
5.58 quantier::local_storage::ILocalStorage::ListSavedSearchesOptions Struct Reference	114
5.59 quantier::local_storage::ILocalStorage::ListTagsOptions Struct Reference	115
5.60 quantier::local_storage::LocalStorageOpenException Class Reference	116
5.60.1 Detailed Description	117
5.60.2 Member Function Documentation	117
5.60.2.1 exceptionDisplayName()	117
5.61 quantier::local_storage::LocalStorageOperationException Class Reference	117
5.61.1 Detailed Description	118

5.61.2 Member Function Documentation	118
5.61.2.1 exceptionDisplayName()	118
5.62 quantier::utility::LRUCache< Key, Value, Allocator > Class Template Reference	119
5.63 quantier::utility::cancelers::ManualCanceler Class Reference	120
5.63.1 Detailed Description	120
5.63.2 Member Function Documentation	121
5.63.2.1 cancel()	121
5.63.2.2 isCanceled()	121
5.64 quantier::synchronization::tests::mocks::MockIAuthenticator Class Reference	121
5.65 quantier::utility::tests::mocks::MockIKeychainService Class Reference	122
5.66 quantier::local_storage::tests::mocks::MockILocalStorage Class Reference	123
5.67 quantier::synchronization::tests::mocks::MockINoteStoreFactory Class Reference	126
5.68 quantier::synchronization::tests::mocks::MockISyncConflictResolver Class Reference	127
5.69 quantier::synchronization::tests::mocks::MockISyncStateStorage Class Reference	128
5.70 quantier::synchronization::ISyncConflictResolver::ConflictResolution::MoveMine< T > Struct Template Reference	129
5.70.1 Detailed Description	129
5.70.2 Member Data Documentation	129
5.70.2.1 mine	129
5.71 quantier::NoteEditor Class Reference	130
5.71.1 Detailed Description	133
5.71.2 Member Function Documentation	133
5.71.2.1 backend()	133
5.71.2.2 clear()	134
5.71.2.3 convertToNote	134
5.71.2.4 currentNoteLocalId()	134
5.71.2.5 defaultFont()	134
5.71.2.6 defaultPalette()	134
5.71.2.7 idleTime()	134
5.71.2.8 inAppNoteLinkPasteRequested	135
5.71.2.9 initialize()	135
5.71.2.10 isEditorPageModified()	135
5.71.2.11 isModified()	136
5.71.2.12 isNoteLoaded()	136
5.71.2.13 saveNoteToLocalStorage	136
5.71.2.14 setAccount()	136
5.71.2.15 setBackend()	136
5.71.2.16 setCurrentNoteLocalId()	136
5.71.2.17 setDefaultFont	137
5.71.2.18 setDefaultPalette	137
5.71.2.19 setFocus()	137
5.71.2.20 setInitialPageHtml()	138

5.71.2.21 setNoteDeletedPageHtml()	138
5.71.2.22 setNoteLoadingPageHtml()	138
5.71.2.23 setNoteNotFoundPageHtml()	138
5.71.2.24 setNoteTitle	138
5.71.2.25 setTagIds	138
5.71.2.26 setUndoStack()	139
5.71.2.27 undoStack()	139
5.72 quantier::local_storage::NoteSearchQuery Class Reference	139
5.72.1 Member Function Documentation	142
5.72.1.1 notebookModifier()	142
5.72.1.2 print()	142
5.72.1.3 queryString()	142
5.73 quantier::OperationCanceled Class Reference	142
5.73.1 Member Function Documentation	143
5.73.1.1 exceptionDisplayName()	143
5.74 quantier::utility::Printable Class Reference	144
5.74.1 Detailed Description	145
5.75 QPromise< T > Class Template Reference	145
5.76 quantier::utility::QuantierApplication Class Reference	145
5.77 quantier::utility::QuantierUndoCommand Class Reference	146
5.77.1 Detailed Description	147
5.78 quantier::synchronization::RateLimitReachedError Struct Reference	148
5.78.1 Detailed Description	148
5.78.2 Member Data Documentation	148
5.78.2.1 rateLimitDurationSec	148
5.79 quantier::ResourceRecognitionIndexItem Class Reference	148
5.79.1 Member Function Documentation	150
5.79.1.1 print()	150
5.80 quantier::ResourceRecognitionIndices Class Reference	150
5.80.1 Member Function Documentation	151
5.80.1.1 print()	151
5.81 quantier::Result< ValueType, ErrorType, typename > Class Template Reference	152
5.81.1 Member Function Documentation	152
5.81.1.1 isValid()	152
5.82 quantier::threading::detail::ResultTypeHelper< F, Arg, Enable > Struct Template Reference	152
5.83 quantier::threading::detail::ResultTypeHelper< F, Arg, typename std::enable_if_t< !std::is_↵ invocable_v< std::decay_t< F >, QFuture< Arg > > > > Struct Template Reference	152
5.84 quantier::threading::detail::ResultTypeHelper< F, Arg, typename std::enable_if_t< std::is_↵ invocable_v< std::decay_t< F >, QFuture< Arg > > > > Struct Template Reference	153
5.85 quantier::threading::detail::ResultTypeHelper< F, void, typename std::enable_if_t< !std::is_↵ invocable_v< std::decay_t< F >, QFuture< void > > > > Struct Template Reference	153
5.86 quantier::threading::detail::ResultTypeHelper< F, void, typename std::enable_if_t< std::is_↵ invocable_v< std::decay_t< F >, QFuture< void > > > > Struct Template Reference	153

5.87	<a href="#">quentier::RuntimeError Class Reference</a>	153
5.87.1	<a href="#">Member Function Documentation</a>	154
5.87.1.1	<a href="#">exceptionDisplayName()</a>	154
5.88	<a href="#">quentier::utility::ShortcutManager Class Reference</a>	155
5.88.1	<a href="#">Member Function Documentation</a>	156
5.88.1.1	<a href="#">defaultShortcut() [1/2]</a>	156
5.88.1.2	<a href="#">defaultShortcut() [2/2]</a>	157
5.88.1.3	<a href="#">shortcut() [1/2]</a>	157
5.88.1.4	<a href="#">shortcut() [2/2]</a>	157
5.88.1.5	<a href="#">userShortcut() [1/2]</a>	157
5.88.1.6	<a href="#">userShortcut() [2/2]</a>	158
5.89	<a href="#">quentier::SpellChecker Class Reference</a>	158
5.90	<a href="#">quentier::utility::StringUtils Class Reference</a>	159
5.91	<a href="#">quentier::utility::SysInfo Class Reference</a>	159
5.92	<a href="#">quentier::threading::TrackedTask&lt; LockableObject, Function &gt; Class Template Reference</a>	159
5.92.1	<a href="#">Detailed Description</a>	160
5.93	<a href="#">quentier::utility::UidGenerator Class Reference</a>	160
5.94	<a href="#">quentier::synchronization::ISyncConflictResolver::ConflictResolution::UseMine Struct Reference</a>	160
5.94.1	<a href="#">Detailed Description</a>	160
5.95	<a href="#">quentier::synchronization::ISyncConflictResolver::ConflictResolution::UseTheirs Struct Reference</a>	160
5.95.1	<a href="#">Detailed Description</a>	160
<b>6</b>	<b>File Documentation</b>	<b>161</b>
6.1	<a href="#">ISkipRule.h</a>	161
6.2	<a href="#">ISkipRuleBuilder.h</a>	162
6.3	<a href="#">MatchMode.h</a>	162
6.4	<a href="#">HtmlUtils.h</a>	163
6.5	<a href="#">IConverter.h</a>	163
6.6	<a href="#">IDecryptedTextCache.h</a>	164
6.7	<a href="#">IENMLTagsConverter.h</a>	165
6.8	<a href="#">IHtmlData.h</a>	166
6.9	<a href="#">InvalidArgument.h</a>	167
6.10	<a href="#">IQuentierException.h</a>	167
6.11	<a href="#">OperationCanceled.h</a>	168
6.12	<a href="#">RuntimeError.h</a>	168
6.13	<a href="#">ILocalStorage.h</a>	169
6.14	<a href="#">ILocalStorageNotifier.h</a>	177
6.15	<a href="#">IPatch.h</a>	178
6.16	<a href="#">LocalStorageOpenException.h</a>	179
6.17	<a href="#">LocalStorageOperationException.h</a>	179
6.18	<a href="#">NoteSearchQuery.h</a>	180
6.19	<a href="#">MockILocalStorage.h</a>	182

6.20 QuentierLogger.h . . . . .	186
6.21 INoteEditorBackend.h . . . . .	187
6.22 NoteEditor.h . . . . .	190
6.23 SpellChecker.h . . . . .	193
6.24 IAuthenticator.h . . . . .	194
6.25 INoteStoreFactory.h . . . . .	194
6.26 ISyncConflictResolver.h . . . . .	195
6.27 ISyncEventsNotifier.h . . . . .	197
6.28 ISynchronizer.h . . . . .	198
6.29 ISyncStateStorage.h . . . . .	198
6.30 IUserStoreFactory.h . . . . .	199
6.31 MockIAuthenticator.h . . . . .	200
6.32 MockINoteStoreFactory.h . . . . .	200
6.33 MockISyncConflictResolver.h . . . . .	201
6.34 MockISyncStateStorage.h . . . . .	201
6.35 Errors.h . . . . .	202
6.36 IAuthenticationInfo.h . . . . .	203
6.37 IAuthenticationInfoBuilder.h . . . . .	203
6.38 IDownloadNotesStatus.h . . . . .	204
6.39 IDownloadResourcesStatus.h . . . . .	205
6.40 ISendStatus.h . . . . .	206
6.41 ISyncChunksDataCounters.h . . . . .	207
6.42 ISyncOptions.h . . . . .	208
6.43 ISyncOptionsBuilder.h . . . . .	209
6.44 ISyncResult.h . . . . .	210
6.45 ISyncState.h . . . . .	210
6.46 ISyncStateBuilder.h . . . . .	211
6.47 AuthenticationInfo.h . . . . .	212
6.48 DownloadNotesStatus.h . . . . .	212
6.49 DownloadResourcesStatus.h . . . . .	213
6.50 SendStatus.h . . . . .	213
6.51 SyncChunksDataCounters.h . . . . .	214
6.52 SyncResult.h . . . . .	214
6.53 SyncState.h . . . . .	215
6.54 enml/conversion_rules/Factory.h . . . . .	215
6.55 enml/Factory.h . . . . .	215
6.56 local_storage/Factory.h . . . . .	216
6.57 synchronization/Factory.h . . . . .	216
6.58 threading/Factory.h . . . . .	217
6.59 utility/Factory.h . . . . .	217
6.60 Future.h . . . . .	218
6.61 enml/conversion_rules/Fwd.h . . . . .	221

6.62 enml/Fwd.h . . . . .	222
6.63 local_storage/Fwd.h . . . . .	222
6.64 synchronization/Fwd.h . . . . .	223
6.65 synchronization/types/Fwd.h . . . . .	223
6.66 threading/Fwd.h . . . . .	224
6.67 types/Fwd.h . . . . .	225
6.68 utility/cancelers/Fwd.h . . . . .	225
6.69 utility/Fwd.h . . . . .	226
6.70 Post.h . . . . .	226
6.71 Qt5Promise.h . . . . .	227
6.72 QtFutureContinuations.h . . . . .	229
6.73 QtFutureHelpers.h . . . . .	235
6.74 Runnable.h . . . . .	237
6.75 TrackedTask.h . . . . .	238
6.76 Account.h . . . . .	239
6.77 ErrorString.h . . . . .	240
6.78 NoteUtils.h . . . . .	241
6.79 RegisterMetatypes.h . . . . .	242
6.80 ResourceRecognitionIndexItem.h . . . . .	242
6.81 ResourceRecognitionIndices.h . . . . .	244
6.82 ResourceUtils.h . . . . .	245
6.83 Result.h . . . . .	245
6.84 Validation.h . . . . .	248
6.85 ApplicationSettings.h . . . . .	248
6.86 AnyOfCanceler.h . . . . .	250
6.87 FutureCanceler.h . . . . .	250
6.88 ICanceler.h . . . . .	251
6.89 ManualCanceler.h . . . . .	251
6.90 Compat.h . . . . .	252
6.91 DateTime.h . . . . .	252
6.92 EventLoopWithExitStatus.h . . . . .	253
6.93 FileIOProcessorAsync.h . . . . .	254
6.94 FileSystem.h . . . . .	255
6.95 FileSystemWatcher.h . . . . .	255
6.96 IEncryptor.h . . . . .	256
6.97 IKeychainService.h . . . . .	257
6.98 Initialize.h . . . . .	258
6.99 LRUCache.hpp . . . . .	258
6.100 MessageBox.h . . . . .	261
6.101 PlatformUtils.h . . . . .	262
6.102 Printable.h . . . . .	262
6.103 QuentierApplication.h . . . . .	263

---

6.104 QuentierUndoCommand.h . . . . .	264
6.105 ShortcutManager.h . . . . .	265
6.106 Size.h . . . . .	267
6.107 StandardPaths.h . . . . .	267
6.108 StringUtils.h . . . . .	268
6.109 SuppressWarnings.h . . . . .	268
6.110 SysInfo.h . . . . .	269
6.111 TagSortByParentChildRelations.h . . . . .	270
6.112 MockIKeychainService.h . . . . .	271
6.113 UidGenerator.h . . . . .	271
6.114 Unreachable.h . . . . .	272
<b>Index</b>	<b>273</b>





# Chapter 1

## libquentier

Set of Qt/C++ APIs for feature rich desktop clients for Evernote service

### 1.1 What's this

This library presents a set of Qt/C++ APIs useful for applications working as feature rich desktop clients for Evernote service. The most important and useful components of the library are the following:

- Local storage - persistence of data downloaded from Evernote service in a local SQLite database
- Synchronization - the logics of exchanging new and/or modified data with Evernote service
- Note editor - the UI component capable for notes displaying and editing

The library is based on the lower level functionality provided by `QEverCloud` library. It also serves as the functional core of `Quentier` application.

**1.1.1 WARNING: libquentier is in alpha state right now, neither API nor ABI can be considered stable yet!**

### 1.2 How to build/install

Please see the building/installation guide.

### 1.3 How to contribute

Please see the contribution guide for detailed info.



## Chapter 2

# Hierarchical Index

### 2.1 Class Hierarchy

This inheritance list is sorted roughly, but not completely, alphabetically:

quentier::utility::ApplicationSettings::ArrayCloser . . . . .	31
quentier::synchronization::AuthenticationExpiredError . . . . .	32
quentier::synchronization::ISyncConflictResolver::ConflictResolution . . . . .	32
quentier::utility::ApplicationSettings::GroupCloser . . . . .	43
quentier::synchronization::IAuthenticationInfoBuilder . . . . .	46
quentier::synchronization::IAuthenticator . . . . .	47
quentier::synchronization::tests::mocks::MockIAuthenticator . . . . .	121
quentier::ResourceRecognitionIndexItem::IBarcodeItem . . . . .	47
quentier::utility::cancelers::ICanceler . . . . .	47
quentier::utility::cancelers::AnyOfCanceler . . . . .	19
quentier::utility::cancelers::FutureCanceler< T > . . . . .	42
quentier::utility::cancelers::ManualCanceler . . . . .	120
quentier::enml::IConverter . . . . .	48
quentier::enml::IDecryptedTextCache . . . . .	54
quentier::utility::IEncryptor . . . . .	57
quentier::enml::IENMLTagsConverter . . . . .	58
quentier::synchronization::ISyncConflictResolver::ConflictResolution::IgnoreMine . . . . .	61
quentier::utility::IKeychainService . . . . .	63
quentier::utility::tests::mocks::MockIKeychainService . . . . .	122
quentier::local_storage::ILocalStorage . . . . .	66
quentier::local_storage::tests::mocks::MockILocalStorage . . . . .	123
quentier::INoteEditorBackend . . . . .	73
quentier::synchronization::INoteStoreFactory . . . . .	76
quentier::synchronization::tests::mocks::MockINoteStoreFactory . . . . .	126
quentier::ResourceRecognitionIndexItem::IObjectItem . . . . .	77
quentier::local_storage::IPatch . . . . .	78
quentier::ResourceRecognitionIndexItem::IShapeItem . . . . .	86
quentier::enml::conversion_rules::ISkipRuleBuilder . . . . .	89
quentier::synchronization::ISyncConflictResolver . . . . .	94
quentier::synchronization::tests::mocks::MockISyncConflictResolver . . . . .	127
quentier::synchronization::ISynchronizer . . . . .	101
quentier::synchronization::ISyncOptionsBuilder . . . . .	104
quentier::synchronization::ISyncStateBuilder . . . . .	106

quentier::ResourceRecognitionIndexItem::ITextItem	108
quentier::synchronization::IUserStoreFactory	108
quentier::local_storage::ILocalStorage::ListGuidsFilters	109
quentier::local_storage::ILocalStorage::ListObjectsFilters	112
quentier::local_storage::ILocalStorage::ListOptionsBase	113
quentier::local_storage::ILocalStorage::ListLinkedNotebooksOptions	109
quentier::local_storage::ILocalStorage::ListNotebooksOptions	110
quentier::local_storage::ILocalStorage::ListNotesOptions	111
quentier::local_storage::ILocalStorage::ListSavedSearchesOptions	114
quentier::local_storage::ILocalStorage::ListTagsOptions	115
quentier::utility::LRUCache< Key, Value, Allocator >	119
quentier::synchronization::ISyncConflictResolver::ConflictResolution::MoveMine< T >	129
quentier::utility::Printable	144
quentier::Account	15
quentier::ErrorString	33
quentier::IQuentierException	80
quentier::InvalidArgument	76
quentier::OperationCanceled	142
quentier::RuntimeError	153
quentier::local_storage::LocalStorageOpenException	116
quentier::local_storage::LocalStorageOperationException	117
quentier::utility::IKeychainService::Exception	36
quentier::ResourceRecognitionIndexItem	148
quentier::ResourceRecognitionIndices	150
quentier::enml::IHtmlData	61
quentier::enml::conversion_rules::ISkipRule	87
quentier::local_storage::NoteSearchQuery	139
quentier::synchronization::IAuthenticationInfo	44
quentier::synchronization::IDownloadNotesStatus	54
quentier::synchronization::IDownloadResourcesStatus	56
quentier::synchronization::ISendStatus	82
quentier::synchronization::ISyncChunksDataCounters	90
quentier::synchronization::ISyncOptions	101
quentier::synchronization::ISyncResult	104
quentier::synchronization::ISyncState	105
quentier::utility::ApplicationSettings	20
QApplication	
quentier::utility::QuentierApplication	145
QEventLoop	
quentier::utility::EventLoopWithExitStatus	35
QException	
quentier::IQuentierException	80
QObject	
quentier::SpellChecker	158
quentier::local_storage::ILocalStorageNotifier	71
quentier::synchronization::ISyncEventsNotifier	95
quentier::synchronization::ISyncStateStorage	107
quentier::synchronization::tests::mocks::MockISyncStateStorage	128
quentier::utility::FileIOProcessorAsync	37
quentier::utility::FileSystemWatcher	41
quentier::utility::QuentierUndoCommand	146
quentier::utility::ShortcutManager	155
QPromise< T >	145
QSettings	
quentier::utility::ApplicationSettings	20
QUndoCommand	
quentier::utility::QuentierUndoCommand	146
QWidget	

quentier::NoteEditor . . . . .	130
quentier::synchronization::RateLimitReachedError . . . . .	148
quentier::Result< ValueType, ErrorType, typename > . . . . .	152
quentier::threading::detail::ResultTypeHelper< F, Arg, Enable > . . . . .	152
quentier::threading::detail::ResultTypeHelper< F, Arg, typename std::enable_if_t< !std::is_invocable_v< std::decay_t< F >, QFuture< Arg > > > > . . . . .	152
quentier::threading::detail::ResultTypeHelper< F, Arg, typename std::enable_if_t< std::is_invocable_v< std::decay_t< F >, QFuture< Arg > > > > . . . . .	153
quentier::threading::detail::ResultTypeHelper< F, void, typename std::enable_if_t< !std::is_invocable_v< std::decay_t< F >, QFuture< void > > > > . . . . .	153
quentier::threading::detail::ResultTypeHelper< F, void, typename std::enable_if_t< std::is_invocable_v< std::decay_t< F >, QFuture< void > > > > . . . . .	153
quentier::utility::StringUtils . . . . .	159
quentier::utility::SysInfo . . . . .	159
quentier::threading::TrackedTask< LockableObject, Function > . . . . .	159
quentier::utility::UidGenerator . . . . .	160
quentier::synchronization::ISyncConflictResolver::ConflictResolution::UseMine . . . . .	160
quentier::synchronization::ISyncConflictResolver::ConflictResolution::UseTheirs . . . . .	160



## Chapter 3

# Class Index

### 3.1 Class List

Here are the classes, structs, unions and interfaces with brief descriptions:

<a href="#">quentier::Account</a>	Encapsulates some details about the account: its name, whether it is local or synchronized to Evernote and for the latter case - some additional details like upload limit etc . . . . .	15
<a href="#">quentier::utility::cancelers::AnyOfCanceler</a>		19
<a href="#">quentier::utility::ApplicationSettings</a>	Enhances the functionality of QSettings, in particular it simplifies the way of working with either application-wide or account-specific settings . . . . .	20
<a href="#">quentier::utility::ApplicationSettings::ArrayCloser</a>		31
<a href="#">quentier::synchronization::AuthenticationExpiredError</a>		32
<a href="#">quentier::synchronization::ISyncConflictResolver::ConflictResolution</a>	The <a href="#">ConflictResolution</a> struct is a namespace inside which several other structs determining actual conflict resolutions . . . . .	32
<a href="#">quentier::ErrorString</a>	Encapsulates two (or more) strings which are meant to contain translatable (base) and non-translatable (details) parts of the error description . . . . .	33
<a href="#">quentier::utility::EventLoopWithExitStatus</a>		35
<a href="#">quentier::utility::IKeychainService::Exception</a>	The <a href="#">IKeychainService::Exception</a> class is the base class for exceptions returned inside QFutures from methods of <a href="#">IKeychainService</a> . . . . .	36
<a href="#">quentier::utility::FileIOProcessorAsync</a>	Wrapper under simple file IO operations, it is meant to be used for simple asynchronous IO . . .	37
<a href="#">quentier::utility::FileSystemWatcher</a>		41
<a href="#">quentier::utility::cancelers::FutureCanceler&lt; T &gt;</a>		42
<a href="#">quentier::utility::ApplicationSettings::GroupCloser</a>		43
<a href="#">quentier::synchronization::IAuthenticationInfo</a>	The <a href="#">IAuthenticationInfo</a> interface represents the information obtained through OAuth and necessary to access Evernote API . . . . .	44
<a href="#">quentier::synchronization::IAuthenticationInfoBuilder</a>		46
<a href="#">quentier::synchronization::IAuthenticator</a>		47
<a href="#">quentier::ResourceRecognitionIndexItem::IBarcodeItem</a>		47
<a href="#">quentier::utility::cancelers::ICanceler</a>	The <a href="#">ICanceler</a> interface provides isCanceled method which can be used to check whether some processing can be skipped because it was canceled . . . . .	47
<a href="#">quentier::enml::IConverter</a>	The <a href="#">IConverter</a> interface encapsulates a set of methods performing conversions between ENML and other note content formats, namely HTML . . . . .	48

<a href="#">quentier::enml::IDecryptedTextCache</a>	54
<a href="#">quentier::synchronization::IDownloadNotesStatus</a>	
The <a href="#">IDownloadNotesStatus</a> interface presents information about the status of notes downloading process	54
<a href="#">quentier::synchronization::IDownloadResourcesStatus</a>	56
<a href="#">quentier::utility::IEncryptor</a>	
The <a href="#">IEncryptor</a> interface provides encryption and decryption functionality which is compatible with that used by Evernote service	57
<a href="#">quentier::enml::IENMLTagsConverter</a>	
The <a href="#">IENMLTagsConverter</a> interfaces provides methods which convert Evernote-specific markup tags such as en-crypt, en-media etc. into their counterparts which should be used in the HTML representation of note content	58
<a href="#">quentier::synchronization::ISyncConflictResolver::ConflictResolution::IgnoreMine</a>	
The <a href="#">IgnoreMine</a> conflict resolution means "use theirs version and ignore mine version as it doesn't really conflict with theirs version"	61
<a href="#">quentier::enml::IHtmlData</a>	
The <a href="#">IHtmlData</a> represents the result of ENML to HTML conversion: HTML itself plus some meta-data	61
<a href="#">quentier::utility::IKeychainService</a>	
The <a href="#">IKeychainService</a> interface provides the ability to interact with the storage of sensitive data - read, write and delete it	63
<a href="#">quentier::local_storage::ILocalStorage</a>	66
<a href="#">quentier::local_storage::ILocalStorageNotifier</a>	71
<a href="#">quentier::INoteEditorBackend</a>	73
<a href="#">quentier::synchronization::INoteStoreFactory</a>	76
<a href="#">quentier::InvalidArgument</a>	76
<a href="#">quentier::ResourceRecognitionIndexItem::IObjectItem</a>	77
<a href="#">quentier::local_storage::IPatch</a>	
The <a href="#">IPatch</a> interface represents patches of the local storage. Each such patch somehow changes the layout of local storage persistence so that only compliant & corresponding versions of libquentier can be used to work with it	78
<a href="#">quentier::IQuentierException</a>	
Interface for exceptions specific to libquentier and applications based on it	80
<a href="#">quentier::synchronization::ISendStatus</a>	
The <a href="#">ISendStatus</a> interface represents the information about the attempt to send information either from user's own account or from some linked notebook to Evernote	82
<a href="#">quentier::ResourceRecognitionIndexItem::IShapeItem</a>	86
<a href="#">quentier::enml::conversion_rules::ISkipRule</a>	
The <a href="#">ISkipRule</a> interface describes a conversion rule with regards to which some ENML/HTML element/attribute should be skipped during the conversion	87
<a href="#">quentier::enml::conversion_rules::ISkipRuleBuilder</a>	89
<a href="#">quentier::synchronization::ISyncChunksDataCounters</a>	
The <a href="#">ISyncChunksDataCounters</a> interface provides integer counters representing the current progress on processing the data from downloaded sync chunks	90
<a href="#">quentier::synchronization::ISyncConflictResolver</a>	
The <a href="#">ISyncConflictResolver</a> interface provides methods used to resolve conflicts between local and remote versions of the same data item	94
<a href="#">quentier::synchronization::ISyncEventsNotifier</a>	95
<a href="#">quentier::synchronization::ISynchronizer</a>	101
<a href="#">quentier::synchronization::ISyncOptions</a>	
Options for synchronization process	101
<a href="#">quentier::synchronization::ISyncOptionsBuilder</a>	104
<a href="#">quentier::synchronization::ISyncResult</a>	104
<a href="#">quentier::synchronization::ISyncState</a>	
The <a href="#">ISyncState</a> interface provides accessory methods to determine the sync state for the account	105
<a href="#">quentier::synchronization::ISyncStateBuilder</a>	106



quentier::synchronization::ISyncStateStorage	
The <a href="#">ISyncStateStorage</a> interface represents the interface of a class which stores sync state for given accounts persistently and provides access to previously stores sync states . . . . .	107
quentier::ResourceRecognitionIndexItem::ITextItem . . . . .	108
quentier::synchronization::IUserStoreFactory . . . . .	108
quentier::local_storage::ILocalStorage::ListGuidsFilters . . . . .	109
quentier::local_storage::ILocalStorage::ListLinkedNotebooksOptions . . . . .	109
quentier::local_storage::ILocalStorage::ListNotebooksOptions . . . . .	110
quentier::local_storage::ILocalStorage::ListNotesOptions . . . . .	111
quentier::local_storage::ILocalStorage::ListObjectsFilters . . . . .	112
quentier::local_storage::ILocalStorage::ListOptionsBase . . . . .	113
quentier::local_storage::ILocalStorage::ListSavedSearchesOptions . . . . .	114
quentier::local_storage::ILocalStorage::ListTagsOptions . . . . .	115
quentier::local_storage::LocalStorageOpenException	
The <a href="#">LocalStorageOpenException</a> is thrown on failure to open the local storage database . . . . .	116
quentier::local_storage::LocalStorageOperationException	
The <a href="#">LocalStorageOperationException</a> is thrown when the local storage encounters some internal error during the attempt to process some operation . . . . .	117
quentier::utility::LRUCache< Key, Value, Allocator > . . . . .	119
quentier::utility::cancelers::ManualCanceler . . . . .	120
quentier::synchronization::tests::mocks::MockIAuthenticator . . . . .	121
quentier::utility::tests::mocks::MockIKeychainService . . . . .	122
quentier::local_storage::tests::mocks::MockILocalStorage . . . . .	123
quentier::synchronization::tests::mocks::MockINoteStoreFactory . . . . .	126
quentier::synchronization::tests::mocks::MockISyncConflictResolver . . . . .	127
quentier::synchronization::tests::mocks::MockISyncStateStorage . . . . .	128
quentier::synchronization::ISyncConflictResolver::ConflictResolution::MoveMine< T >	
The <a href="#">MoveMine</a> conflict resolution means "before using theirs version change mine version as specified". Note: the data item inside this conflict resolution might refer to something different than mine version passed to the conflict resolution function. It can be that way because the actual conflict might be with another local data item instead of the passed one . . . . .	129
quentier::NoteEditor	
Widget encapsulating all the functionality necessary for showing and editing notes . . . . .	130
quentier::local_storage::NoteSearchQuery . . . . .	139
quentier::OperationCanceled . . . . .	142
quentier::utility::Printable	
Interface for Quentier's internal classes which should be able to write themselves into QText←Stream and/or convert to QString . . . . .	144
QPromise< T > . . . . .	145
quentier::utility::QuentierApplication . . . . .	145
quentier::utility::QuentierUndoCommand	
Has the sole purpose of working around one quirky aspect of Qt's undo/redo framework: when you push QUndoCommand to QUndoStack, it calls "redo" method of that command. This class offers subclasses to implement their own methods for actual "undo" and "redo" commands while ignoring the attempts to "redo" anything if there were no previous "undo" call prior to that . . . . .	146
quentier::synchronization::RateLimitReachedError . . . . .	148
quentier::ResourceRecognitionIndexItem . . . . .	148
quentier::ResourceRecognitionIndices . . . . .	150
quentier::Result< ValueType, ErrorType, typename > . . . . .	152
quentier::threading::detail::ResultTypeHelper< F, Arg, Enable > . . . . .	152
quentier::threading::detail::ResultTypeHelper< F, Arg, typename std::enable_if_t< !std::is_invocable_v< std::decay_t< F >, QFu	152
152	
quentier::threading::detail::ResultTypeHelper< F, Arg, typename std::enable_if_t< std::is_invocable_v< std::decay_t< F >, QFu	153
153	
quentier::threading::detail::ResultTypeHelper< F, void, typename std::enable_if_t< !std::is_invocable_v< std::decay_t< F >, QFu	153
153	
quentier::threading::detail::ResultTypeHelper< F, void, typename std::enable_if_t< std::is_invocable_v< std::decay_t< F >, QFu	153
153	

---

<a href="#">quentier::RuntimeError</a>	153
<a href="#">quentier::utility::ShortcutManager</a>	155
<a href="#">quentier::SpellChecker</a>	158
<a href="#">quentier::utility::StringUtils</a>	159
<a href="#">quentier::utility::SysInfo</a>	159
<a href="#">quentier::threading::TrackedTask&lt; LockableObject, Function &gt;</a>	159
<a href="#">quentier::utility::UidGenerator</a>	160
<a href="#">quentier::synchronization::ISyncConflictResolver::ConflictResolution::UseMine</a>	
The <a href="#">UseMine</a> conflict resolution means "override theirs version with mine version"	160
<a href="#">quentier::synchronization::ISyncConflictResolver::ConflictResolution::UseTheirs</a>	
The <a href="#">UseTheirs</a> conflict resolution means "override mine version with theirs version"	160

## Chapter 4

# File Index

### 4.1 File List

Here is a list of all documented files with brief descriptions:

<a href="#">ISkipRule.h</a>	161
<a href="#">ISkipRuleBuilder.h</a>	162
<a href="#">MatchMode.h</a>	162
<a href="#">HtmlUtils.h</a>	163
<a href="#">IConverter.h</a>	163
<a href="#">IDecryptedTextCache.h</a>	164
<a href="#">IENMLTagsConverter.h</a>	165
<a href="#">IHtmlData.h</a>	166
<a href="#">InvalidArgument.h</a>	167
<a href="#">IQuentierException.h</a>	167
<a href="#">OperationCanceled.h</a>	168
<a href="#">RuntimeError.h</a>	168
<a href="#">ILocalStorage.h</a>	169
<a href="#">ILocalStorageNotifier.h</a>	177
<a href="#">IPatch.h</a>	178
<a href="#">LocalStorageOpenException.h</a>	179
<a href="#">LocalStorageOperationException.h</a>	179
<a href="#">NoteSearchQuery.h</a>	180
<a href="#">MockILocalStorage.h</a>	182
<a href="#">QuentierLogger.h</a>	186
<a href="#">INoteEditorBackend.h</a>	187
<a href="#">NoteEditor.h</a>	190
<a href="#">SpellChecker.h</a>	193
<a href="#">IAuthenticator.h</a>	194
<a href="#">INoteStoreFactory.h</a>	194
<a href="#">ISyncConflictResolver.h</a>	195
<a href="#">ISyncEventsNotifier.h</a>	197
<a href="#">ISynchronizer.h</a>	198
<a href="#">ISyncStateStorage.h</a>	198
<a href="#">IUserStoreFactory.h</a>	199
<a href="#">MockIAuthenticator.h</a>	200
<a href="#">MockINoteStoreFactory.h</a>	200
<a href="#">MockISyncConflictResolver.h</a>	201
<a href="#">MockISyncStateStorage.h</a>	201
<a href="#">Errors.h</a>	202

<a href="#">IAuthenticationInfo.h</a>	203
<a href="#">IAuthenticationInfoBuilder.h</a>	203
<a href="#">IDownloadNotesStatus.h</a>	204
<a href="#">IDownloadResourcesStatus.h</a>	205
<a href="#">ISendStatus.h</a>	206
<a href="#">ISyncChunksDataCounters.h</a>	207
<a href="#">ISyncOptions.h</a>	208
<a href="#">ISyncOptionsBuilder.h</a>	209
<a href="#">ISyncResult.h</a>	210
<a href="#">ISyncState.h</a>	210
<a href="#">ISyncStateBuilder.h</a>	211
<a href="#">AuthenticationInfo.h</a>	212
<a href="#">DownloadNotesStatus.h</a>	212
<a href="#">DownloadResourcesStatus.h</a>	213
<a href="#">SendStatus.h</a>	213
<a href="#">SyncChunksDataCounters.h</a>	214
<a href="#">SyncResult.h</a>	214
<a href="#">SyncState.h</a>	215
<a href="#">enml/conversion_rules/Factory.h</a>	215
<a href="#">enml/Factory.h</a>	215
<a href="#">local_storage/Factory.h</a>	216
<a href="#">synchronization/Factory.h</a>	216
<a href="#">threading/Factory.h</a>	217
<a href="#">utility/Factory.h</a>	217
<a href="#">Future.h</a>	218
<a href="#">enml/conversion_rules/Fwd.h</a>	221
<a href="#">enml/Fwd.h</a>	222
<a href="#">local_storage/Fwd.h</a>	222
<a href="#">synchronization/Fwd.h</a>	223
<a href="#">synchronization/types/Fwd.h</a>	223
<a href="#">threading/Fwd.h</a>	224
<a href="#">types/Fwd.h</a>	225
<a href="#">utility/cancelers/Fwd.h</a>	225
<a href="#">utility/Fwd.h</a>	226
<a href="#">Post.h</a>	226
<a href="#">Qt5Promise.h</a>	227
<a href="#">QtFutureContinuations.h</a>	229
<a href="#">QtFutureHelpers.h</a>	235
<a href="#">Runnable.h</a>	237
<a href="#">TrackedTask.h</a>	238
<a href="#">Account.h</a>	239
<a href="#">ErrorString.h</a>	240
<a href="#">NoteUtils.h</a>	241
<a href="#">RegisterMetatypes.h</a>	242
<a href="#">ResourceRecognitionIndexItem.h</a>	242
<a href="#">ResourceRecognitionIndices.h</a>	244
<a href="#">ResourceUtils.h</a>	245
<a href="#">Result.h</a>	245
<a href="#">Validation.h</a>	248
<a href="#">ApplicationSettings.h</a>	248
<a href="#">AnyOfCanceler.h</a>	250
<a href="#">FutureCanceler.h</a>	250
<a href="#">ICanceler.h</a>	251
<a href="#">ManualCanceler.h</a>	251
<a href="#">Compat.h</a>	252
<a href="#">DateTime.h</a>	252
<a href="#">EventLoopWithExitStatus.h</a>	253
<a href="#">FileIOProcessorAsync.h</a>	254

FileSystem.h	255
FileSystemWatcher.h	255
IEncryptor.h	256
IKeychainService.h	257
Initialize.h	258
LRUCache.hpp	258
MessageBox.h	261
PlatformUtils.h	262
Printable.h	262
QuentierApplication.h	263
QuentierUndoCommand.h	264
ShortcutManager.h	265
Size.h	267
StandardPaths.h	267
StringUtils.h	268
SuppressWarnings.h	268
SysInfo.h	269
TagSortByParentChildRelations.h	270
MockIKeychainService.h	271
UidGenerator.h	271
Unreachable.h	272



## Chapter 5

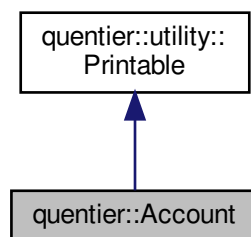
# Class Documentation

### 5.1 `quentier::Account` Class Reference

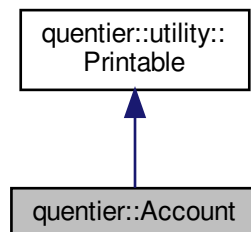
The `Account` class encapsulates some details about the account: its name, whether it is local or synchronized to Evernote and for the latter case - some additional details like upload limit etc.

```
#include <Account.h>
```

Inheritance diagram for `quentier::Account`:



Collaboration diagram for `quentier::Account`:



## Public Types

- enum class **Type** { **Local** , **Evernote** }
- enum class **EvernoteAccountType** { **Free** , **Plus** , **Premium** , **Business** }

## Public Member Functions

- **Account** (QString [name](#), Type [type](#), qevercloud::UserID [userId](#)=-1, EvernoteAccountType [evernoteAccountType](#)=EvernoteAccountType::Free, QString [evernoteHost](#)={}, QString [shardId](#)={})
- **Account** (const [Account](#) &other)
- **Account** ([Account](#) &&other) noexcept
- [Account](#) & **operator=** (const [Account](#) &other)
- [Account](#) & **operator=** ([Account](#) &&other) noexcept
- bool **operator==** (const [Account](#) &other) const noexcept
- bool **operator!=** (const [Account](#) &other) const noexcept
- bool **isEmpty** () const
- QString [name](#) () const
- void **setName** (QString [name](#))  
*setName sets the username to the account*
- QString [displayName](#) () const
- void **setDisplayName** (QString [displayName](#))
- Type [type](#) () const
- qevercloud::UserID [id](#) () const
- EvernoteAccountType [evernoteAccountType](#) () const
- QString [evernoteHost](#) () const
- QString [shardId](#) () const
- void **setEvernoteAccountType** (EvernoteAccountType [evernoteAccountType](#))
- void **setEvernoteHost** (QString [evernoteHost](#))
- void **setShardId** (QString [shardId](#))
- qint32 **mailLimitDaily** () const
- qint64 **noteSizeMax** () const
- qint64 **resourceSizeMax** () const
- qint32 **linkedNotebookMax** () const
- qint32 **noteCountMax** () const
- qint32 **notebookCountMax** () const
- qint32 **tagCountMax** () const
- qint32 **noteTagCountMax** () const
- qint32 **savedSearchCountMax** () const
- qint32 **noteResourceCountMax** () const
- void **setEvernoteAccountLimits** (const qevercloud::AccountLimits &limits)
- QTextStream & [print](#) (QTextStream &strm) const override

## Friends

- QUENTIER\_EXPORT QTextStream & **operator<<** (QTextStream &strm, Type [type](#))
- QUENTIER\_EXPORT QDebug & **operator<<** (QDebug &dbg, Type [type](#))
- QUENTIER\_EXPORT QTextStream & **operator<<** (QTextStream &strm, EvernoteAccountType [type](#))
- QUENTIER\_EXPORT QDebug & **operator<<** (QDebug &dbg, EvernoteAccountType [type](#))

### 5.1.1 Detailed Description

The [Account](#) class encapsulates some details about the account: its name, whether it is local or synchronized to Evernote and for the latter case - some additional details like upload limit etc.



## 5.1.2 Member Function Documentation

### 5.1.2.1 displayName()

```
QString quantier::Account::displayName ( ) const
```

#### Returns

Displayable user's name which is not used to uniquely identify the account, so this name may repeat across different local and Evernote accounts

### 5.1.2.2 evernoteAccountType()

```
EvernoteAccountType quantier::Account::evernoteAccountType ( ) const
```

#### Returns

The type of the Evernote account; if applied to free account, returns "Free"

### 5.1.2.3 evernoteHost()

```
QString quantier::Account::evernoteHost ( ) const
```

#### Returns

The Evernote server host with which the account is associated

### 5.1.2.4 id()

```
qevercloud::UserID quantier::Account::id ( ) const
```

#### Returns

User id for Evernote accounts, -1 for local accounts (as the concept of user id is not defined for local accounts)

#### 5.1.2.5 isEmpty()

```
bool quentier::Account::isEmpty ( ) const
```

##### Returns

True if either the account is local but the name is empty or if the account is Evernote but user id is negative; in all other cases return false

#### 5.1.2.6 name()

```
QString quentier::Account::name ( ) const
```

##### Returns

Username for either local or Evernote account

#### 5.1.2.7 print()

```
QTextStream & quentier::Account::print (
    QTextStream & strm ) const [override], [virtual]
```

Implements [quentier::utility::Printable](#).

#### 5.1.2.8 setDisplayName()

```
void quentier::Account::setDisplayName (
    QString displayName )
```

Set the printable name of the account

#### 5.1.2.9 shardId()

```
QString quentier::Account::shardId ( ) const
```

##### Returns

Shard id for Evernote accounts, empty string for local accounts (as the concept of shard id is not defined for local accounts)

## 5.1.2.10 type()

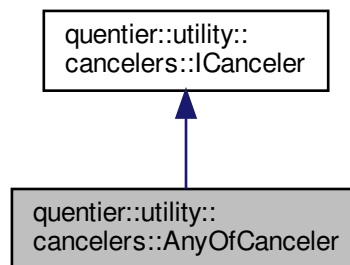
```
Type quantier::Account::type ( ) const
```

## Returns

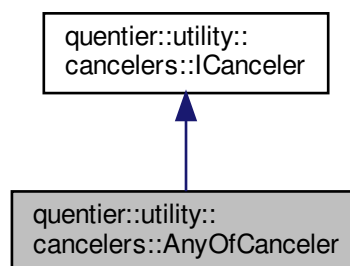
The type of the account: either local of Evernote

## 5.2 quantier::utility::cancelers::AnyOfCanceler Class Reference

Inheritance diagram for quantier::utility::cancelers::AnyOfCanceler:



Collaboration diagram for quantier::utility::cancelers::AnyOfCanceler:



## Public Member Functions

- **AnyOfCanceler** (QList< ICancelerPtr > cancelers)
- **AnyOfCanceler** ([AnyOfCanceler](#) &&other) noexcept
- **AnyOfCanceler** & **operator=** ([AnyOfCanceler](#) &&other) noexcept
- bool **isCanceled** () const noexcept override

## 5.2.1 Member Function Documentation

### 5.2.1.1 isCanceled()

```
bool quantier::utility::cancelers::AnyOfCanceler::isCanceled ( ) const [override], [virtual],  
[noexcept]
```

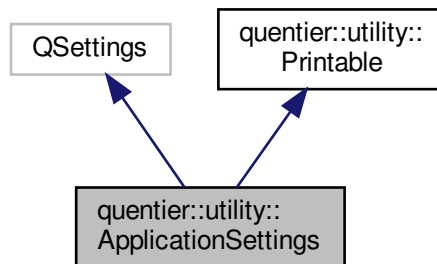
Implements [quantier::utility::cancelers::ICanceler](#).

## 5.3 quantier::utility::ApplicationSettings Class Reference

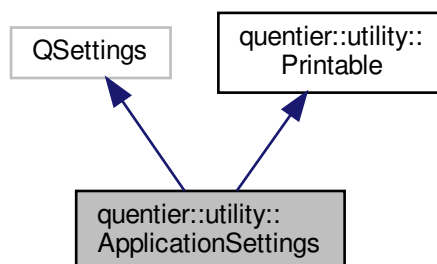
The [ApplicationSettings](#) class enhances the functionality of QSettings, in particular it simplifies the way of working with either application-wide or account-specific settings.

```
#include <ApplicationSettings.h>
```

Inheritance diagram for quantier::utility::ApplicationSettings:



Collaboration diagram for quantier::utility::ApplicationSettings:



## Classes

- struct [ArrayCloser](#)
- struct [GroupCloser](#)

## Public Member Functions

- [ApplicationSettings](#) (const QString &settingsName={})
- [ApplicationSettings](#) (const [Account](#) &account, const QString &settingsName={})
- [ApplicationSettings](#) (const [Account](#) &account, const char \*settingsName, int settingsNameSize=-1)
- [ApplicationSettings](#) (const [Account](#) &account, std::string\_view settingsName)
- [~ApplicationSettings](#) () override
- void [beginGroup](#) (const QString &prefix)
- void [beginGroup](#) (const char \*prefix, int size=-1)
- void [beginGroup](#) (std::string\_view prefix)
- int [beginReadArray](#) (const QString &prefix)
- int [beginReadArray](#) (const char \*prefix, int size=-1)
- int [beginReadArray](#) (std::string\_view prefix)
- void [beginWriteArray](#) (const QString &prefix, int arraySize=-1)
- void [beginWriteArray](#) (const char \*prefix, int arraySize=-1, int prefixSize=-1)
- void [beginWriteArray](#) (std::string\_view prefix, int arraySize=-1)
- bool [contains](#) (const QString &key) const
- bool [contains](#) (const char \*key, int size=-1) const
- bool [contains](#) (std::string\_view key) const
- void [remove](#) (const QString &key)
- void [remove](#) (const char \*key, int size=-1)
- void [remove](#) (std::string\_view key)
- void [setValue](#) (const QString &key, const QVariant &value)
- void [setValue](#) (const char \*key, const QVariant &value, int keySize=-1)
- void [setValue](#) (std::string\_view key, const QVariant &value)
- QVariant [value](#) (const QString &key, const QVariant &defaultValue={}) const
- QVariant [value](#) (const char \*key, const QVariant &defaultValue={}, int keySize=-1) const
- QVariant [value](#) (std::string\_view key, const QVariant &defaultValue={}) const
- QTextStream & [print](#) (QTextStream &strm) const override

### 5.3.1 Detailed Description

The [ApplicationSettings](#) class enhances the functionality of QSettings, in particular it simplifies the way of working with either application-wide or account-specific settings.

### 5.3.2 Constructor & Destructor Documentation

#### 5.3.2.1 ApplicationSettings() [1/4]

```
quantier::utility::ApplicationSettings::ApplicationSettings (
    const QString & settingsName = {} ) [explicit]
```

Constructor for application settings not being account-specific

## Parameters

<i>settingsName</i>	If not empty, the created application settings would manage the settings stored in a file with a specific name within the common settings storage; otherwise they would be stored in the default settings file for the account
---------------------	--

## 5.3.2.2 ApplicationSettings() [2/4]

```
quentier::utility::ApplicationSettings::ApplicationSettings (
    const Account & account,
    const QString & settingsName = {} ) [explicit]
```

Constructor for application settings specific to the account

## Parameters

<i>account</i>	The account for which the settings are to be stored or read
<i>settingsName</i>	If not empty, the created application settings would manage the settings stored in a file with a specific name within the account's settings storage; otherwise they would be stored in the default settings file for the account

## 5.3.2.3 ApplicationSettings() [3/4]

```
quentier::utility::ApplicationSettings::ApplicationSettings (
    const Account & account,
    const char * settingsName,
    int settingsNameSize = -1 )
```

Constructor for application settings specific to the account

## Parameters

<i>account</i>	The account for which the settings are to be stored or read
<i>settingsName</i>	If not nullptr, the created application settings would manage the settings stored in a file with a specific name within the account's settings storage; otherwise they would be stored in the default settings file for the account. Must be UTF-8 encoded as internally it is converted to QString via QString::fromUtf8
<i>settingsNameSize</i>	Size of the settingsName string. If negative (the default), the settingsName size is taken to be strlen(settingsName)

## 5.3.2.4 ApplicationSettings() [4/4]

```
quentier::utility::ApplicationSettings::ApplicationSettings (
```

```
const Account & account,
std::string_view settingsName )
```

Constructor for application settings specific to the account

#### Parameters

<i>account</i>	The account for which the settings are to be stored or read
<i>settingsName</i>	If not empty, the created application settings would manage the settings stored in a file with a specific name within the account's settings storage; otherwise they would be stored in the default settings file for the account. Must be UTF-8 encoded as internally it is converted to QString via QString::fromUtf8

#### 5.3.2.5 ~ApplicationSettings()

```
quentier::utility::ApplicationSettings::~~ApplicationSettings ( ) [override]
```

Destructor

### 5.3.3 Member Function Documentation

#### 5.3.3.1 beginGroup() [1/3]

```
void quentier::utility::ApplicationSettings::beginGroup (
    const char * prefix,
    int size = -1 )
```

Appends prefix to the current group. Overload of beginGroup accepting const char \* and optionally the size of the string

#### Parameters

<i>prefix</i>	String containing the prefix name. Must be UTF-8 encoded as internally it is converted to QString via QString::fromUtf8
<i>size</i>	Size of the prefix string. If negative (the default), the prefix size is taken to be strlen(prefix).

#### 5.3.3.2 beginGroup() [2/3]

```
void quentier::utility::ApplicationSettings::beginGroup (
    const QString & prefix )
```

Appends prefix to the current group. The call is redirected to QSettings::beginGroup. It is required in this class only to workaround hiding QSettings method due to overloads

## Parameters

<i>prefix</i>	String containing the prefix name
---------------	-----------------------------------

**5.3.3.3 beginGroup()** [3/3]

```
void quantier::utility::ApplicationSettings::beginGroup (
    std::string_view prefix )
```

Appends prefix to the current group. Overload of beginGroup accepting std::string\_view

## Parameters

<i>prefix</i>	String containing the prefix name. Must be UTF-8 encoded as internally it is converted to QString via QString::fromUtf8
<i>size</i>	Size of the prefix string. If negative (the default), the prefix size is taken to be strlen(prefix).

**5.3.3.4 beginReadArray()** [1/3]

```
int quantier::utility::ApplicationSettings::beginReadArray (
    const char * prefix,
    int size = -1 )
```

Adds prefix to the current group and starts reading from an array. Overload of beginReadArray accepting const char \* and optionally the size of the string

## Parameters

<i>prefix</i>	String containing the prefix name. Must be UTF-8 encoded as internally it is converted to QString via QString::fromUtf8
<i>size</i>	Size of the prefix string. If negative (the default), the prefix size is taken to be strlen(prefix)

**5.3.3.5 beginReadArray()** [2/3]

```
int quantier::utility::ApplicationSettings::beginReadArray (
    const QString & prefix )
```

Adds prefix to the current group and starts reading from an array. The call is redirected to QSettings::beginReadArray. It is required in this class only to workaround hiding QSettings method due to overloads



## Parameters

<i>prefix</i>	String containing the prefix name
---------------	-----------------------------------

## Returns

The size of the array

**5.3.3.6 beginReadArray() [3/3]**

```
int quotientier::utility::ApplicationSettings::beginReadArray (
    std::string_view prefix )
```

Adds prefix to the current group and starts reading from an array. Overload of beginReadArray accepting std::string\_view

## Parameters

<i>prefix</i>	String containing the prefix name. Must be UTF-8 encoded as internally it is converted to QString via QString::fromUtf8
---------------	---

**5.3.3.7 beginWriteArray() [1/3]**

```
void quotientier::utility::ApplicationSettings::beginWriteArray (
    const char * prefix,
    int arraySize = -1,
    int prefixSize = -1 )
```

Adds prefix to the current group and starts writing an array of size arraySize. Overload of beginWriteArray accepting const char \* and optionally the size of the string

## Parameters

<i>prefix</i>	String containing the prefix name. Must be UTF-8 encoded as internally it is converted to QString via QString::fromUtf8
<i>arraySize</i>	Size of the array to be written. If negative (the default), it is automatically determined based on the indexes of the entries written.
<i>prefixSize</i>	Size of the prefix string. If negative (the default), the prefix size is taken to be strlen(prefix)

**5.3.3.8 beginWriteArray() [2/3]**

```
void quotientier::utility::ApplicationSettings::beginWriteArray (
```

```
const QString & prefix,
int arraySize = -1 )
```

Adds prefix to the current group and starts writing an array of size arraySize. The call is redirected to QSettings::beginWriteArray. It is required in this class only to workaround hiding QSettings method due to overloads

#### Parameters

<i>prefix</i>	String containing the prefix name
<i>arraySize</i>	Size of the array to be written. If negative (the default), it is automatically determined based on the indexes of the entries written.

### 5.3.3.9 beginWriteArray() [3/3]

```
void quantier::utility::ApplicationSettings::beginWriteArray (
    std::string_view prefix,
    int arraySize = -1 )
```

Adds prefix to the current group and starts writing an array of size arraySize. Overload of beginWriteArray accepting std::string\_view

#### Parameters

<i>prefix</i>	String containing the prefix name. Must be UTF-8 encoded as internally it is converted to QString via QString::fromUtf8
<i>arraySize</i>	Size of the array to be written. If negative (the default), it is automatically determined based on the indexes of the entries written.

### 5.3.3.10 contains() [1/3]

```
bool quantier::utility::ApplicationSettings::contains (
    const char * key,
    int size = -1 ) const
```

Overload of contains accepting const char \* and optionally the size of the string

#### Parameters

<i>key</i>	String containing the setting name. Must be UTF-8 encoded as internally it is converted to QString via QString::fromUtf8
<i>size</i>	Size of the key string. If negative (the default), the key size is taken to be strlen(key)

#### Returns

True if there exists a setting called key; false otherwise

**5.3.3.11 contains()** [2/3]

```
bool quentier::utility::ApplicationSettings::contains (
    const QString & key ) const
```

The call is redirected to QSettings::contains. It is required in this class only to workaround hiding QSettings method due to overloads

**Parameters**

<i>key</i>	The key being checked for presence
------------	------------------------------------

**Returns**

True if there exists a setting called key; false otherwise

**5.3.3.12 contains()** [3/3]

```
bool quentier::utility::ApplicationSettings::contains (
    std::string_view key ) const
```

Overload of contains accepting std::string\_view

**Parameters**

<i>key</i>	String containing the setting name. Must be UTF-8 encoded as internally it is converted to QString via QString::fromUtf8
------------	--

**Returns**

True if there exists a setting called key; false otherwise

**5.3.3.13 print()**

```
QTextStream & quentier::utility::ApplicationSettings::print (
    QTextStream & strm ) const [override], [virtual]
```

Implements [quentier::utility::Printable](#).

**5.3.3.14 remove()** [1/3]

```
void quentier::utility::ApplicationSettings::remove (
    const char * key,
    int size = -1 )
```

Removes the setting key and any sub-settings of key. Overload of remove accepting const char \* and optionally the size of the string

## Parameters

<i>key</i>	String containing the setting name. Must be UTF-8 encoded as internally it is converted to QString via QString::fromUtf8
<i>size</i>	Size of the key string. If negative (the default), the key size is taken to be strlen(key).

**5.3.3.15 remove()** [2/3]

```
void quantier::utility::ApplicationSettings::remove (
    const QString & key )
```

Removes the setting key and any sub-settings of key. The call is redirected to QSettings::remove. It is required in this class only to workaround hiding QSettings method due to overloads

## Parameters

<i>key</i>	String containing the setting name
------------	------------------------------------

**5.3.3.16 remove()** [3/3]

```
void quantier::utility::ApplicationSettings::remove (
    std::string_view key )
```

Removes the setting key and any sub-settings of key. Overload of remove accepting std::string\_view

## Parameters

<i>key</i>	String containing the setting name. Must be UTF-8 encoded as internally it is converted to QString via QString::fromUtf8
------------	--

**5.3.3.17 setValue()** [1/3]

```
void quantier::utility::ApplicationSettings::setValue (
    const char * key,
    const QVariant & value,
    int keySize = -1 )
```

Sets the value of setting. Overload of setValue accepting const char \* and optionally the size of the string

## Parameters

<i>key</i>	String containing the setting name. Must be UTF-8 encoded as internally it is converted to QString via QString::fromUtf8
<i>value</i>	Value for setting key
<i>keySize</i>	Size of the key string. If negative (the default), the key size is taken to be strlen(key).

**5.3.3.18 setValue()** [2/3]

```
void quotientier::utility::ApplicationSettings::setValue (
    const QString & key,
    const QVariant & value )
```

Sets the value of setting. The call is redirected to QSettings::setValue. It is required in this class only to workaround hiding QSettings method due to overloads

## Parameters

<i>key</i>	String containing the setting name
<i>value</i>	Value for setting key

**5.3.3.19 setValue()** [3/3]

```
void quotientier::utility::ApplicationSettings::setValue (
    std::string_view key,
    const QVariant & value )
```

Sets the value of setting. Overload of setValue accepting std::string\_view

## Parameters

<i>key</i>	String containing the setting name. Must be UTF-8 encoded as internally it is converted to QString via QString::fromUtf8
<i>value</i>	Value for setting key

**5.3.3.20 value()** [1/3]

```
QVariant quotientier::utility::ApplicationSettings::value (
    const char * key,
    const QVariant & defaultValue = {},
    int keySize = -1 ) const
```

Fetches the value of setting. Overload of value accepting const char \* and optionally the size of the string

## Parameters

<i>key</i>	String containing the setting name. Must be UTF-8 encoded as internally it is converted to QString via QString::fromUtf8
<i>defaultValue</i>	Default value returned if the setting doesn't exist
<i>keySize</i>	Size of the key string. If negative (the default), the key size is taken to be strlen(key)

## Returns

The value for setting key. If the setting doesn't exist, returns defaultValue. If no default value is specified, a default QVariant is returned.

**5.3.3.21 value()** [2/3]

```
QVariant quentier::utility::ApplicationSettings::value (  
    const QString & key,  
    const QVariant & defaultValue = {} ) const
```

Fetches the value of setting. The call is redirected to QSettings::value. It is required in this class only to workaround hiding QSettings method due to overloads

## Parameters

<i>key</i>	String containing the setting name
<i>defaultValue</i>	Default value returned if the setting doesn't exist

## Returns

The value for setting key. If the setting doesn't exist, returns defaultValue. If no default value is specified, a default QVariant is returned.

**5.3.3.22 value()** [3/3]

```
QVariant quentier::utility::ApplicationSettings::value (  
    std::string_view key,  
    const QVariant & defaultValue = {} ) const
```

Fetches the value of setting. Overload of value accepting std::string\_view

## Parameters

<i>key</i>	String containing the setting name. Must be UTF-8 encoded as internally it is converted to QString via QString::fromUtf8
<i>defaultValue</i>	Default value returned if the setting doesn't exist

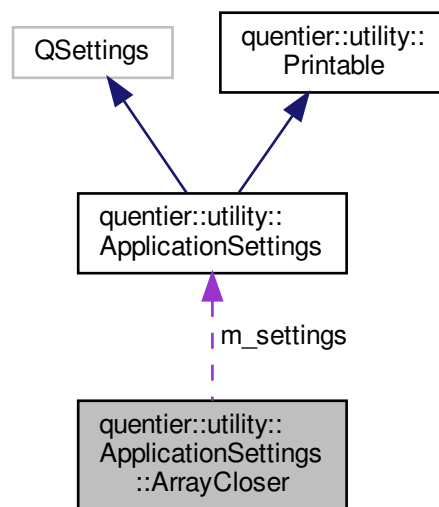
### Returns

The value for setting key. If the setting doesn't exist, returns defaultValue. If no default value is specified, a default QVariant is returned.

## 5.4 quantier::utility::ApplicationSettings::ArrayCloser Struct Reference

```
#include <ApplicationSettings.h>
```

Collaboration diagram for quantier::utility::ApplicationSettings::ArrayCloser:



### Public Member Functions

- **ArrayCloser** ([ApplicationSettings](#) &settings)

### Public Attributes

- [ApplicationSettings](#) & **m\_settings**

#### 5.4.1 Detailed Description

Helper struct for RAII style of ensuring the array once began would be closed even if exception is thrown after beginning the array

## 5.5 `quentier::synchronization::AuthenticationExpiredError` Struct Reference

```
#include <Errors.h>
```

### 5.5.1 Detailed Description

Authentication expired error indicates that used authentication token has expired so authentication should be repeated before the next attempt to run synchronization.

## 5.6 `quentier::synchronization::ISyncConflictResolver::Conflict` Resolution Struct Reference

The [ConflictResolution](#) struct is a namespace inside which several other structs determining actual conflict resolutions.

```
#include <ISyncConflictResolver.h>
```

### Classes

- struct [IgnoreMine](#)  
*The [IgnoreMine](#) conflict resolution means "use theirs version and ignore mine version as it doesn't really conflict with theirs version".*
- struct [MoveMine](#)  
*The [MoveMine](#) conflict resolution means "before using theirs version change mine version as specified". Note: the data item inside this conflict resolution might refer to something different than mine version passed to the conflict resolution function. It can be that way because the actual conflict might be with another local data item instead of the passed one.*
- struct [UseMine](#)  
*The [UseMine](#) conflict resolution means "override theirs version with mine version".*
- struct [UseTheirs](#)  
*The [UseTheirs](#) conflict resolution means "override mine version with theirs version".*

### 5.6.1 Detailed Description

The [ConflictResolution](#) struct is a namespace inside which several other structs determining actual conflict resolutions.

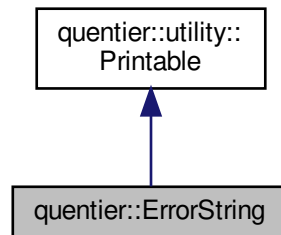


## 5.7 quentier::ErrorString Class Reference

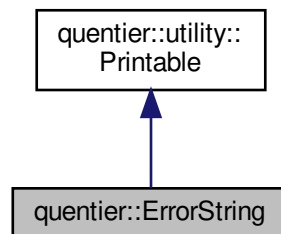
The [ErrorString](#) class encapsulates two (or more) strings which are meant to contain translatable (base) and non-translatable (details) parts of the error description.

```
#include <ErrorString.h>
```

Inheritance diagram for quentier::ErrorString:



Collaboration diagram for quentier::ErrorString:



### Public Member Functions

- **ErrorString** (const char \*error=nullptr)
- **ErrorString** (const QString &error)
- **ErrorString** (const [ErrorString](#) &other)
- **ErrorString** ([ErrorString](#) &&other) noexcept
- [ErrorString](#) & **operator=** (const [ErrorString](#) &other)
- [ErrorString](#) & **operator=** ([ErrorString](#) &&other) noexcept
- const QString & **base** () const noexcept
- QString & **base** ()
- const QStringList & **additionalBases** () const noexcept
- QStringList & **additionalBases** ()

- `const QString & details () const noexcept`
- `QString & details ()`
- `void setBase (QString error)`
- `void setBase (const char *error)`
- `void appendBase (const QString &error)`
- `void appendBase (const QStringList &errors)`
- `void appendBase (const char *error)`
- `void setDetails (const QString &error)`
- `void setDetails (const char *error)`
- `bool isEmpty () const`
- `void clear ()`
- `QString localizedString () const`
- `QString nonLocalizedString () const`
- `QTextStream & print (QTextStream &strm) const override`

### 5.7.1 Detailed Description

The [ErrorString](#) class encapsulates two (or more) strings which are meant to contain translatable (base) and non-translatable (details) parts of the error description.

1. `base()` methods return const and non-const links to the primary translatable string
2. `details()` methods return const and non-const links to non-translatable string (coming from some third party library etc)
3. `additionalBases()` methods return const and non-const links to additional translatable strings; one translatable string is not always enough because the error message might be composed from different parts

### 5.7.2 Member Function Documentation

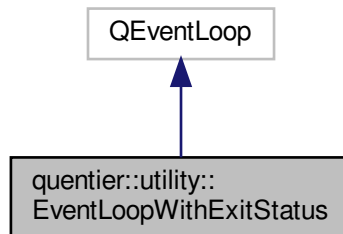
#### 5.7.2.1 `print()`

```
QTextStream & quentier::ErrorString::print (
    QTextStream & strm ) const [override], [virtual]
```

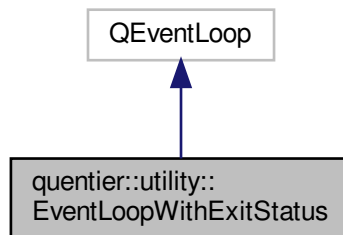
Implements [quentier::utility::Printable](#).

## 5.8 quantier::utility::EventLoopWithExitStatus Class Reference

Inheritance diagram for quantier::utility::EventLoopWithExitStatus:



Collaboration diagram for quantier::utility::EventLoopWithExitStatus:



### Public Types

- enum class **ExitStatus** { **Success** , **Failure** , **Timeout** }

### Public Slots

- void **exitAsSuccess** ()
- void **exitAsFailure** ()
- void **exitAsFailureWithError** (QString errorDescription)
- void **exitAsFailureWithErrorString** ([ErrorString](#) errorDescription)
- void **exitAsTimeout** ()

### Public Member Functions

- **EventLoopWithExitStatus** (QObject \*parent=nullptr)
- ExitStatus **exitStatus** () const
- const [ErrorString](#) & **errorDescription** () const

## Friends

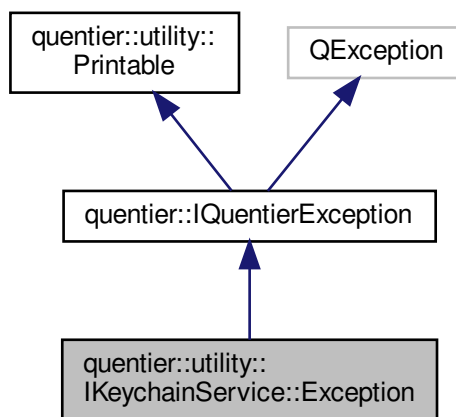
- QDebug & **operator**<< (QDebug &dbg, ExitStatus status)
- QTextStream & **operator**<< (QTextStream &strm, ExitStatus status)

## 5.9 quantier::utility::IKeychainService::Exception Class Reference

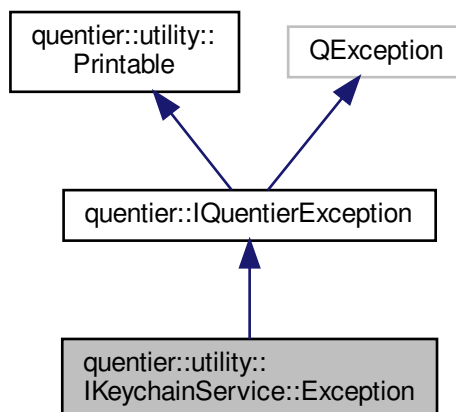
The [IKeychainService::Exception](#) class is the base class for exceptions returned inside QFutures from methods of [IKeychainService](#).

```
#include <IKeychainService.h>
```

Inheritance diagram for quantier::utility::IKeychainService::Exception:



Collaboration diagram for quantier::utility::IKeychainService::Exception:



## Public Member Functions

- **Exception** ([ErrorCode](#) errorCode) noexcept
- **Exception** ([ErrorCode](#) errorCode, [ErrorString](#) errorDescription) noexcept
- [ErrorCode](#) **errorCode** () const noexcept
- QString [exceptionDisplayName](#) () const override
- void **raise** () const override
- [Exception](#) \* **clone** () const override

## Additional Inherited Members

### 5.9.1 Detailed Description

The [IKeychainService::Exception](#) class is the base class for exceptions returned inside QFutures from methods of [IKeychainService](#).

### 5.9.2 Member Function Documentation

#### 5.9.2.1 exceptionDisplayName()

```
QString quantier::utility::IKeychainService::Exception::exceptionDisplayName ( ) const [override],
[virtual]
```

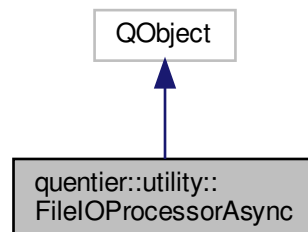
Implements [quantier::IQuantierException](#).

## 5.10 quantier::utility::FileIOProcessorAsync Class Reference

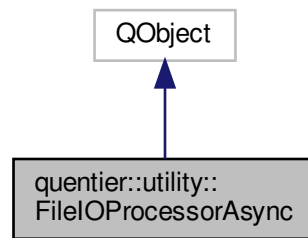
The [FileIOProcessorAsync](#) class is a wrapper under simple file IO operations, it is meant to be used for simple asynchronous IO.

```
#include <FileIOProcessorAsync.h>
```

Inheritance diagram for quantier::utility::FileIOProcessorAsync:



Collaboration diagram for `quentier::utility::FileIOProcessorAsync`:



## Public Slots

- void [onWriteFileRequest](#) (QString absoluteFilePath, QByteArray data, QUuid requestId, bool append)  
*onWriteFileRequest slot processes file write requests with given request ids*
- void [onReadFileRequest](#) (QString absoluteFilePath, QUuid requestId)  
*onReadFileRequest slot processes file read requests with given request ids*

## Signals

- void **readyForIO** ()  
*readyForIO signal is emitted when the queue for file IO is empty for some time (30 seconds by default, can also be configured via `setIdleTimePeriod` method) after the last IO event to signal listeners that they can perform some IO via the [FileIOProcessorAsync](#)*
- void [writeFileRequestProcessed](#) (bool success, [ErrorString](#) errorDescription, QUuid requestId)  
*writeFileRequestProcessed signal is emitted when the file write request with given id is finished*
- void [readFileRequestProcessed](#) (bool success, [ErrorString](#) errorDescription, QByteArray data, QUuid requestId)  
*readFileRequestProcessed signal is emitted when the file read request with given id is finished*

## Public Member Functions

- **FileIOProcessorAsync** (QObject \*parent=nullptr)
- void [setIdleTimePeriod](#) (qint32 seconds)  
*setIdleTimePeriod sets time period defining the idle state of [FileIOProcessorAsync](#): once the time measured since the last IO operation is over the specified number of seconds, the class emits readyForIO signal to any interested listeners of this event. If this method is not called ever, the default idle time period would be 30 seconds.*

### 5.10.1 Detailed Description

The [FileIOProcessorAsync](#) class is a wrapper under simple file IO operations, it is meant to be used for simple asynchronous IO.

## 5.10.2 Member Function Documentation

### 5.10.2.1 onReadFileRequest

```
void quotientier::utility::FileIOProcessorAsync::onReadFileRequest (
    QString absoluteFilePath,
    QUuid requestId ) [slot]
```

onReadFileRequest slot processes file read requests with given request ids

#### Parameters

<i>absoluteFilePath</i>	Absolute file path to be read
<i>requestId</i>	Unique identifier of the file read request

### 5.10.2.2 onWriteFileRequest

```
void quotientier::utility::FileIOProcessorAsync::onWriteFileRequest (
    QString absoluteFilePath,
    QByteArray data,
    QUuid requestId,
    bool append ) [slot]
```

onWriteFileRequest slot processes file write requests with given request ids

#### Parameters

<i>absoluteFilePath</i>	Absolute file path to be written
<i>data</i>	Data to be written to the file
<i>requestId</i>	Unique identifier of the file write request
<i>append</i>	If true, the data would be appended to file, otherwise the entire file would be erased before with the data is written

### 5.10.2.3 readFileRequestProcessed

```
void quotientier::utility::FileIOProcessorAsync::readFileRequestProcessed (
    bool success,
    QString errorDescription,
    QByteArray data,
    QUuid requestId ) [signal]
```

readFileRequestProcessed signal is emitted when the file read request with given id is finished

## Parameters

<i>success</i>	True if read operation was successful, false otherwise
<i>errorDescription</i>	Textual description of the error
<i>data</i>	Data read from file
<i>requestId</i>	Unique identifier of the file read request

**5.10.2.4 setIdleTimePeriod()**

```
void quentier::utility::FileIOProcessorAsync::setIdleTimePeriod (
    qint32 seconds )
```

`setIdleTimePeriod` sets time period defining the idle state of [FileIOProcessorAsync](#): once the time measured since the last IO operation is over the specified number of seconds, the class emits `readyForIO` signal to any interested listeners of this event. If this method is not called ever, the default idle time period would be 30 seconds.

## Parameters

<i>seconds</i>	Number of seconds for idle time period
----------------	--

**5.10.2.5 writeFileRequestProcessed**

```
void quentier::utility::FileIOProcessorAsync::writeFileRequestProcessed (
    bool success,
    ErrorString errorDescription,
    QUuid requestId ) [signal]
```

`writeFileRequestProcessed` signal is emitted when the file write request with given id is finished

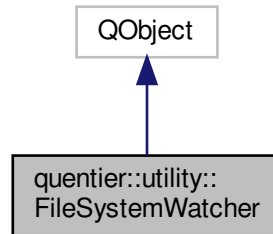
## Parameters

<i>success</i>	True if write operation was successful, false otherwise
<i>errorDescription</i>	Textual description of the error
<i>requestId</i>	Unique identifier of the file write request

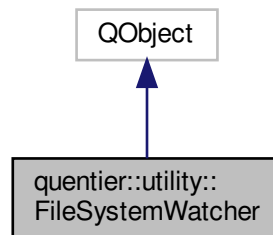


## 5.11 quantier::utility::FileSystemWatcher Class Reference

Inheritance diagram for quantier::utility::FileSystemWatcher:



Collaboration diagram for quantier::utility::FileSystemWatcher:



### Signals

- void **directoryChanged** (const QString &path)
- void **directoryRemoved** (const QString &path)
- void **fileChanged** (const QString &path)
- void **fileRemoved** (const QString &path)

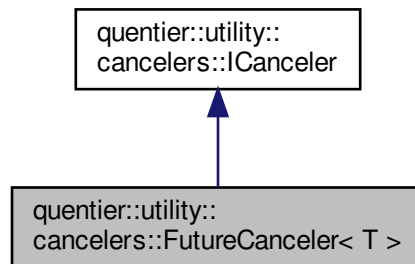
### Public Member Functions

- **FileSystemWatcher** (int removalTimeoutMSec=500, QObject \*parent=nullptr)
- **FileSystemWatcher** (const QStringList &paths, int removalTimeoutMSec=500, QObject \*parent=nullptr)
- void **addPath** (const QString &path)
- void **addPaths** (const QStringList &paths)
- QStringList **directories** () const
- QStringList **files** () const
- void **removePath** (const QString &path)
- void **removePaths** (const QStringList &paths)

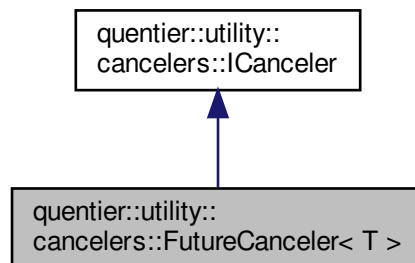
## 5.12 quantier::utility::cancelers::FutureCanceler< T > Class Template Reference

```
#include <FutureCanceler.h>
```

Inheritance diagram for quantier::utility::cancelers::FutureCanceler< T >:



Collaboration diagram for quantier::utility::cancelers::FutureCanceler< T >:



### Public Member Functions

- **FutureCanceler** (QFuture< T > future)
- bool **isCanceled** () const noexcept override

#### 5.12.1 Detailed Description

```
template<class T>
class quantier::utility::cancelers::FutureCanceler< T >
```

**ICanceler** implementation which tracks the canceled status of a future.

## 5.12.2 Member Function Documentation

### 5.12.2.1 `isCanceled()`

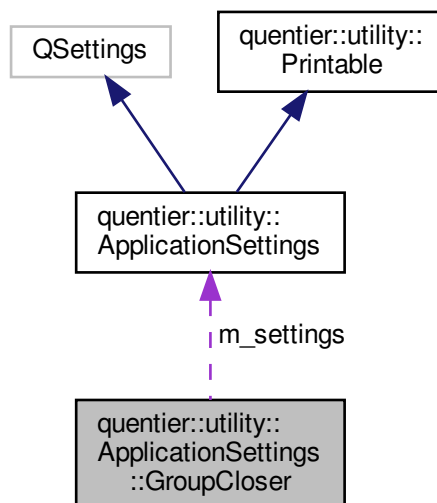
```
template<class T >
bool quentier::utility::cancelers::FutureCanceler< T >::isCanceled ( ) const [inline], [override],
[virtual], [noexcept]
```

Implements [quentier::utility::cancelers::ICanceler](#).

## 5.13 `quentier::utility::ApplicationSettings::GroupCloser` Struct Reference

```
#include <ApplicationSettings.h>
```

Collaboration diagram for `quentier::utility::ApplicationSettings::GroupCloser`:



### Public Member Functions

- `GroupCloser` ([ApplicationSettings](#) &settings)

### Public Attributes

- [ApplicationSettings](#) & `m_settings`

### 5.13.1 Detailed Description

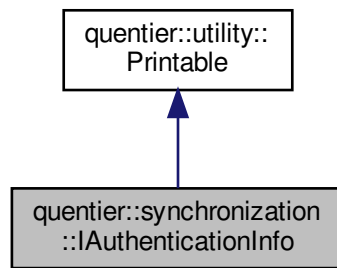
Helper struct for RAll style of ensuring the group once opened would be closed even if exception is thrown after beginning the group

## 5.14 `quentier::synchronization::IAuthenticationInfo` Class Reference

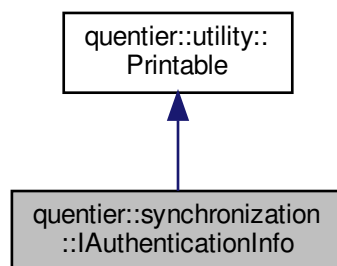
The [IAuthenticationInfo](#) interface represents the information obtained through OAuth and necessary to access Evernote API.

```
#include <IAuthenticationInfo.h>
```

Inheritance diagram for `quentier::synchronization::IAuthenticationInfo`:



Collaboration diagram for `quentier::synchronization::IAuthenticationInfo`:



## Public Member Functions

- virtual qevercloud::UserID [userId](#) () const =0
- virtual QString [authToken](#) () const =0
- virtual qevercloud::Timestamp [authTokenExpirationTime](#) () const =0
- virtual qevercloud::Timestamp [authenticationTime](#) () const =0
- virtual QString [shardId](#) () const =0
- virtual QString [noteStoreUrl](#) () const =0
- virtual QString [webApiUrlPrefix](#) () const =0
- virtual QList< QNetworkCookie > [userStoreCookies](#) () const =0

### 5.14.1 Detailed Description

The [IAuthenticationInfo](#) interface represents the information obtained through OAuth and necessary to access Evernote API.

### 5.14.2 Member Function Documentation

#### 5.14.2.1 [authenticationTime\(\)](#)

```
virtual qevercloud::Timestamp quantier::synchronization::IAuthenticationInfo::authenticationTime ( ) const [pure virtual]
```

Timestamp at which authentication info was received from Evernote

#### 5.14.2.2 [authToken\(\)](#)

```
virtual QString quantier::synchronization::IAuthenticationInfo::authToken ( ) const [pure virtual]
```

Authentication token which needs to be used for access to Evernote API

#### 5.14.2.3 [authTokenExpirationTime\(\)](#)

```
virtual qevercloud::Timestamp quantier::synchronization::IAuthenticationInfo::authTokenExpirationTime ( ) const [pure virtual]
```

Expiration timestamp for the authentication token

#### 5.14.2.4 [noteStoreUrl\(\)](#)

```
virtual QString quantier::synchronization::IAuthenticationInfo::noteStoreUrl ( ) const [pure virtual]
```

Url of the note store service for this user

#### 5.14.2.5 shardId()

```
virtual QString quentier::synchronization::IAuthenticationInfo::shardId ( ) const [pure virtual]
```

Shard identifier which needs to be used for access to Evernote API along with the authentication token

#### 5.14.2.6 userId()

```
virtual qevercloud::UserID quentier::synchronization::IAuthenticationInfo::userId ( ) const [pure virtual]
```

Identifier of the authenticated user

#### 5.14.2.7 userStoreCookies()

```
virtual QList< QNetworkCookie > quentier::synchronization::IAuthenticationInfo::userStore↵
Cookies ( ) const [pure virtual]
```

The list of network cookies received during OAuth procedure. Although is is not mentioned anywhere in Evernote docs, these cookies might have to be used for access to user store. See this discussion for reference: <https://discussion.evernote.com/forums/topic/124257-calls-to-userstore-from-evernote-api-stop>

#### 5.14.2.8 webApiUrlPrefix()

```
virtual QString quentier::synchronization::IAuthenticationInfo::webApiUrlPrefix ( ) const [pure virtual]
```

Url prefix for Evernote Web API.

See also

qevercloud::PublicUserInfo::webApiUrlPrefix

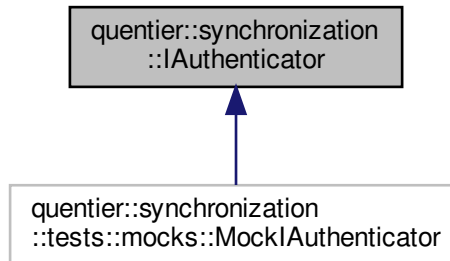
## 5.15 quentier::synchronization::IAuthenticationInfoBuilder Class Reference

### Public Member Functions

- virtual [IAuthenticationInfoBuilder](#) & **setUserId** (qevercloud::UserID userId)=0
- virtual [IAuthenticationInfoBuilder](#) & **setAuthToken** (QString token)=0
- virtual [IAuthenticationInfoBuilder](#) & **setAuthTokenExpirationTime** (qevercloud::Timestamp expiration↵Time)=0
- virtual [IAuthenticationInfoBuilder](#) & **setAuthenticationTime** (qevercloud::Timestamp authenticationTime)=0
- virtual [IAuthenticationInfoBuilder](#) & **setShardId** (QString shardId)=0
- virtual [IAuthenticationInfoBuilder](#) & **setNoteStoreUrl** (QString noteStoreUrl)=0
- virtual [IAuthenticationInfoBuilder](#) & **setWebApiUrlPrefix** (QString webApiUrlPrefix)=0
- virtual [IAuthenticationInfoBuilder](#) & **setUserStoreCookies** (QList< QNetworkCookie > cookies)=0
- virtual [IAuthenticationInfoPtr](#) **build** ()=0

## 5.16 quantier::synchronization::IAuthenticator Class Reference

Inheritance diagram for quantier::synchronization::IAuthenticator:



### Public Member Functions

- virtual `QFuture< IAuthenticationInfoPtr >` **authenticateNewAccount** ()=0
- virtual `QFuture< IAuthenticationInfoPtr >` **authenticateAccount** ([Account](#) account)=0

## 5.17 quantier::ResourceRecognitionIndexItem::IBarcodeItem Struct Reference

### Public Member Functions

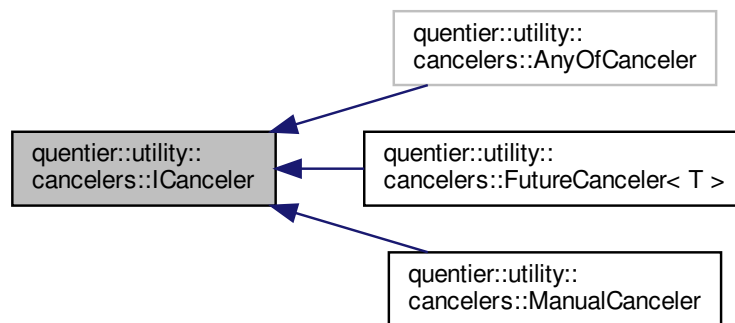
- virtual `QString` **barcode** () const =0
- virtual `int` **weight** () const =0

## 5.18 quantier::utility::cancelers::ICanceler Class Reference

The [ICanceler](#) interface provides `isCanceled` method which can be used to check whether some processing can be skipped because it was canceled.

```
#include <ICanceler.h>
```

Inheritance diagram for `quentier::utility::cancelers::ICanceler`:



## Public Member Functions

- virtual bool **isCanceled** () const =0

### 5.18.1 Detailed Description

The [ICanceler](#) interface provides `isCanceled` method which can be used to check whether some processing can be skipped because it was canceled.

## 5.19 quentier::enml::IConverter Class Reference

The [IConverter](#) interface encapsulates a set of methods performing conversions between ENML and other note content formats, namely HTML.

```
#include <IConverter.h>
```

## Public Types

- enum class [EnexExportTags](#) { **Yes** = 0 , **No** }

*The `EnexExportTags` enum allows to specify whether export of note(s) to ENEX should include the names of note's tags or not.*



## Public Member Functions

- virtual [Result](#)< [QString](#), [ErrorString](#) > [convertHtmlToEnml](#) (const [QString](#) &html, [IDecryptedTextCache](#) &decryptedTextCache, const [QList](#)< [conversion\\_rules::ISkipRulePtr](#) > &skipRules={}) const =0
- virtual [Result](#)< void, [ErrorString](#) > [convertHtmlToDoc](#) (const [QString](#) &html, [QTextDocument](#) &doc, const [QList](#)< [conversion\\_rules::ISkipRulePtr](#) > &skipRules={}) const =0
- virtual [Result](#)< [QString](#), [ErrorString](#) > [convertHtmlToXml](#) (const [QString](#) &html) const =0
- virtual [Result](#)< [QString](#), [ErrorString](#) > [convertHtmlToXhtml](#) (const [QString](#) &html) const =0
- virtual [Result](#)< [IHtmlDataPtr](#), [ErrorString](#) > [convertEnmlToHtml](#) (const [QString](#) &enml, [IDecryptedTextCache](#) &decryptedTextCache) const =0
- virtual [Result](#)< [QString](#), [ErrorString](#) > [convertEnmlToPlainText](#) (const [QString](#) &enml) const =0
- virtual [Result](#)< [QStringList](#), [ErrorString](#) > [convertEnmlToWordsList](#) (const [QString](#) &enml) const =0
- virtual [QStringList](#) [convertPlainTextToWordsList](#) (const [QString](#) &plainText) const =0
- virtual [Result](#)< void, [ErrorString](#) > [validateEnml](#) (const [QString](#) &enml) const =0
- virtual [Result](#)< [QString](#), [ErrorString](#) > [validateAndFixupEnml](#) (const [QString](#) &enml) const =0
- virtual [Result](#)< [QString](#), [ErrorString](#) > [exportNotesToEnex](#) (const [QList](#)< [qevercloud::Note](#) > &notes, const [QHash](#)< [QString](#), [QString](#) > &tagNamesByTagLocalIds, [EnexExportTags](#) exportTagsOption, const [QString](#) &version={}) const =0
- virtual [Result](#)< [QList](#)< [qevercloud::Note](#) >, [ErrorString](#) > [importEnex](#) (const [QString](#) &enex) const =0

### 5.19.1 Detailed Description

The [IConverter](#) interface encapsulates a set of methods performing conversions between ENML and other note content formats, namely HTML.

### 5.19.2 Member Function Documentation

#### 5.19.2.1 [convertEnmlToHtml\(\)](#)

```
virtual Result< IHtmlDataPtr, ErrorString > quotient::enml::IConverter::convertEnmlToHtml (
    const QString & enml,
    IDecryptedTextCache & decryptedTextCache ) const    [pure virtual]
```

Converts ENML into HTML representation of note content

#### Parameters

<i>enml</i>	ENML representation of note content
<i>decryptedTextCache</i>	cache of decrypted text fragments

#### Returns

[Result](#) with HTML data in case of success or error string in case of failure

### 5.19.2.2 convertEnmlToPlainText()

```
virtual Result< QString, ErrorString > quantier::enml::IConverter::convertEnmlToPlainText (
    const QString & enml ) const [pure virtual]
```

Converts ENML into plain text representation of note content

#### Parameters

<i>enml</i>	ENML representation of note content
-------------	-------------------------------------

#### Returns

[Result](#) with plain text representation of note content in case of success or error string in case of failure

### 5.19.2.3 convertEnmlToWordsList()

```
virtual Result< QStringList, ErrorString > quantier::enml::IConverter::convertEnmlToWordsList (
    const QString & enml ) const [pure virtual]
```

Converts ENML into a list of words

#### Parameters

<i>enml</i>	ENML representation of note content
-------------	-------------------------------------

#### Returns

[Result](#) with list of words in case of success or error string in case of failure

### 5.19.2.4 convertHtmlToDoc()

```
virtual Result< void, ErrorString > quantier::enml::IConverter::convertHtmlToDoc (
    const QString & html,
    QTextDocument & doc,
    const QList< conversion_rules::ISkipRulePtr > & skipRules = {} ) const [pure
virtual]
```

Convert HTML representation of note content into QTextDocument

#### Parameters

<i>html</i>	HTML representation of note content
<i>doc</i>	QTextDocument into which the converted note content is put
<i>skipRules</i>	skip rules to be used during the conversion

**Returns**

Valid result in case of success or error string in case of failure

**5.19.2.5 convertHtmlToEnml()**

```
virtual Result< QString, ErrorString > quantier::enml::IConverter::convertHtmlToEnml (
    const QString & html,
    IDecryptedTextCache & decryptedTextCache,
    const QList< conversion_rules::ISkipRulePtr > & skipRules = {} ) const [pure
virtual]
```

Converts HTML representation of note content into ENML

**Parameters**

<i>html</i>	HTML representation of note content
<i>decryptedTextCache</i>	cache of decrypted text fragments
<i>skipRules</i>	skip rules to be used during the conversion

**Returns**

[Result](#) with ENML in case of success or error string in case of failure

**5.19.2.6 convertHtmlToXhtml()**

```
virtual Result< QString, ErrorString > quantier::enml::IConverter::convertHtmlToXhtml (
    const QString & html ) const [pure virtual]
```

Convert HTML representation of note content into a valid XHTML document

**Parameters**

<i>html</i>	HTML representation of note content
-------------	-------------------------------------

**Returns**

[Result](#) with XHTML in case of success or error string in case of failure

**5.19.2.7 convertHtmlToXml()**

```
virtual Result< QString, ErrorString > quantier::enml::IConverter::convertHtmlToXml (
    const QString & html ) const [pure virtual]
```

Convert HTML representation of note content into a valid XML document

## Parameters

<i>html</i>	HTML representation of note content
-------------	-------------------------------------

## Returns

[Result](#) with XML in case of success or error string in case of failure

## 5.19.2.8 convertPlainTextToWordsList()

```
virtual QStringList quantier::enml::IConverter::convertPlainTextToWordsList (
    const QString & plainText ) const [pure virtual]
```

Converts plain text into a list of words

## Parameters

<i>plainText</i>	plain text representation of note content
------------------	---

## Returns

list of words

## 5.19.2.9 exportNotesToEnex()

```
virtual Result< QString, ErrorString > quantier::enml::IConverter::exportNotesToEnex (
    const QList< qevercloud::Note > & notes,
    const QHash< QString, QString > & tagNamesByTagLocalIds,
    EnexExportTags exportTagsOption,
    const QString & version = {} ) const [pure virtual]
```

Exports a list of notes into ENEX

## Parameters

<i>notes</i>	notes to be exported into ENEX
<i>tagNamesByTagLocalIds</i>	mapper from tag local ids into tag names
<i>exportTagsOption</i>	option controlling the export of tag names
<i>version</i>	optional version tag for ENEX, omitted if not set

## Returns

[Result](#) with ENEX in case of success or error string in case of failure

### 5.19.2.10 importEnex()

```
virtual Result< QList< qevercloud::Note >, ErrorString > quantier::enml::IConverter::importEnex (
    const QString & enex ) const [pure virtual]
```

Import notes from ENEX

#### Parameters

<i>enex</i>	ENEX to be used for import
-------------	----------------------------

#### Returns

[Result](#) with list of notes in case of success or error string in case of failure

#### Note

if tag names are present in ENEX, corresponding notes would have their tagNames field filled

### 5.19.2.11 validateAndFixupEnml()

```
virtual Result< QString, ErrorString > quantier::enml::IConverter::validateAndFixupEnml (
    const QString & enml ) const [pure virtual]
```

Validates ENML and attempts to fix it automatically if it's not valid

#### Parameters

<i>enml</i>	ENML representation of note content
-------------	-------------------------------------

#### Returns

[Result](#) with either unchanged or fixed up ENML in case of success or error string in case of failure

### 5.19.2.12 validateEnml()

```
virtual Result< void, ErrorString > quantier::enml::IConverter::validateEnml (
    const QString & enml ) const [pure virtual]
```

Validates ENML against rules

#### Parameters

<i>enml</i>	ENML representation of note content
-------------	-------------------------------------

## Returns

valid [Result](#) in case of success or error string in case of failure

## 5.20 quantier::enml::IDecryptedTextCache Class Reference

### Public Types

- enum class **RememberForSession** { **Yes**, **No** }

### Public Member Functions

- virtual void **addDecryptexTextInfo** (const QString &encryptedText, const QString &decryptedText, const QString &passphrase, [utility::IEncryptor::Cipher](#) cipher, RememberForSession rememberForSession)=0
- virtual std::optional< std::pair< QString, RememberForSession > > **findDecryptedTextInfo** (const QString &encryptedText) const =0
- virtual std::optional< QString > **updateDecryptedTextInfo** (const QString &originalEncryptedText, const QString &newDecryptedText)=0
- virtual bool **containsRememberedForSessionEntries** () const =0
- virtual void **removeDecryptedTextInfo** (const QString &encryptedText)=0
- virtual void **clearNonRememberedForSessionEntries** ()=0

### Friends

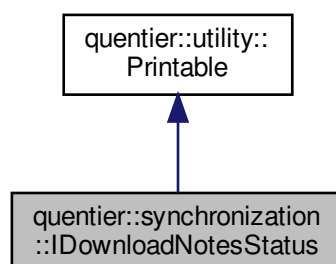
- QUENTIER\_EXPORT QDebug & **operator**<< (QDebug &dbg, RememberForSession rememberForSession)
- QUENTIER\_EXPORT QTextStream & **operator**<< (QTextStream &strm, RememberForSession rememberForSession)

## 5.21 quantier::synchronization::IDownloadNotesStatus Class Reference

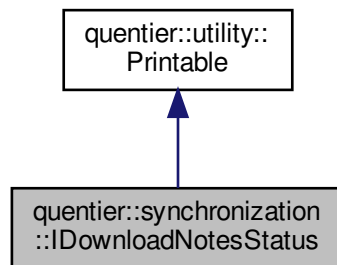
The [IDownloadNotesStatus](#) interface presents information about the status of notes downloading process.

```
#include <IDownloadNotesStatus.h>
```

Inheritance diagram for quantier::synchronization::IDownloadNotesStatus:



Collaboration diagram for quantier::synchronization::IDownloadNotesStatus:



## Public Types

- using **QExceptionPtr** = `std::shared_ptr< QException >`
- using **NoteWithException** = `std::pair< qevercloud::Note, QExceptionPtr >`
- using **GuidWithException** = `std::pair< qevercloud::Guid, QExceptionPtr >`
- using **UpdateSequenceNumbersByGuid** = `QHash< qevercloud::Guid, qint32 >`

## Public Member Functions

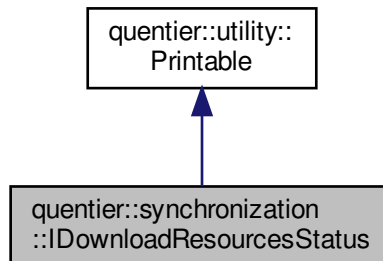
- virtual quint64 **totalNewNotes** () const =0
- virtual quint64 **totalUpdatedNotes** () const =0
- virtual quint64 **totalExpungedNotes** () const =0
- virtual QList< NoteWithException > **notesWhichFailedToDownload** () const =0
- virtual QList< NoteWithException > **notesWhichFailedToProcess** () const =0
- virtual QList< GuidWithException > **noteGuidsWhichFailedToExpunge** () const =0
- virtual UpdateSequenceNumbersByGuid **processedNoteGuidsAndUsns** () const =0
- virtual UpdateSequenceNumbersByGuid **cancelledNoteGuidsAndUsns** () const =0
- virtual QList< qevercloud::Guid > **expungedNoteGuids** () const =0
- virtual StopSynchronizationError **stopSynchronizationError** () const =0

### 5.21.1 Detailed Description

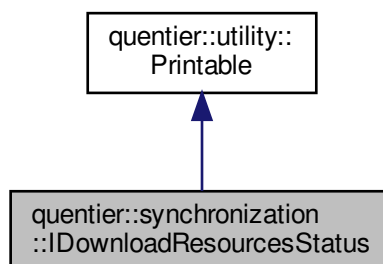
The [IDownloadNotesStatus](#) interface presents information about the status of notes downloading process.

## 5.22 quentier::synchronization::IDownloadResourcesStatus Class Reference

Inheritance diagram for quentier::synchronization::IDownloadResourcesStatus:



Collaboration diagram for quentier::synchronization::IDownloadResourcesStatus:



### Public Types

- using **QExceptionPtr** = `std::shared_ptr< QException >`
- using **ResourceWithException** = `std::pair< qevercloud::Resource, QExceptionPtr >`
- using **UpdateSequenceNumbersByGuid** = `QHash< qevercloud::Guid, qint32 >`

### Public Member Functions

- virtual quint64 **totalNewResources** () const =0
- virtual quint64 **totalUpdatedResources** () const =0
- virtual QList< ResourceWithException > **resourcesWhichFailedToDownload** () const =0
- virtual QList< ResourceWithException > **resourcesWhichFailedToProcess** () const =0
- virtual UpdateSequenceNumbersByGuid **processedResourceGuidsAndUsns** () const =0
- virtual UpdateSequenceNumbersByGuid **cancelledResourceGuidsAndUsns** () const =0
- virtual StopSynchronizationError **stopSynchronizationError** () const =0



## 5.23 quantier::utility::IEncryptor Struct Reference

The [IEncryptor](#) interface provides encryption and decryption functionality which is compatible with that used by Evernote service.

```
#include <IEncryptor.h>
```

### Public Types

- enum class [Cipher](#) { [RC2](#) , [AES](#) }

### Public Member Functions

- virtual [Result](#)< [QString](#), [ErrorString](#) > [encrypt](#) (const [QString](#) &text, const [QString](#) &passphrase)=0
- virtual [Result](#)< [QString](#), [ErrorString](#) > [decrypt](#) (const [QString](#) &encryptedText, const [QString](#) &passphrase, [Cipher](#) cipher)=0

### Friends

- QUENTIER\_EXPORT [QDebug](#) & [operator](#)<< ([QDebug](#) &dbg, [Cipher](#) cipher)
- QUENTIER\_EXPORT [QDataStream](#) & [operator](#)<< ([QDataStream](#) &strm, [Cipher](#) cipher)

### 5.23.1 Detailed Description

The [IEncryptor](#) interface provides encryption and decryption functionality which is compatible with that used by Evernote service.

### 5.23.2 Member Enumeration Documentation

#### 5.23.2.1 Cipher

```
enum class quantier::utility::IEncryptor::Cipher [strong]
```

Cipher used for encryption/decryption

#### Enumerator

RC2	RC2 64 bit block cipher
AES	AES 128 bit block cipher

### 5.23.3 Member Function Documentation

#### 5.23.3.1 decrypt()

```
virtual Result< QString, ErrorString > quantier::utility::IEncryptor::decrypt (
    const QString & encryptedText,
    const QString & passphrase,
    Cipher cipher ) [pure virtual]
```

Decrypt previously encrypted text fragment

##### Parameters

<i>encryptedText</i>	Encrypted text to decrypt
<i>passphrase</i>	Passphrase used to encrypt text
<i>cipher</i>	Cipher used to encrypt text

##### Returns

[Result](#) with either decrypted text or error message

#### 5.23.3.2 encrypt()

```
virtual Result< QString, ErrorString > quantier::utility::IEncryptor::encrypt (
    const QString & text,
    const QString & passphrase ) [pure virtual]
```

Encrypt text fragment using AES cipher (RC2 cipher is only used for decryption)

##### Parameters

<i>text</i>	Text to encrypt
<i>passphrase</i>	Passphrase which can be used to decrypt the text

##### Returns

[Result](#) with either encrypted text or error message

## 5.24 quantier::enml::IENMLTagsConverter Class Reference

The [IENMLTagsConverter](#) interfaces provides methods which convert Evernote-specific markup tags such as encrypt, en-media etc. into their counterparts which should be used in the HTML representation of note content.

```
#include <IENMLTagsConverter.h>
```

## Public Member Functions

- virtual QString [convertEnToDo](#) (bool checked, quint32 index) const =0
- virtual QString [convertEncryptedText](#) (const QString &encryptedText, const QString &hint, [utility::IEncryptor::Cipher](#) cipher, quint32 index) const =0
- virtual QString [convertDecryptedText](#) (const QString &decryptedText, const QString &encryptedText, const QString &hint, [utility::IEncryptor::Cipher](#) cipher, quint32 index) const =0
- virtual [Result](#)< QString, [ErrorString](#) > [convertResource](#) (const qevercloud::Resource &resource) const =0

### 5.24.1 Detailed Description

The [IENMLTagsConverter](#) interfaces provides methods which convert Evernote-specific markup tags such as en-crypt, en-media etc. into their counterparts which should be used in the HTML representation of note content.

### 5.24.2 Member Function Documentation

#### 5.24.2.1 convertDecryptedText()

```
virtual QString quantier::enml::IENMLTagsConverter::convertDecryptedText (
    const QString & decryptedText,
    const QString & encryptedText,
    const QString & hint,
    utility::IEncryptor::Cipher cipher,
    quint32 index ) const [pure virtual]
```

Converts already decrypted en-crypt tag into its HTML counterpart

#### Parameters

<i>decryptedText</i>	decrypted text from en-crypt tag
<i>encryptedText</i>	encrypted text contained within en-crypt tag
<i>hint</i>	hint to be displayed when user tries to decrypt the text
<i>cipher</i>	cipher used to ecrypt the text
<i>index</i>	index of particular en-crypt tag within the note content so that different en-crypt tags can be differentiated

#### Returns

HTML representation of decrypted en-crypt tag

#### 5.24.2.2 convertEncryptedText()

```
virtual QString quantier::enml::IENMLTagsConverter::convertEncryptedText (
    const QString & encryptedText,
```

```
const QString & hint,
utility::IEncryptor::Cipher cipher,
quint32 index ) const [pure virtual]
```

Converts en-crypt tag into its HTML counterpart

#### Parameters

<i>encryptedText</i>	encrypted text contained within en-crypt tag
<i>hint</i>	hint to be displayed when user tries to decrypt the text
<i>cipher</i>	cipher used to encrypt the text
<i>index</i>	index of particular en-crypt tag within the note content so that different en-crypt tags can be differentiated

#### Returns

HTML representation of en-crypt tag

### 5.24.2.3 convertEnToDo()

```
virtual QString quentier::enml::IENMLTagsConverter::convertEnToDo (
    bool checked,
    quint32 index ) const [pure virtual]
```

Converts en-todo tag into its HTML counterpart

#### Parameters

<i>checked</i>	indicates whether this todo is checked or not
<i>index</i>	index of particular en-todo tag within the note content so that different todo tags can be differentiated

#### Returns

HTML representation of en-todo tag

### 5.24.2.4 convertResource()

```
virtual Result< QString, ErrorString > quentier::enml::IENMLTagsConverter::convertResource (
    const qevercloud::Resource & resource ) const [pure virtual]
```

Converts en-media tag representing a resource into its HTML counterpart

#### Parameters

<i>resource</i>	resource corresponding to en-media tag
-----------------	--

## Returns

[Result](#) with valid HTML representing the resource/en-media tag in case of success or error string in case of failure

## 5.25 quantier::synchronization::ISyncConflictResolver::ConflictResolution::IgnoreMine Struct Reference

The [IgnoreMine](#) conflict resolution means "use theirs version and ignore mine version as it doesn't really conflict with theirs version".

```
#include <ISyncConflictResolver.h>
```

### 5.25.1 Detailed Description

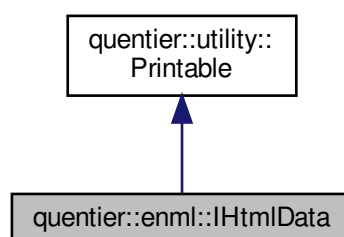
The [IgnoreMine](#) conflict resolution means "use theirs version and ignore mine version as it doesn't really conflict with theirs version".

## 5.26 quantier::enml::IHtmlData Struct Reference

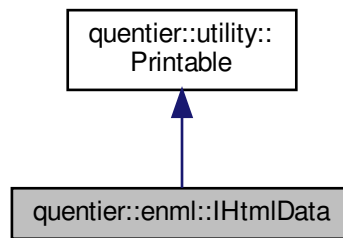
The [IHtmlData](#) represents the result of ENML to HTML conversion: HTML itself plus some metadata.

```
#include <IHtmlData.h>
```

Inheritance diagram for quantier::enml::IHtmlData:



Collaboration diagram for `quentier::enml::IHtmlData`:



## Public Member Functions

- virtual QString [html](#) () const =0
- virtual quint32 [numEnToDoNodes](#) () const =0
- virtual quint32 [numHyperlinkNodes](#) () const =0
- virtual quint32 [numEnCryptNodes](#) () const =0
- virtual quint32 [numEnDecryptedNodes](#) () const =0
- QTextStream & [print](#) (QTextStream &strm) const override

### 5.26.1 Detailed Description

The [IHtmlData](#) represents the result of ENML to HTML conversion: HTML itself plus some metadata.

### 5.26.2 Member Function Documentation

#### 5.26.2.1 [html\(\)](#)

```
virtual QString quentier::enml::IHtmlData::html ( ) const [pure virtual]
```

HTML representation of note content

#### 5.26.2.2 [numEnCryptNodes\(\)](#)

```
virtual quint32 quentier::enml::IHtmlData::numEnCryptNodes ( ) const [pure virtual]
```

Number of en-crypt nodes within note HTML

### 5.26.2.3 numEnDecryptedNodes()

```
virtual quint32 quantier::enml::IHtmlData::numEnDecryptedNodes ( ) const [pure virtual]
```

Number of decrypted en-crypt nodes within note HTML

### 5.26.2.4 numEnToDoNodes()

```
virtual quint32 quantier::enml::IHtmlData::numEnToDoNodes ( ) const [pure virtual]
```

Number of ToDo nodes within note HTML

### 5.26.2.5 numHyperlinkNodes()

```
virtual quint32 quantier::enml::IHtmlData::numHyperlinkNodes ( ) const [pure virtual]
```

Number of hyperlink nodes within note HTML

### 5.26.2.6 print()

```
QTextStream & quantier::enml::IHtmlData::print (
    QTextStream & strm ) const [override], [virtual]
```

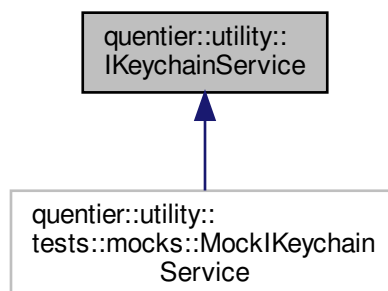
Implements [quantier::utility::Printable](#).

## 5.27 quantier::utility::IKeychainService Class Reference

The [IKeychainService](#) interface provides the ability to interact with the storage of sensitive data - read, write and delete it.

```
#include <IKeychainService.h>
```

Inheritance diagram for quantier::utility::IKeychainService:



## Classes

- class [Exception](#)

The [IKeychainService::Exception](#) class is the base class for exceptions returned inside QFutures from methods of [IKeychainService](#).

## Public Types

- enum class [ErrorCode](#) {  
[NoError](#) , [EntryNotFound](#) , [CouldNotDeleteEntry](#) , [AccessDeniedByUser](#) ,  
[AccessDenied](#) , [NoBackendAvailable](#) , [NotImplemented](#) , [OtherError](#) }

## Public Member Functions

- virtual QFuture< void > [writePassword](#) (QString service, QString key, QString password)=0
- virtual QFuture< QString > [readPassword](#) (QString service, QString key) const =0
- virtual QFuture< void > [deletePassword](#) (QString service, QString key)=0

## Friends

- QUENTIER\_EXPORT QTextStream & **operator**<< (QTextStream &strm, [ErrorCode](#) errorCode)
- QUENTIER\_EXPORT QDebug & **operator**<< (QDebug &dbg, [ErrorCode](#) errorCode)

### 5.27.1 Detailed Description

The [IKeychainService](#) interface provides the ability to interact with the storage of sensitive data - read, write and delete it.

### 5.27.2 Member Enumeration Documentation

#### 5.27.2.1 ErrorCode

```
enum class quentier::utility::IKeychainService::ErrorCode [strong]
```

Error codes for results of operations with the keychain service

Enumerator

NoError	No error occurred, operation was successful
EntryNotFound	For the given key no data was found
CouldNotDeleteEntry	Could not delete existing secret data
AccessDeniedByUser	User denied access to keychain
AccessDenied	Access denied for some reason
NoBackendAvailable	No platform-specific keychain service available
NotImplemented	Not implemented on platform
OtherError	Something else went wrong, the error description specifies what



## 5.27.3 Member Function Documentation

### 5.27.3.1 deletePassword()

```
virtual QFuture< void > quantier::utility::IKeychainService::deletePassword (
    QString service,
    QString key ) [pure virtual]
```

deletePassword potentially asynchronously deletes password from the keychain.

#### Parameters

<i>service</i>	Name of service within the keychain
<i>key</i>	Key under which the password is stored

#### Returns

Future which becomes finished when the operation is complete. If the operation fails, the future would contain an exception.

### 5.27.3.2 readPassword()

```
virtual QFuture< QString > quantier::utility::IKeychainService::readPassword (
    QString service,
    QString key ) const [pure virtual]
```

readPassword method potentially asynchronously reads password from the keychain.

#### Parameters

<i>service</i>	Name of service within the keychain
<i>key</i>	Key under which the password is stored

#### Returns

Future which becomes finished when the operation is complete. The value inside the future would be the read password. If the operation fails, the future would contain an exception.

### 5.27.3.3 writePassword()

```
virtual QFuture< void > quantier::utility::IKeychainService::writePassword (
    QString service,
```

```
QString key,
QString password ) [pure virtual]
```

writePassword method potentially asynchronously writes password to the keychain.

#### Parameters

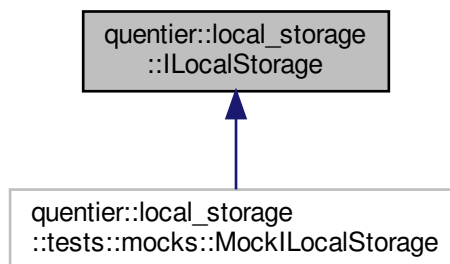
<i>service</i>	Name of service within the keychain
<i>key</i>	Key to store the password under
<i>password</i>	Password to store in the keychain

#### Returns

Future which becomes finished when the operation is complete. If the operation fails, the future would contain an exception.

## 5.28 quantier::local\_storage::ILocalStorage Class Reference

Inheritance diagram for quantier::local\_storage::ILocalStorage:



#### Classes

- struct [ListGuidsFilters](#)
- struct [ListLinkedNotebooksOptions](#)
- struct [ListNotebooksOptions](#)
- struct [ListNotesOptions](#)
- struct [ListObjectsFilters](#)
- struct [ListOptionsBase](#)
- struct [ListSavedSearchesOptions](#)
- struct [ListTagsOptions](#)

## Public Types

- enum class **StartupOption** { **ClearDatabase** = 1 << 1 , **OverrideLock** = 1 << 2 }
- enum class **ListObjectsFilter** { **Include** , **Exclude** }
- enum class **OrderDirection** { **Ascending** , **Descending** }
- enum class **ListNotebooksOrder** { **NoOrder** , **ByUpdateSequenceNumber** , **ByNotebookName** , **ByCreationTimestamp** , **ByModificationTimestamp** }
- enum class **ListLinkedNotebooksOrder** { **NoOrder** , **ByUpdateSequenceNumber** , **ByShareName** , **ByUsername** }
- enum class **ListTagsOrder** { **NoOrder** , **ByUpdateSequenceNumber** , **ByName** }
- enum class **ListNotesOrder** { **NoOrder** , **ByUpdateSequenceNumber** , **ByTitle** , **ByCreationTimestamp** , **ByModificationTimestamp** , **ByDeletionTimestamp** , **ByAuthor** , **BySource** , **BySourceApplication** , **ByReminderTime** , **ByPlaceName** }
- enum class **ListSavedSearchesOrder** { **NoOrder** , **ByUpdateSequenceNumber** , **ByName** , **ByFormat** }
- enum class **Affiliation** { **Any** , **User** , **AnyLinkedNotebook** , **ParticularLinkedNotebooks** }
- enum class **TagNotesRelation** { **Any** , **WithNotes** , **WithoutNotes** }
- enum class **NoteCountOption** { **IncludeNonDeletedNotes** = 1 << 1 , **IncludeDeletedNotes** = 1 << 2 }
- enum class **UpdateNoteOption** { **UpdateResourceMetadata** = 1 << 1 , **UpdateResourceBinaryData** = 1 << 2 , **UpdateTags** = 1 << 3 }
- enum class **FetchNoteOption** { **WithResourceMetadata** = 1 << 1 , **WithResourceBinaryData** = 1 << 2 }
- enum class **FetchResourceOption** { **WithBinaryData** = 1 << 1 }
- enum class **HighestUsnOption** { **WithinUserOwnContent** , **WithinUserOwnContentAndLinkedNotebooks** }

## Public Member Functions

- **Q\_DECLARE\_FLAGS** (StartupOptions, StartupOption)
- virtual QFuture< bool > **isVersionTooHigh** () const =0
- virtual QFuture< bool > **requiresUpgrade** () const =0
- virtual QFuture< QList< IPatchPtr > > **requiredPatches** () const =0
- virtual QFuture< qint32 > **version** () const =0
- virtual QFuture< qint32 > **highestSupportedVersion** () const =0
- virtual QFuture< quint32 > **userCount** () const =0
- virtual QFuture< void > **putUser** (qevercloud::User user)=0
- virtual QFuture< std::optional< qevercloud::User > > **findUserById** (qevercloud::UserID userId) const =0
- virtual QFuture< void > **expungeUserById** (qevercloud::UserID userId)=0
- virtual QFuture< quint32 > **notebookCount** () const =0
- virtual QFuture< void > **putNotebook** (qevercloud::Notebook notebook)=0
- virtual QFuture< std::optional< qevercloud::Notebook > > **findNotebookByLocalId** (QString notebookLocalId) const =0
- virtual QFuture< std::optional< qevercloud::Notebook > > **findNotebookByGuid** (qevercloud::Guid guid) const =0
- virtual QFuture< std::optional< qevercloud::Notebook > > **findNotebookByName** (QString notebookName, std::optional< qevercloud::Guid > linkedNotebookGuid=std::nullopt) const =0
- virtual QFuture< std::optional< qevercloud::Notebook > > **findDefaultNotebook** () const =0
- virtual QFuture< void > **expungeNotebookByLocalId** (QString notebookLocalId)=0
- virtual QFuture< void > **expungeNotebookByGuid** (qevercloud::Guid notebookGuid)=0
- virtual QFuture< void > **expungeNotebookByName** (QString name, std::optional< qevercloud::Guid > linkedNotebookGuid=std::nullopt)=0
- virtual QFuture< QList< qevercloud::Notebook > > **listNotebooks** ([ListNotebooksOptions](#) options={}) const =0
- virtual QFuture< QList< qevercloud::SharedNotebook > > **listSharedNotebooks** (qevercloud::Guid notebookGuid={}) const =0

- virtual QFuture< QSet< qevercloud::Guid > > **listNotebookGuids** ([ListGuidsFilters](#) filters, std::optional< qevercloud::Guid > linkedNotebookGuid={}) const =0
- virtual QFuture< quint32 > **linkedNotebookCount** () const =0
- virtual QFuture< void > **putLinkedNotebook** (qevercloud::LinkedNotebook linkedNotebook)=0
- virtual QFuture< std::optional< qevercloud::LinkedNotebook > > **findLinkedNotebookByGuid** (qevercloud::Guid guid) const =0
- virtual QFuture< void > **expungeLinkedNotebookByGuid** (qevercloud::Guid guid)=0
- virtual QFuture< QList< qevercloud::LinkedNotebook > > **listLinkedNotebooks** ([ListLinkedNotebooksOptions](#) options={}) const =0
- virtual QFuture< quint32 > **noteCount** (NoteCountOptions options=NoteCountOptions(NoteCountOption::IncludeNonDeletedNotes)) const =0
- virtual QFuture< quint32 > **noteCountPerNotebookLocalId** (QString notebookLocalId, NoteCountOptions options=NoteCountOptions(NoteCountOption::IncludeNonDeletedNotes)) const =0
- virtual QFuture< quint32 > **noteCountPerTagLocalId** (QString tagLocalId, NoteCountOptions options=NoteCountOptions(NoteCountOption::IncludeNonDeletedNotes)) const =0
- virtual QFuture< QHash< QString, quint32 > > **noteCountsPerTags** ([ListTagsOptions](#) listTagsOptions={}, NoteCountOptions options=NoteCountOptions(NoteCountOption::IncludeNonDeletedNotes)) const =0
- virtual QFuture< quint32 > **noteCountPerNotebookAndTagLocalIds** (QStringList notebookLocalIds, QStringList tagLocalIds, NoteCountOptions options=NoteCountOptions(NoteCountOption::IncludeNonDeletedNotes)) const =0
- virtual QFuture< void > **putNote** (qevercloud::Note note)=0
- virtual QFuture< void > **updateNote** (qevercloud::Note note, UpdateNoteOptions options)=0
- virtual QFuture< std::optional< qevercloud::Note > > **findNoteByLocalId** (QString noteLocalId, FetchNoteOptions options) const =0
- virtual QFuture< std::optional< qevercloud::Note > > **findNoteByGuid** (qevercloud::Guid noteGuid, FetchNoteOptions options) const =0
- virtual QFuture< QList< qevercloud::Note > > **listNotes** (FetchNoteOptions fetchOptions, [ListNotesOptions](#) listOptions={}) const =0
- virtual QFuture< QList< qevercloud::Note > > **listNotesPerNotebookLocalId** (QString notebookLocalId, FetchNoteOptions fetchOptions, [ListNotesOptions](#) listOptions={}) const =0
- virtual QFuture< QList< qevercloud::Note > > **listNotesPerTagLocalId** (QString tagLocalId, FetchNoteOptions fetchOptions, [ListNotesOptions](#) listOptions={}) const =0
- virtual QFuture< QList< qevercloud::Note > > **listNotesPerNotebookAndTagLocalIds** (QStringList notebookLocalIds, QStringList tagLocalIds, FetchNoteOptions fetchOptions, [ListNotesOptions](#) listOptions={}) const =0
- virtual QFuture< QList< qevercloud::Note > > **listNotesByLocalIds** (QStringList noteLocalIds, FetchNoteOptions fetchOptions, [ListNotesOptions](#) listOptions={}) const =0
- virtual QFuture< QSet< qevercloud::Guid > > **listNoteGuids** ([ListGuidsFilters](#) filters, std::optional< qevercloud::Guid > linkedNotebookGuid={}) const =0
- virtual QFuture< QList< qevercloud::Note > > **queryNotes** ([NoteSearchQuery](#) query, FetchNoteOptions fetchOptions) const =0
- virtual QFuture< QStringList > **queryNoteLocalIds** ([NoteSearchQuery](#) query) const =0
- virtual QFuture< void > **expungeNoteByLocalId** (QString noteLocalId)=0
- virtual QFuture< void > **expungeNoteByGuid** (qevercloud::Guid noteGuid)=0
- virtual QFuture< quint32 > **tagCount** () const =0
- virtual QFuture< void > **putTag** (qevercloud::Tag tag)=0
- virtual QFuture< std::optional< qevercloud::Tag > > **findTagByLocalId** (QString tagLocalId) const =0
- virtual QFuture< std::optional< qevercloud::Tag > > **findTagByGuid** (qevercloud::Guid tagGuid) const =0
- virtual QFuture< std::optional< qevercloud::Tag > > **findTagByName** (QString tagName, std::optional< qevercloud::Guid > linkedNotebookGuid=std::nullopt) const =0
- virtual QFuture< QList< qevercloud::Tag > > **listTags** ([ListTagsOptions](#) options={}) const =0
- virtual QFuture< QList< qevercloud::Tag > > **listTagsPerNoteLocalId** (QString noteLocalId, [ListTagsOptions](#) options={}) const =0
- virtual QFuture< QSet< qevercloud::Guid > > **listTagGuids** ([ListGuidsFilters](#) filters, std::optional< qevercloud::Guid > linkedNotebookGuid={}) const =0
- virtual QFuture< void > **expungeTagByLocalId** (QString tagLocalId)=0

- virtual QFuture< void > **expungeTagByGuid** (qevercloud::Guid tagGuid)=0
- virtual QFuture< void > **expungeTagByName** (QString name, std::optional< qevercloud::Guid > linkedNotebookGuid=std::nullopt)=0
- virtual QFuture< quint32 > **resourceCount** (NoteCountOptions options=NoteCountOptions(NoteCountOption::IncludeNonDeletedNotes)) const =0
- virtual QFuture< quint32 > **resourceCountPerNoteLocalId** (QString noteLocalId) const =0
- virtual QFuture< void > **putResource** (qevercloud::Resource resource)=0
- virtual QFuture< std::optional< qevercloud::Resource > > **findResourceByLocalId** (QString resourceLocalId, FetchResourceOptions options={}) const =0
- virtual QFuture< std::optional< qevercloud::Resource > > **findResourceByGuid** (qevercloud::Guid resourceGuid, FetchResourceOptions options={}) const =0
- virtual QFuture< void > **expungeResourceByLocalId** (QString resourceLocalId)=0
- virtual QFuture< void > **expungeResourceByGuid** (qevercloud::Guid resourceGuid)=0
- virtual QFuture< quint32 > **savedSearchCount** () const =0
- virtual QFuture< void > **putSavedSearch** (qevercloud::SavedSearch search)=0
- virtual QFuture< std::optional< qevercloud::SavedSearch > > **findSavedSearchByLocalId** (QString savedSearchLocalId) const =0
- virtual QFuture< std::optional< qevercloud::SavedSearch > > **findSavedSearchByGuid** (qevercloud::Guid guid) const =0
- virtual QFuture< std::optional< qevercloud::SavedSearch > > **findSavedSearchByName** (QString name) const =0
- virtual QFuture< QList< qevercloud::SavedSearch > > **listSavedSearches** ([ListSavedSearchesOptions](#) options={}) const =0
- virtual QFuture< QSet< qevercloud::Guid > > **listSavedSearchGuids** ([ListGuidsFilters](#) filters) const =0
- virtual QFuture< void > **expungeSavedSearchByLocalId** (QString savedSearchLocalId)=0
- virtual QFuture< void > **expungeSavedSearchByGuid** (qevercloud::Guid guid)=0
- virtual QFuture< qint32 > **highestUpdateSequenceNumber** (HighestUsnOption option) const =0
- virtual QFuture< qint32 > **highestUpdateSequenceNumber** (qevercloud::Guid linkedNotebookGuid) const =0
- virtual [ILocalStorageNotifier](#) \* **notifier** () const =0

## Friends

- QUENTIER\_EXPORT QTextStream & **operator**<< (QTextStream &strm, StartupOption option)
- QUENTIER\_EXPORT QDebug & **operator**<< (QDebug &dbg, StartupOption option)
- QUENTIER\_EXPORT QTextStream & **operator**<< (QTextStream &strm, StartupOptions options)
- QUENTIER\_EXPORT QDebug & **operator**<< (QDebug &dbg, StartupOptions options)
- QUENTIER\_EXPORT QTextStream & **operator**<< (QTextStream &strm, ListObjectsFilter filter)
- QUENTIER\_EXPORT QDebug & **operator**<< (QDebug &dbg, ListObjectsFilter filter)
- QUENTIER\_EXPORT QTextStream & **operator**<< (QTextStream &strm, const [ListObjectsFilters](#) &filters)
- QUENTIER\_EXPORT QDebug & **operator**<< (QDebug &dbg, const [ListObjectsFilters](#) &filters)
- QUENTIER\_EXPORT QTextStream & **operator**<< (QTextStream &strm, const [ListGuidsFilters](#) &filters)
- QUENTIER\_EXPORT QDebug & **operator**<< (QDebug &dbg, const [ListGuidsFilters](#) &filters)
- QUENTIER\_EXPORT QTextStream & **operator**<< (QTextStream &strm, OrderDirection orderDirection)
- QUENTIER\_EXPORT QDebug & **operator**<< (QDebug &dbg, OrderDirection orderDirection)
- QUENTIER\_EXPORT QTextStream & **operator**<< (QTextStream &strm, ListNotebooksOrder order)
- QUENTIER\_EXPORT QDebug & **operator**<< (QDebug &dbg, ListNotebooksOrder order)
- QUENTIER\_EXPORT QTextStream & **operator**<< (QTextStream &strm, ListLinkedNotebooksOrder order)
- QUENTIER\_EXPORT QDebug & **operator**<< (QDebug &dbg, ListLinkedNotebooksOrder order)
- QUENTIER\_EXPORT QTextStream & **operator**<< (QTextStream &strm, ListTagsOrder order)
- QUENTIER\_EXPORT QDebug & **operator**<< (QDebug &dbg, ListTagsOrder order)
- QUENTIER\_EXPORT QTextStream & **operator**<< (QTextStream &strm, ListNotesOrder order)
- QUENTIER\_EXPORT QDebug & **operator**<< (QDebug &dbg, ListNotesOrder order)
- QUENTIER\_EXPORT QTextStream & **operator**<< (QTextStream &strm, ListSavedSearchesOrder order)

- `QUENTIER_EXPORT QDebug & operator<< (QDebug &dbg, ListSavedSearchesOrder order)`
- `QUENTIER_EXPORT QTextStream & operator<< (QTextStream &strm, Affiliation affiliation)`
- `QUENTIER_EXPORT QDebug & operator<< (QDebug &dbg, Affiliation affiliation)`
- `QUENTIER_EXPORT QTextStream & operator<< (QTextStream &strm, const ListNotebooksOptions &options)`
- `QUENTIER_EXPORT QDebug & operator<< (QDebug &dbg, const ListNotebooksOptions &options)`
- `QUENTIER_EXPORT QTextStream & operator<< (QTextStream &strm, const ListLinkedNotebooksOptions &options)`
- `QUENTIER_EXPORT QDebug & operator<< (QDebug &dbg, const ListLinkedNotebooksOptions &options)`
- `QUENTIER_EXPORT QTextStream & operator<< (QTextStream &strm, const ListSavedSearchesOptions &options)`
- `QUENTIER_EXPORT QDebug & operator<< (QDebug &dbg, const ListSavedSearchesOptions &options)`
- `QUENTIER_EXPORT QTextStream & operator<< (QTextStream &strm, const ListNotesOptions &options)`
- `QUENTIER_EXPORT QDebug & operator<< (QDebug &dbg, const ListNotesOptions &options)`
- `QUENTIER_EXPORT QTextStream & operator<< (QTextStream &strm, const ListTagsOptions &options)`
- `QUENTIER_EXPORT QDebug & operator<< (QDebug &dbg, const ListTagsOptions &options)`
- `QUENTIER_EXPORT QTextStream & operator<< (QTextStream &strm, NoteCountOption option)`
- `QUENTIER_EXPORT QDebug & operator<< (QDebug &dbg, NoteCountOption option)`
- `QUENTIER_EXPORT QTextStream & operator<< (QTextStream &strm, NoteCountOptions options)`
- `QUENTIER_EXPORT QDebug & operator<< (QDebug &dbg, NoteCountOptions options)`
- `QUENTIER_EXPORT QTextStream & operator<< (QTextStream &strm, UpdateNoteOption option)`
- `QUENTIER_EXPORT QDebug & operator<< (QDebug &dbg, UpdateNoteOption option)`
- `QUENTIER_EXPORT QTextStream & operator<< (QTextStream &strm, UpdateNoteOptions options)`
- `QUENTIER_EXPORT QDebug & operator<< (QDebug &dbg, UpdateNoteOptions options)`
- `QUENTIER_EXPORT QTextStream & operator<< (QTextStream &strm, FetchNoteOption option)`
- `QUENTIER_EXPORT QDebug & operator<< (QDebug &dbg, FetchNoteOption option)`
- `QUENTIER_EXPORT QTextStream & operator<< (QTextStream &strm, FetchNoteOptions options)`
- `QUENTIER_EXPORT QDebug & operator<< (QDebug &dbg, FetchNoteOptions options)`
- `QUENTIER_EXPORT QTextStream & operator<< (QTextStream &strm, FetchResourceOption option)`
- `QUENTIER_EXPORT QDebug & operator<< (QDebug &dbg, FetchResourceOption option)`
- `QUENTIER_EXPORT QTextStream & operator<< (QTextStream &strm, FetchResourceOptions options)`
- `QUENTIER_EXPORT QDebug & operator<< (QDebug &dbg, FetchResourceOptions options)`
- `QUENTIER_EXPORT QTextStream & operator<< (QTextStream &strm, HighestUsnOption option)`
- `QUENTIER_EXPORT QDebug & operator<< (QDebug &dbg, HighestUsnOption option)`

## 5.28.1 Member Enumeration Documentation

### 5.28.1.1 Affiliation

```
enum class quentier::local\_storage::ILocalStorage::Affiliation [strong]
```

Denotes whether some data item belongs to user's own account, any of linked notebooks or particular linked notebooks

### 5.28.1.2 TagNotesRelation

```
enum class quentier::local\_storage::ILocalStorage::TagNotesRelation [strong]
```

Denotes the relation between tag and notes - whether any note is using the given tag

## Enumerator

Any	The tag might be used by some notes or it might not be.
WithNotes	The tag is used by some notes.
WithoutNotes	The tag is not used by any note.

## 5.28.2 Member Function Documentation

## 5.28.2.1 notifier()

```
virtual ILocalStorageNotifier * quantier::local_storage::ILocalStorage::notifier ( ) const
[pure virtual]
```

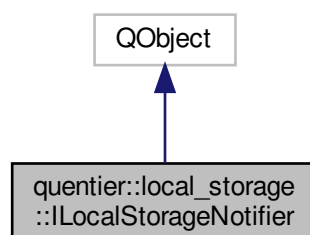
Notifications about the events occurring with the local storage are done via signals emitted by [ILocalStorageNotifier](#).

## Returns

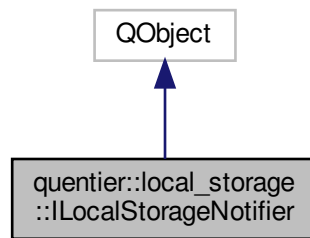
the pointer to [ILocalStorageNotifier](#) object which would be valid for at least as long as [ILocalStorage](#) object that returned it is alive.

## 5.29 quantier::local\_storage::ILocalStorageNotifier Class Reference

Inheritance diagram for quantier::local\_storage::ILocalStorageNotifier:



Collaboration diagram for `quentier::local_storage::ILocalStorageNotifier`:



## Signals

- void **userPut** (`qevercloud::User` user)
- void **userExpunged** (`qevercloud::UserID` userId)
- void **notebookPut** (`qevercloud::Notebook` notebook)
- void **notebookExpunged** (`QString` notebookLocalId)
- void **linkedNotebookPut** (`qevercloud::LinkedNotebook` linkedNotebook)
- void **linkedNotebookExpunged** (`qevercloud::Guid` linkedNotebookGuid)
- void **notePut** (`qevercloud::Note` note)
- void **noteUpdated** (`qevercloud::Note` note, `ILocalStorage::UpdateNoteOptions` options)
- void **noteExpunged** (`QString` noteLocalId)
- void **tagPut** (`qevercloud::Tag` tag)
- void **tagExpunged** (`QString` tagLocalId, `QStringList` expungedChildTagLocalIds)
- void **resourcePut** (`qevercloud::Resource` resource)
- void **resourceMetadataPut** (`qevercloud::Resource` resource)
- void **resourceExpunged** (`QString` resourceLocalId)
- void **savedSearchPut** (`qevercloud::SavedSearch` savedSearch)
- void **savedSearchExpunged** (`QString` savedSearchLocalId)

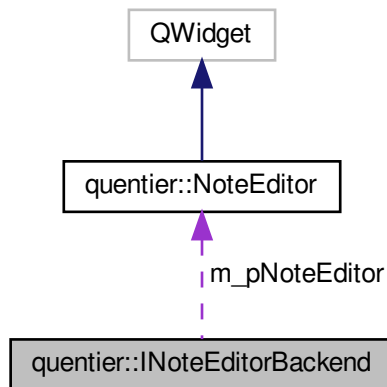
## Protected Member Functions

- **ILocalStorageNotifier** (`QObject *parent=nullptr`)



## 5.30 quantier::INoteEditorBackend Class Reference

Collaboration diagram for quantier::INoteEditorBackend:



### Public Types

- enum class **Rotation** { **Clockwise** , **Counterclockwise** }

### Public Member Functions

- virtual void **initialize** (local\_storage::ILocalStoragePtr localStorage, [SpellChecker](#) &spellChecker, const [Account](#) &account, QThread \*backgroundJobsThread, enml::IDecryptedTextCachePtr decryptedTextCache)=0
- virtual QObject \* **object** ()=0
- virtual QWidget \* **widget** ()=0
- virtual void **setAccount** (const [Account](#) &account)=0
- virtual void **setUndoStack** (QUndoStack \*pUndoStack)=0
- virtual void **setInitialPageHtml** (const QString &html)=0
- virtual void **setNoteNotFoundPageHtml** (const QString &html)=0
- virtual void **setNoteDeletedPageHtml** (const QString &html)=0
- virtual void **setNoteLoadingPageHtml** (const QString &html)=0
- virtual bool **isNoteLoaded** () const =0
- virtual qint64 **idleTime** () const =0
- virtual void **convertToNote** ()=0
- virtual void **saveNoteToLocalStorage** ()=0
- virtual void **setNoteTitle** (const QString &noteTitle)=0
- virtual void **setTagIds** (const QStringList &tagLocalUids, const QStringList &tagGuids)=0
- virtual void **undo** ()=0
- virtual void **redo** ()=0
- virtual void **cut** ()=0
- virtual void **copy** ()=0
- virtual void **paste** ()=0
- virtual void **pasteUnformatted** ()=0

- virtual void **selectAll** ()=0
- virtual void **formatSelectionAsSourceCode** ()=0
- virtual void **fontMenu** ()=0
- virtual void **textBold** ()=0
- virtual void **textItalic** ()=0
- virtual void **textUnderline** ()=0
- virtual void **textStrikethrough** ()=0
- virtual void **textHighlight** ()=0
- virtual void **alignLeft** ()=0
- virtual void **alignCenter** ()=0
- virtual void **alignRight** ()=0
- virtual void **alignFull** ()=0
- virtual QString **selectedText** () const =0
- virtual bool **hasSelection** () const =0
- virtual void **findNext** (const QString &text, bool matchCase) const =0
- virtual void **findPrevious** (const QString &text, bool matchCase) const =0
- virtual void **replace** (const QString &textToReplace, const QString &replacementText, bool matchCase)=0
- virtual void **replaceAll** (const QString &textToReplace, const QString &replacementText, bool matchCase)=0
- virtual void **insertToDoCheckbox** ()=0
- virtual void **insertInAppNoteLink** (const QString &userId, const QString &shardId, const QString &noteGuid, const QString &linkText)=0
- virtual void **setSpellcheck** (bool enabled)=0
- virtual bool **spellCheckEnabled** () const =0
- virtual void **setFont** (const QFont &font)=0
- virtual void **setFontHeight** (int height)=0
- virtual void **setFontColor** (const QColor &color)=0
- virtual void **setBackgroundColor** (const QColor &color)=0
- virtual QPalette **defaultPalette** () const =0
- virtual void **setDefaultPalette** (const QPalette &pal)=0
- virtual const QFont \* **defaultFont** () const =0
- virtual void **setDefaultFont** (const QFont &font)=0
- virtual void **insertHorizontalLine** ()=0
- virtual void **increaseFontSize** ()=0
- virtual void **decreaseFontSize** ()=0
- virtual void **increaseIndentation** ()=0
- virtual void **decreaseIndentation** ()=0
- virtual void **insertBulletedList** ()=0
- virtual void **insertNumberedList** ()=0
- virtual void **insertTableDialog** ()=0
- virtual void **insertFixedWidthTable** (int rows, int columns, int widthInPixels)=0
- virtual void **insertRelativeWidthTable** (int rows, int columns, double relativeWidth)=0
- virtual void **insertTableRow** ()=0
- virtual void **insertTableColumn** ()=0
- virtual void **removeTableRow** ()=0
- virtual void **removeTableColumn** ()=0
- virtual void **addAttachmentDialog** ()=0
- virtual void **saveAttachmentDialog** (const QByteArray &resourceHash)=0
- virtual void **saveAttachmentUnderCursor** ()=0
- virtual void **openAttachment** (const QByteArray &resourceHash)=0
- virtual void **openAttachmentUnderCursor** ()=0
- virtual void **copyAttachment** (const QByteArray &resourceHash)=0
- virtual void **copyAttachmentUnderCursor** ()=0
- virtual void **removeAttachment** (const QByteArray &resourceHash)=0
- virtual void **removeAttachmentUnderCursor** ()=0
- virtual void **renameAttachment** (const QByteArray &resourceHash)=0

- virtual void **renameAttachmentUnderCursor** ()=0
- virtual void **rotateImageAttachment** (const QByteArray &resourceHash, Rotation rotationDirection)=0
- virtual void **rotateImageAttachmentUnderCursor** (Rotation rotationDirection)=0
- virtual void **encryptSelectedText** ()=0
- virtual void **decryptEncryptedTextUnderCursor** ()=0
- virtual void **decryptEncryptedText** (QString encryptedText, QString cipher, QString hint, QString encryptIndex)=0
- virtual void **hideDecryptedTextUnderCursor** ()=0
- virtual void **hideDecryptedText** (QString encryptedText, QString decryptedText, QString cipher, QString hint, QString decryptIndex)=0
- virtual void **editHyperlinkDialog** ()=0
- virtual void **copyHyperlink** ()=0
- virtual void **removeHyperlink** ()=0
- virtual void **onNoteLoadCancelled** ()=0
- virtual bool **print** (QPrinter &printer, [ErrorString](#) &errorDescription)=0
- virtual bool **exportToPdf** (const QString &absoluteFilePath, [ErrorString](#) &errorDescription)=0
- virtual bool **exportToEnex** (const QStringList &tagNames, QString &enex, [ErrorString](#) &errorDescription)=0
- virtual QString **currentNoteLocalId** () const =0
- virtual void **setCurrentNoteLocalId** (const QString &noteLocalUid)=0
- virtual void **clear** ()=0
- virtual bool **isModified** () const =0
- virtual bool **isEditorPageModified** () const =0
- virtual void **setFocusToEditor** ()=0

## Protected Member Functions

- **INoteEditorBackend** ([NoteEditor](#) \*parent)

## Protected Attributes

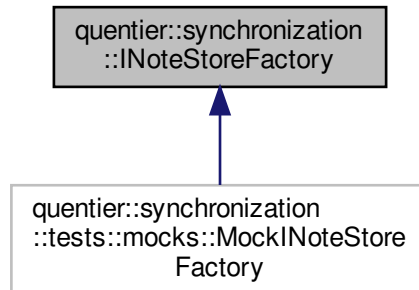
- [NoteEditor](#) \* **m\_pNoteEditor**

## Friends

- QUENTIER\_EXPORT QTextStream & **operator<<** (QTextStream &strm, Rotation rotation)
- QUENTIER\_EXPORT QDebug & **operator<<** (QDebug &dbg, Rotation rotation)

### 5.31 quantier::synchronization::INoteStoreFactory Class Reference

Inheritance diagram for quantier::synchronization::INoteStoreFactory:

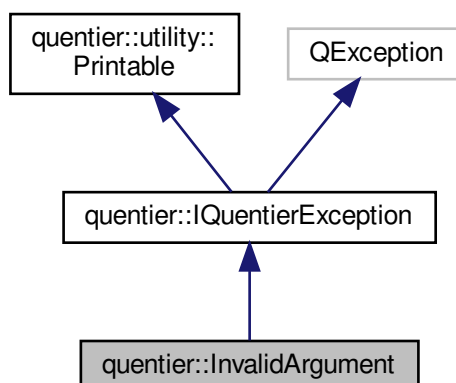


#### Public Member Functions

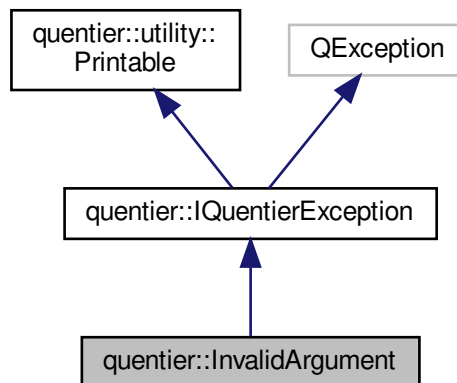
- virtual qevercloud::INoteStorePtr **createNoteStore** (QString noteStoreUrl={}, std::optional< qevercloud::↔ Guid > linkedNotebookGuid={}, qevercloud::IRequestContextPtr ctx={}, qevercloud::IRetryPolicyPtr retry↔ Policy={})=0

### 5.32 quantier::InvalidArgument Class Reference

Inheritance diagram for quantier::InvalidArgument:



Collaboration diagram for `quentier::InvalidArgument`:



### Public Member Functions

- `InvalidArgument` (`ErrorString` message)
- `InvalidArgument * clone` () const override
- `void raise` () const override

### Protected Member Functions

- `QString exceptionDisplayName` () const override

#### 5.32.1 Member Function Documentation

##### 5.32.1.1 `exceptionDisplayName()`

```
QString quentier::InvalidArgument::exceptionDisplayName ( ) const [override], [protected], [virtual]
```

Implements `quentier::IQuentierException`.

## 5.33 `quentier::ResourceRecognitionIndexItem::IObjectItem` Struct Reference

### Public Member Functions

- virtual `QString objectType` () const =0
- virtual `int weight` () const =0

## 5.34 quotient::local\_storage::IPatch Class Reference

The [IPatch](#) interface represents patches of the local storage. Each such patch somehow changes the layout of local storage persistence so that only compliant & corresponding versions of libquentier can be used to work with it.

```
#include <IPatch.h>
```

### Public Member Functions

- virtual int [fromVersion](#) () const noexcept=0
- virtual int [toVersion](#) () const noexcept=0
- virtual QString [patchShortDescription](#) () const =0
- virtual QString [patchLongDescription](#) () const =0
- virtual QFuture< void > [backupLocalStorage](#) ()=0
- virtual QFuture< void > [restoreLocalStorageFromBackup](#) ()=0
- virtual QFuture< void > [removeLocalStorageBackup](#) ()=0
- virtual QFuture< void > [apply](#) ()=0

#### 5.34.1 Detailed Description

The [IPatch](#) interface represents patches of the local storage. Each such patch somehow changes the layout of local storage persistence so that only compliant & corresponding versions of libquentier can be used to work with it.

#### 5.34.2 Member Function Documentation

##### 5.34.2.1 [apply\(\)](#)

```
virtual QFuture< void > quotient::local_storage::IPatch::apply ( ) [pure virtual]
```

Apply the patch to local storage

##### Returns

Future which can be awaited for patch application. Contains exception if patch application fails.

##### 5.34.2.2 [backupLocalStorage\(\)](#)

```
virtual QFuture< void > quotient::local_storage::IPatch::backupLocalStorage ( ) [pure virtual]
```

Backup either the entire local storage or its parts affected by the particular patch, should be called before applying the patch (but can be skipped if not desired).

##### Returns

Future which can be awaited for the backup completion. Contains exception if backup fails.

### 5.34.2.3 fromVersion()

```
virtual int quantier::local_storage::IPatch::fromVersion ( ) const [pure virtual], [noexcept]
```

#### Returns

Version of local storage to which the patch needs to be applied

### 5.34.2.4 patchLongDescription()

```
virtual QString quantier::local_storage::IPatch::patchLongDescription ( ) const [pure virtual]
```

#### Returns

Long i.e. detailed description of the patch

### 5.34.2.5 patchShortDescription()

```
virtual QString quantier::local_storage::IPatch::patchShortDescription ( ) const [pure virtual]
```

#### Returns

Short description of the patch

### 5.34.2.6 removeLocalStorageBackup()

```
virtual QFuture< void > quantier::local_storage::IPatch::removeLocalStorageBackup ( ) [pure virtual]
```

Remove the previously made backup of local storage, presumably after successful application of the patch so the backup is no longer needed. It won't work if no backup was made before applying a patch, obviously.

#### Returns

Future which can be awaited for local storage backup removal. Contains exception if backup removal fails.

### 5.34.2.7 restoreLocalStorageFromBackup()

```
virtual QFuture< void > quentier::local_storage::IPatch::restoreLocalStorageFromBackup ( )
[pure virtual]
```

Restore local storage from previously made backup, presumably after the failed attempt to apply a patch. Won't work if no backup was made before applying a patch, obviously.

#### Returns

Future which can be awaited for the backup restoration completion. Contains exception if backup restoration fails.

### 5.34.2.8 toVersion()

```
virtual int quentier::local_storage::IPatch::toVersion ( ) const [pure virtual], [noexcept]
```

#### Returns

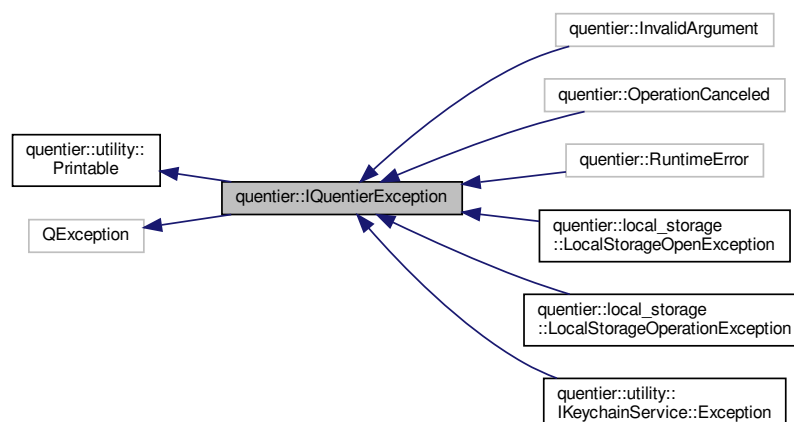
Version of local storage to which the patch would upgrade the local storage

## 5.35 quentier::IQuentierException Class Reference

The [IQuentierException](#) class represents the interface for exceptions specific to libquentier and applications based on it.

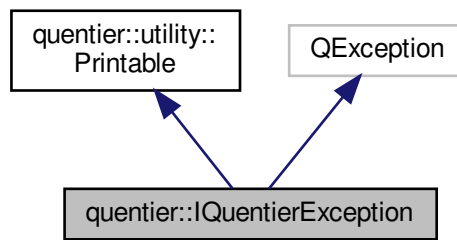
```
#include <IQuentierException.h>
```

Inheritance diagram for quentier::IQuentierException:





Collaboration diagram for `quentier::IQuentierException`:



## Public Member Functions

- `ErrorString errorMessage () const`
- `QString localizedErrorMessage () const`
- `QString nonLocalizedErrorMessage () const`
- `const char * what () const noexcept override`
- `QTextStream & print (QTextStream &strm) const override`

## Protected Member Functions

- `IQuentierException (ErrorString message)`
- `IQuentierException (const IQuentierException &other)`
- `IQuentierException & operator= (const IQuentierException &other)`
- `virtual QString exceptionDisplayName () const =0`

### 5.35.1 Detailed Description

The `IQuentierException` class represents the interface for exceptions specific to libquentier and applications based on it.

In addition to standard exception features inherited from `std::exception`, `IQuentierException` based exceptions can provide both localized and non-localized error messages.

### 5.35.2 Member Function Documentation

#### 5.35.2.1 `print()`

```
QTextStream & quentier::IQuentierException::print (
    QTextStream & strm ) const [override], [virtual]
```

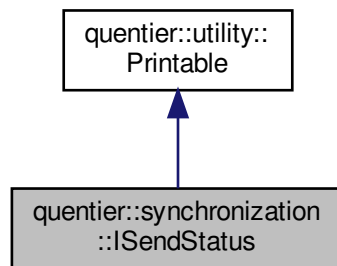
Implements `quentier::utility::Printable`.

## 5.36 quantier::synchronization::ISendStatus Class Reference

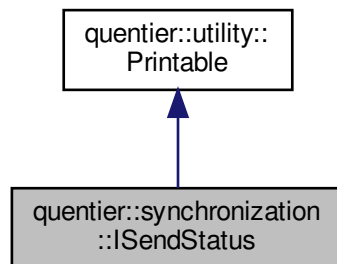
The [ISendStatus](#) interface represents the information about the attempt to send information either from user's own account or from some linked notebook to Evernote.

```
#include <ISendStatus.h>
```

Inheritance diagram for quantier::synchronization::ISendStatus:



Collaboration diagram for quantier::synchronization::ISendStatus:



### Public Types

- using **QExceptionPtr** = `std::shared_ptr< QException >`
- using **NoteWithException** = `std::pair< qevercloud::Note, QExceptionPtr >`
- using **NotebookWithException** = `std::pair< qevercloud::Notebook, QExceptionPtr >`
- using **SavedSearchWithException** = `std::pair< qevercloud::SavedSearch, QExceptionPtr >`
- using **TagWithException** = `std::pair< qevercloud::Tag, QExceptionPtr >`

## Public Member Functions

- virtual quint64 [totalAttemptedToSendNotes](#) () const =0
- virtual quint64 [totalAttemptedToSendNotebooks](#) () const =0
- virtual quint64 [totalAttemptedToSendSavedSearches](#) () const =0
- virtual quint64 [totalAttemptedToSendTags](#) () const =0
- virtual quint64 [totalSuccessfullySentNotes](#) () const =0
- virtual QList< NoteWithException > [failedToSendNotes](#) () const =0
- virtual quint64 [totalSuccessfullySentNotebooks](#) () const =0
- virtual QList< NotebookWithException > [failedToSendNotebooks](#) () const =0
- virtual quint64 [totalSuccessfullySentSavedSearches](#) () const =0
- virtual QList< SavedSearchWithException > [failedToSendSavedSearches](#) () const =0
- virtual quint64 [totalSuccessfullySentTags](#) () const =0
- virtual QList< TagWithException > [failedToSendTags](#) () const =0
- virtual StopSynchronizationError [stopSynchronizationError](#) () const =0
- virtual bool [needToRepeatIncrementalSync](#) () const =0

### 5.36.1 Detailed Description

The [ISendStatus](#) interface represents the information about the attempt to send information either from user's own account or from some linked notebook to Evernote.

### 5.36.2 Member Function Documentation

#### 5.36.2.1 failedToSendNotebooks()

```
virtual QList< NotebookWithException > quantier::synchronization::ISendStatus::failedToSendNotebooks ( ) const [pure virtual]
```

##### Returns

list with notebooks and exceptions representing failures to send these notebooks to Evernote

#### 5.36.2.2 failedToSendNotes()

```
virtual QList< NoteWithException > quantier::synchronization::ISendStatus::failedToSendNotes ( ) const [pure virtual]
```

##### Returns

list with notes and exceptions representing failures to send these notes to Evernote

### 5.36.2.3 failedToSendSavedSearches()

```
virtual QList< SavedSearchWithException > quantier::synchronization::ISendStatus::failedTo↵  
SendSavedSearches ( ) const [pure virtual]
```

#### Returns

list with saved searches and exceptions representing failures to send these saved searches to Evernote

### 5.36.2.4 failedToSendTags()

```
virtual QList< TagWithException > quantier::synchronization::ISendStatus::failedToSendTags ( )  
const [pure virtual]
```

#### Returns

list with tags and exceptions representing failures to send these tags to Evernote

### 5.36.2.5 needToRepeatIncrementalSync()

```
virtual bool quantier::synchronization::ISendStatus::needToRepeatIncrementalSync ( ) const  
[pure virtual]
```

If during the send step of synchronization it was found out that Evernote service's state of account has been updated since the last download step, returns true meaning that incremental download step should be repeated. Otherwise returns false.

### 5.36.2.6 stopSynchronizationError()

```
virtual StopSynchronizationError quantier::synchronization::ISendStatus::stopSynchronization↵  
Error ( ) const [pure virtual]
```

#### Returns

error which might have occurred during sending the data to Evernote which has prevented further attempts to send anything to Evernote or std::monostate if no such error has occurred

### 5.36.2.7 totalAttemptedToSendNotebooks()

```
virtual quint64 quantier::synchronization::ISendStatus::totalAttemptedToSendNotebooks ( )  
const [pure virtual]
```

#### Returns

total number of notebooks attempted to be sent to Evernote

### 5.36.2.8 totalAttemptedToSendNotes()

```
virtual quint64 quentier::synchronization::ISendStatus::totalAttemptedToSendNotes ( ) const  
[pure virtual]
```

#### Returns

total number of notes attempted to be sent to Evernote

### 5.36.2.9 totalAttemptedToSendSavedSearches()

```
virtual quint64 quentier::synchronization::ISendStatus::totalAttemptedToSendSavedSearches ( )  
const [pure virtual]
```

#### Returns

total number of saved searches attempted to be sent to Evernote

### 5.36.2.10 totalAttemptedToSendTags()

```
virtual quint64 quentier::synchronization::ISendStatus::totalAttemptedToSendTags ( ) const  
[pure virtual]
```

#### Returns

total number of tags attempted to be sent to Evernote

### 5.36.2.11 totalSuccessfullySentNotebooks()

```
virtual quint64 quentier::synchronization::ISendStatus::totalSuccessfullySentNotebooks ( )  
const [pure virtual]
```

#### Returns

number of notebooks which were successfully sent to Evernote

#### 5.36.2.12 totalSuccessfullySentNotes()

```
virtual quint64 quentier::synchronization::ISendStatus::totalSuccessfullySentNotes ( ) const  
[pure virtual]
```

##### Returns

number of notes which were successfully sent to Evernote

#### 5.36.2.13 totalSuccessfullySentSavedSearches()

```
virtual quint64 quentier::synchronization::ISendStatus::totalSuccessfullySentSavedSearches ( )  
const [pure virtual]
```

##### Returns

number of saved searches which were successfully sent to Evernote

#### 5.36.2.14 totalSuccessfullySentTags()

```
virtual quint64 quentier::synchronization::ISendStatus::totalSuccessfullySentTags ( ) const  
[pure virtual]
```

##### Returns

number of tags which were successfully sent to Evernote

## 5.37 quentier::ResourceRecognitionIndexItem::IShapeItem Struct Reference

### Public Member Functions

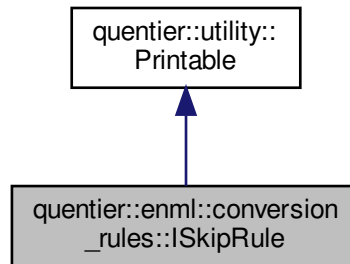
- virtual QString **shape** () const =0
- virtual int **weight** () const =0

## 5.38 quantier::enml::conversion\_rules::ISkipRule Class Reference

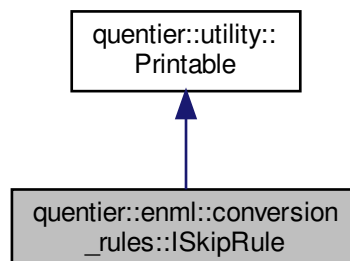
The [ISkipRule](#) interface describes a conversion rule with regards to which some ENML/HTML element/attribute should be skipped during the conversion.

```
#include <ISkipRule.h>
```

Inheritance diagram for quantier::enml::conversion\_rules::ISkipRule:



Collaboration diagram for quantier::enml::conversion\_rules::ISkipRule:



### Public Types

- enum class [Target](#) { [Element](#) , [AttributeName](#) , [AttributeValue](#) }

### Public Member Functions

- virtual [Target](#) [target](#) () const =0
- virtual QString [value](#) () const =0
- virtual MatchMode [matchMode](#) () const =0
- virtual bool [includeContents](#) () const =0
- virtual Qt::CaseSensitivity [caseSensitivity](#) () const =0
- QTextStream & [print](#) (QTextStream &strm) const override

## Friends

- QUENTIER\_EXPORT QTextStream & **operator**<< (QTextStream &strm, [Target target](#))
- QUENTIER\_EXPORT QDebug & **operator**<< (QDebug &dbg, [Target target](#))

### 5.38.1 Detailed Description

The [ISkipRule](#) interface describes a conversion rule with regards to which some ENML/HTML element/attribute should be skipped during the conversion.

ENML format prohibits the use of certain HTML tags and attributes. This interface facilitates skipping these tags and attributes in the process of conversion from HTML to ENML

### 5.38.2 Member Enumeration Documentation

#### 5.38.2.1 Target

```
enum class quentier::enml::conversion_rules::ISkipRule::Target [strong]
```

Target to be affected by the skip rule

Enumerator

Element	HTML element
AttributeName	HTML attribute with specified name
AttributeValue	HTML attribute with specified value

### 5.38.3 Member Function Documentation

#### 5.38.3.1 caseSensitivity()

```
virtual Qt::CaseSensitivity quentier::enml::conversion_rules::ISkipRule::caseSensitivity ( )
const [pure virtual]
```

Case sensitivity for target name/value check

#### 5.38.3.2 includeContents()

```
virtual bool quentier::enml::conversion_rules::ISkipRule::includeContents ( ) const [pure
virtual]
```

Specifies whether the element contents should be included without the element itself if it needs to be skipped or not



### 5.38.3.3 matchMode()

```
virtual MatchMode quentier::enml::conversion_rules::ISkipRule::matchMode ( ) const [pure virtual]
```

Match mode for name or value of the target

### 5.38.3.4 print()

```
QTextStream & quentier::enml::conversion_rules::ISkipRule::print (
    QTextStream & strm ) const [override], [virtual]
```

Implements [quentier::utility::Printable](#).

### 5.38.3.5 target()

```
virtual Target quentier::enml::conversion_rules::ISkipRule::target ( ) const [pure virtual]
```

Target to be affected by the skip rule

### 5.38.3.6 value()

```
virtual QString quentier::enml::conversion_rules::ISkipRule::value ( ) const [pure virtual]
```

Name or value of the target

## 5.39 quentier::enml::conversion\_rules::ISkipRuleBuilder Class Reference

### Public Member Functions

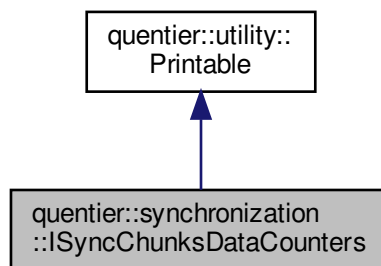
- virtual [ISkipRuleBuilder](#) & **setTarget** ([ISkipRule::Target](#) target)=0
- virtual [ISkipRuleBuilder](#) & **setValue** (QString value)=0
- virtual [ISkipRuleBuilder](#) & **setMatchMode** (MatchMode matchMode)=0
- virtual [ISkipRuleBuilder](#) & **setIncludeContents** (bool includeContents)=0
- virtual [ISkipRuleBuilder](#) & **setCaseSensitivity** (Qt::CaseSensitivity caseSensitivity)=0
- virtual [ISkipRulePtr](#) **build** ()=0

## 5.40 quantier::synchronization::ISyncChunksDataCounters Struct Reference

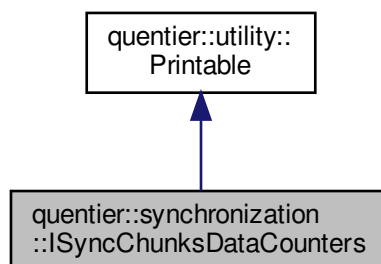
The [ISyncChunksDataCounters](#) interface provides integer counters representing the current progress on processing the data from downloaded sync chunks.

```
#include <ISyncChunksDataCounters.h>
```

Inheritance diagram for quantier::synchronization::ISyncChunksDataCounters:



Collaboration diagram for quantier::synchronization::ISyncChunksDataCounters:



### Public Member Functions

- virtual quint64 [totalSavedSearches](#) () const noexcept=0
- virtual quint64 [totalExpungedSavedSearches](#) () const noexcept=0
- virtual quint64 [addedSavedSearches](#) () const noexcept=0
- virtual quint64 [updatedSavedSearches](#) () const noexcept=0
- virtual quint64 [expungedSavedSearches](#) () const noexcept=0
- virtual quint64 [totalTags](#) () const noexcept=0
- virtual quint64 [totalExpungedTags](#) () const noexcept=0

- virtual quint64 [addedTags](#) () const noexcept=0
- virtual quint64 [updatedTags](#) () const noexcept=0
- virtual quint64 [expungedTags](#) () const noexcept=0
- virtual quint64 [totalLinkedNotebooks](#) () const noexcept=0
- virtual quint64 [totalExpungedLinkedNotebooks](#) () const noexcept=0
- virtual quint64 [addedLinkedNotebooks](#) () const noexcept=0
- virtual quint64 [updatedLinkedNotebooks](#) () const noexcept=0
- virtual quint64 [expungedLinkedNotebooks](#) () const noexcept=0
- virtual quint64 [totalNotebooks](#) () const noexcept=0
- virtual quint64 [totalExpungedNotebooks](#) () const noexcept=0
- virtual quint64 [addedNotebooks](#) () const noexcept=0
- virtual quint64 [updatedNotebooks](#) () const noexcept=0
- virtual quint64 [expungedNotebooks](#) () const noexcept=0

### 5.40.1 Detailed Description

The [ISyncChunksDataCounters](#) interface provides integer counters representing the current progress on processing the data from downloaded sync chunks.

### 5.40.2 Member Function Documentation

#### 5.40.2.1 [addedLinkedNotebooks\(\)](#)

```
virtual quint64 quentier::synchronization::ISyncChunksDataCounters::addedLinkedNotebooks ( )
const [pure virtual], [noexcept]
```

Number of linked notebooks from sync chunks added to the local storage so far

#### 5.40.2.2 [addedNotebooks\(\)](#)

```
virtual quint64 quentier::synchronization::ISyncChunksDataCounters::addedNotebooks ( ) const
[pure virtual], [noexcept]
```

Number of notebooks from sync chunks added to the local storage so far

#### 5.40.2.3 [addedSavedSearches\(\)](#)

```
virtual quint64 quentier::synchronization::ISyncChunksDataCounters::addedSavedSearches ( )
const [pure virtual], [noexcept]
```

Number of saved searches from sync chunks added to the local storage so far

**5.40.2.4 addedTags()**

```
virtual quint64 quentier::synchronization::ISyncChunksDataCounters::addedTags ( ) const [pure virtual], [noexcept]
```

Number of tags from sync chunks added to the local storage so far

**5.40.2.5 expungedLinkedNotebooks()**

```
virtual quint64 quentier::synchronization::ISyncChunksDataCounters::expungedLinkedNotebooks ( ) const [pure virtual], [noexcept]
```

Number of linked notebooks from sync chunks expunged from the local storage so far

**5.40.2.6 expungedNotebooks()**

```
virtual quint64 quentier::synchronization::ISyncChunksDataCounters::expungedNotebooks ( ) const [pure virtual], [noexcept]
```

Number of notebooks from sync chunks expunged from the local storage so far

**5.40.2.7 expungedSavedSearches()**

```
virtual quint64 quentier::synchronization::ISyncChunksDataCounters::expungedSavedSearches ( ) const [pure virtual], [noexcept]
```

Number of saved searches from sync chunks expunged from the local storage so far

**5.40.2.8 expungedTags()**

```
virtual quint64 quentier::synchronization::ISyncChunksDataCounters::expungedTags ( ) const [pure virtual], [noexcept]
```

Number of tags from sync chunks expunged from the local storage so far

**5.40.2.9 totalExpungedLinkedNotebooks()**

```
virtual quint64 quentier::synchronization::ISyncChunksDataCounters::totalExpungedLinkedNotebooks ( ) const [pure virtual], [noexcept]
```

Total number of expunged saved searches in downloaded sync chunks

**5.40.2.10 totalExpungedNotebooks()**

```
virtual quint64 quentier::synchronization::ISyncChunksDataCounters::totalExpungedNotebooks ( ) const [pure virtual], [noexcept]
```

Total number of expunged notebooks in downloaded sync chunks

#### 5.40.2.11 totalExpungedSavedSearches()

```
virtual quint64 quentier::synchronization::ISyncChunksDataCounters::totalExpungedSavedSearches  
( ) const [pure virtual], [noexcept]
```

Total number of expunged saved searches in downloaded sync chunks

#### 5.40.2.12 totalExpungedTags()

```
virtual quint64 quentier::synchronization::ISyncChunksDataCounters::totalExpungedTags ( )  
const [pure virtual], [noexcept]
```

Total number of expunged tags in downloaded sync chunks

#### 5.40.2.13 totalLinkedNotebooks()

```
virtual quint64 quentier::synchronization::ISyncChunksDataCounters::totalLinkedNotebooks ( )  
const [pure virtual], [noexcept]
```

Total number of new or updated linked notebooks in downloaded sync chunks

#### 5.40.2.14 totalNotebooks()

```
virtual quint64 quentier::synchronization::ISyncChunksDataCounters::totalNotebooks ( ) const  
[pure virtual], [noexcept]
```

Total number of new or updated notebooks in downloaded sync chunks

#### 5.40.2.15 totalSavedSearches()

```
virtual quint64 quentier::synchronization::ISyncChunksDataCounters::totalSavedSearches ( )  
const [pure virtual], [noexcept]
```

Total number of new or updated saved searches in downloaded sync chunks

#### 5.40.2.16 totalTags()

```
virtual quint64 quentier::synchronization::ISyncChunksDataCounters::totalTags ( ) const [pure  
virtual], [noexcept]
```

Total number of new or updated tags in downloaded sync chunks

#### 5.40.2.17 updatedLinkedNotebooks()

```
virtual quint64 quentier::synchronization::ISyncChunksDataCounters::updatedLinkedNotebooks ( )  
const [pure virtual], [noexcept]
```

Number of linked notebooks from sync chunks updated in the local storage so far

#### 5.40.2.18 updatedNotebooks()

```
virtual quint64 quantier::synchronization::ISyncChunksDataCounters::updatedNotebooks ( ) const
[pure virtual], [noexcept]
```

Number of notebooks from sync chunks updated in the local storage so far

#### 5.40.2.19 updatedSavedSearches()

```
virtual quint64 quantier::synchronization::ISyncChunksDataCounters::updatedSavedSearches ( )
const [pure virtual], [noexcept]
```

Number of saved searches from sync chunks updated in the local storage so far

#### 5.40.2.20 updatedTags()

```
virtual quint64 quantier::synchronization::ISyncChunksDataCounters::updatedTags ( ) const
[pure virtual], [noexcept]
```

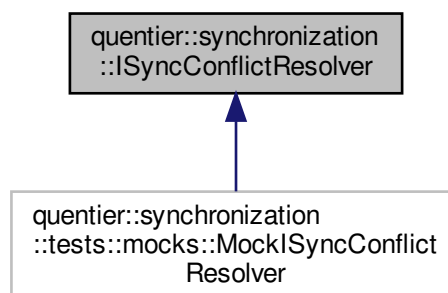
Number of tags from sync chunks updated in the local storage so far

## 5.41 quantier::synchronization::ISyncConflictResolver Class Reference

The [ISyncConflictResolver](#) interface provides methods used to resolve conflicts between local and remote versions of the same data item.

```
#include <ISyncConflictResolver.h>
```

Inheritance diagram for quantier::synchronization::ISyncConflictResolver:



## Classes

- struct [ConflictResolution](#)

The [ConflictResolution](#) struct is a namespace inside which several other structs determining actual conflict resolutions.

## Public Types

- using **NotebookConflictResolution** = std::variant< [ConflictResolution::UseTheirs](#), [ConflictResolution::UseMine](#), [ConflictResolution::IgnoreMine](#), [ConflictResolution::MoveMine](#)< qevercloud::Notebook > >
- using **NoteConflictResolution** = std::variant< [ConflictResolution::UseTheirs](#), [ConflictResolution::UseMine](#), [ConflictResolution::IgnoreMine](#), [ConflictResolution::MoveMine](#)< qevercloud::Note > >
- using **SavedSearchConflictResolution** = std::variant< [ConflictResolution::UseTheirs](#), [ConflictResolution::UseMine](#), [ConflictResolution::IgnoreMine](#), [ConflictResolution::MoveMine](#)< qevercloud::SavedSearch > >
- using **TagConflictResolution** = std::variant< [ConflictResolution::IgnoreMine](#), [ConflictResolution::UseTheirs](#), [ConflictResolution::UseMine](#), [ConflictResolution::MoveMine](#)< qevercloud::Tag > >

## Public Member Functions

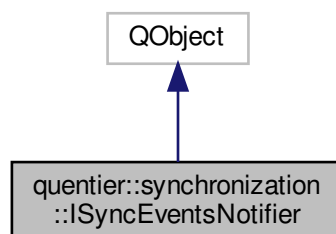
- virtual QFuture< NotebookConflictResolution > **resolveNotebookConflict** (qevercloud::Notebook theirs, qevercloud::Notebook mine)=0
- virtual QFuture< NoteConflictResolution > **resolveNoteConflict** (qevercloud::Note theirs, qevercloud::Note mine)=0
- virtual QFuture< SavedSearchConflictResolution > **resolveSavedSearchConflict** (qevercloud::SavedSearch theirs, qevercloud::SavedSearch mine)=0
- virtual QFuture< TagConflictResolution > **resolveTagConflict** (qevercloud::Tag theirs, qevercloud::Tag mine)=0

### 5.41.1 Detailed Description

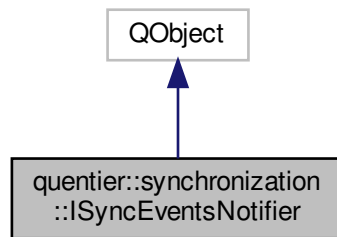
The [ISyncConflictResolver](#) interface provides methods used to resolve conflicts between local and remote versions of the same data item.

## 5.42 quantier::synchronization::ISyncEventsNotifier Class Reference

Inheritance diagram for quantier::synchronization::ISyncEventsNotifier:



Collaboration diagram for `quentier::synchronization::ISyncEventsNotifier`:



## Signals

- void [syncChunksDownloadProgress](#) (qint32 highestDownloadedUsn, qint32 highestServerUsn, qint32 lastPreviousUsn)
- void [syncChunksDownloaded](#) ()
- void [syncChunksDataProcessingProgress](#) (ISyncChunksDataCountersPtr counters)
- void [startLinkedNotebooksDataDownloading](#) (const QList< qevercloud::LinkedNotebook > &linkedNotebooks)
- void [linkedNotebookSyncChunksDownloadProgress](#) (qint32 highestDownloadedUsn, qint32 highestServerUsn, qint32 lastPreviousUsn, const qevercloud::LinkedNotebook &linkedNotebook)
- void [linkedNotebookSyncChunksDownloaded](#) (const qevercloud::LinkedNotebook &linkedNotebook)
- void [linkedNotebookSyncChunksDataProcessingProgress](#) (ISyncChunksDataCountersPtr counters, const qevercloud::LinkedNotebook &linkedNotebook)
- void [notesDownloadProgress](#) (quint32 notesDownloaded, quint32 totalNotesToDownload)
- void [linkedNotebookNotesDownloadProgress](#) (quint32 notesDownloaded, quint32 totalNotesToDownload, const qevercloud::LinkedNotebook &linkedNotebook)
- void [resourcesDownloadProgress](#) (quint32 resourcesDownloaded, quint32 totalResourcesToDownload)
- void [linkedNotebookResourcesDownloadProgress](#) (quint32 resourcesDownloaded, quint32 totalResourcesToDownload, const qevercloud::LinkedNotebook &linkedNotebook)
- void [downloadFinished](#) (bool dataDownloaded)
- void [userOwnSendStatusUpdate](#) (ISendStatusPtr sendStatus)
- void [linkedNotebookSendStatusUpdate](#) (const qevercloud::Guid &linkedNotebookGuid, ISendStatusPtr sendStatus)

## Protected Member Functions

- **ISyncEventsNotifier** (QObject \*parent=nullptr)

### 5.42.1 Member Function Documentation

#### 5.42.1.1 downloadFinished

```
void quentier::synchronization::ISyncEventsNotifier::downloadFinished (
    bool dataDownloaded ) [signal]
```

This signal is emitted when the initial download step is finished.



## Parameters

<i>dataDownloaded</i>	True if some data was actually downloaded during this step i.e. there were some updates on Evernote servers compared to local state, false otherwise.
-----------------------	---

**5.42.1.2 linkedNotebookNotesDownloadProgress**

```
void quantier::synchronization::ISyncEventsNotifier::linkedNotebookNotesDownloadProgress (
    quint32 notesDownloaded,
    quint32 totalNotesToDownload,
    const qevercloud::LinkedNotebook & linkedNotebook ) [signal]
```

This signal is emitted on each successful download of full note data from some linked notebook.

## Parameters

<i>notesDownloaded</i>	The number of notes downloaded by the moment
<i>totalNotesToDownload</i>	The total number of notes that need to be downloaded
<i>linkedNotebook</i>	The linked notebook which notes download progress is being reported

**5.42.1.3 linkedNotebookResourcesDownloadProgress**

```
void quantier::synchronization::ISyncEventsNotifier::linkedNotebookResourcesDownloadProgress (
    quint32 resourcesDownloaded,
    quint32 totalResourcesToDownload,
    const qevercloud::LinkedNotebook & linkedNotebook ) [signal]
```

This signal is emitted on each successful download of full resource data from linked notebooks during the incremental sync (as individual resources are downloaded along with their notes during full sync).

## Parameters

<i>resourcesDownloaded</i>	The number of resources downloaded by the moment
<i>totalResourcesToDownload</i>	The total number of resources that need to be downloaded
<i>linkedNotebook</i>	The linked notebook which resources download progress is being reported

**5.42.1.4 linkedNotebookSendStatusUpdate**

```
void quantier::synchronization::ISyncEventsNotifier::linkedNotebookSendStatusUpdate (
    const qevercloud::Guid & linkedNotebookGuid,
    ISendStatusPtr sendStatus ) [signal]
```

This signal is emitted on each successful or unsuccessful attempt to send some new or locally modified data item from some linked notebook to Evernote.

## Parameters

<i>linkedNotebookGuid</i>	Guid of the linked notebook for which the send status was updated
<i>sendStatus</i>	The updated send status

**5.42.1.5 linkedNotebookSyncChunksDataProcessingProgress**

```
void quantier::synchronization::ISyncEventsNotifier::linkedNotebookSyncChunksDataProcessingProgress (
    ISyncChunksDataCountersPtr counters,
    const qevercloud::LinkedNotebook & linkedNotebook ) [signal]
```

This signal is emitted during some linked notebook's downloaded sync chunks contents processing and denotes the progress on that step.

## Parameters

<i>counters</i>	Updated sync chunks data counters
<i>linkedNotebook</i>	The linked notebook which sync chunks data processing progress is being reported

**5.42.1.6 linkedNotebookSyncChunksDownloaded**

```
void quantier::synchronization::ISyncEventsNotifier::linkedNotebookSyncChunksDownloaded (
    const qevercloud::LinkedNotebook & linkedNotebook ) [signal]
```

This signal is emitted when the sync chunks for data from some linked notebook are downloaded during "remote to local" synchronization step

## Parameters

<i>linkedNotebook</i>	The linked notebook which sync chunks were downloaded
-----------------------	---

**5.42.1.7 linkedNotebookSyncChunksDownloadProgress**

```
void quantier::synchronization::ISyncEventsNotifier::linkedNotebookSyncChunksDownloadProgress (
    quint32 highestDownloadedUsn,
    quint32 highestServerUsn,
    quint32 lastPreviousUsn,
    const qevercloud::LinkedNotebook & linkedNotebook ) [signal]
```

This signal is emitted during linked notebooks sync chunks downloading and denotes the progress of that step, individually for each linked notebook. The percentage of completeness can be computed roughly as  $(\text{highestDownloadedUsn} - \text{lastPreviousUsn}) / (\text{highestServerUsn} - \text{lastPreviousUsn}) * 100\%$ .

## Parameters

<i>highestDownloadedUsn</i>	The highest update sequence number within data items from linked notebook sync chunks downloaded so far
<i>highestServerUsn</i>	The current highest update sequence number within the linked notebook
<i>lastPreviousUsn</i>	The last update sequence number from previous sync of the given linked notebook; if current sync is the first one, this value is zero
<i>linkedNotebook</i>	The linked notebook which sync chunks download progress is reported

## 5.42.1.8 notesDownloadProgress

```
void quantier::synchronization::ISyncEventsNotifier::notesDownloadProgress (
    quint32 notesDownloaded,
    quint32 totalNotesToDownload ) [signal]
```

This signal is emitted on each successful download of full note data from user's own account.

## Parameters

<i>notesDownloaded</i>	The number of notes downloaded by the moment
<i>totalNotesToDownload</i>	The total number of notes that need to be downloaded

## 5.42.1.9 resourcesDownloadProgress

```
void quantier::synchronization::ISyncEventsNotifier::resourcesDownloadProgress (
    quint32 resourcesDownloaded,
    quint32 totalResourcesToDownload ) [signal]
```

This signal is emitted on each successful download of full resource data from user's own account during the incremental sync (as individual resources are downloaded along with their notes during full sync).

## Parameters

<i>resourcesDownloaded</i>	The number of resources downloaded by the moment
<i>totalResourcesToDownload</i>	The total number of resources that need to be downloaded

## 5.42.1.10 startLinkedNotebooksDataDownloading

```
void quantier::synchronization::ISyncEventsNotifier::startLinkedNotebooksDataDownloading (
    const QList< qevercloud::LinkedNotebook > & linkedNotebooks ) [signal]
```

This signal is emitted before the downloading of data corresponding to linked notebooks starts.

## Parameters

<i>linkedNotebooks</i>	Linked notebooks the data from which will start being downloaded after the execution of this callback
------------------------	---

**5.42.1.11 syncChunksDataProcessingProgress**

```
void quantier::synchronization::ISyncEventsNotifier::syncChunksDataProcessingProgress (
    ISyncChunksDataCountersPtr counters ) [signal]
```

This signal is emitted during user own account's downloaded sync chunks contents processing and denotes the progress on that step.

**5.42.1.12 syncChunksDownloaded**

```
void quantier::synchronization::ISyncEventsNotifier::syncChunksDownloaded ( ) [signal]
```

This signal is emitted when the sync chunks for data from user's own account are downloaded during the download synchronization step.

**5.42.1.13 syncChunksDownloadProgress**

```
void quantier::synchronization::ISyncEventsNotifier::syncChunksDownloadProgress (
    quint32 highestDownloadedUsn,
    quint32 highestServerUsn,
    quint32 lastPreviousUsn ) [signal]
```

This signal is emitted during user own account's sync chunks downloading and denotes the progress of that step. The percentage of completeness can be computed roughly as  $(\text{highestDownloadedUsn} - \text{lastPreviousUsn}) / (\text{highestServerUsn} - \text{lastPreviousUsn}) * 100\%$ .

## Parameters

<i>highestDownloadedUsn</i>	The highest update sequence number within data items from sync chunks downloaded so far
<i>highestServerUsn</i>	The current highest update sequence number within the account
<i>lastPreviousUsn</i>	The last update sequence number from previous sync; if current sync is the first one, this value is zero

**5.42.1.14 userOwnSendStatusUpdate**

```
void quantier::synchronization::ISyncEventsNotifier::userOwnSendStatusUpdate (
    ISendStatusPtr sendStatus ) [signal]
```

This signal is emitted on each successful or unsuccessful attempt to send some new or locally modified data item from user's own account to Evernote.

## Parameters

<i>sendStatus</i>	The updated send status
-------------------	-------------------------

## 5.43 quantier::synchronization::ISynchronizer Class Reference

### Public Types

- using **SyncResult** = std::pair< QFuture< ISyncResultPtr >, ISyncEventsNotifier \* >

### Public Member Functions

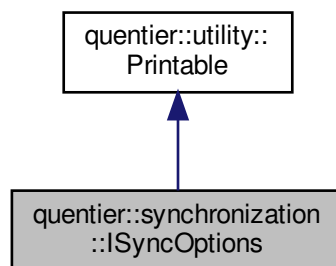
- virtual QFuture< std::pair< [Account](#), IAuthenticationInfoPtr > > **authenticateNewAccount** ()=0
- virtual QFuture< IAuthenticationInfoPtr > **authenticateAccount** ([Account](#) account)=0
- virtual SyncResult **synchronizeAccount** ([Account](#) account, local\_storage::ILocalStoragePtr localStorage, utility::cancellers::ICancelerPtr canceler, ISyncOptionsPtr options=nullptr, ISyncConflictResolverPtr syncConflictResolver=nullptr)=0
- virtual void **revokeAuthentication** (qevercloud::UserID userId)=0

## 5.44 quantier::synchronization::ISyncOptions Class Reference

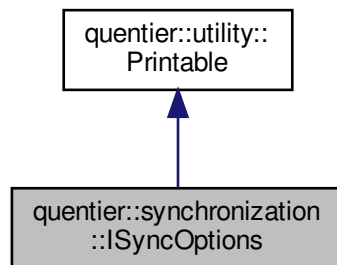
Options for synchronization process.

```
#include <ISyncOptions.h>
```

Inheritance diagram for quantier::synchronization::ISyncOptions:



Collaboration diagram for `quentier::synchronization::ISyncOptions`:



## Public Member Functions

- virtual bool [downloadNoteThumbnails](#) () const =0
- virtual std::optional< QDir > [inkNoteImagesStorageDir](#) () const =0
- virtual qevercloud::IRequestContextPtr [requestContext](#) () const =0
- virtual qevercloud::IRetryPolicyPtr [retryPolicy](#) () const =0
- virtual std::optional< quint32 > [maxConcurrentNoteDownloads](#) () const =0
- virtual std::optional< quint32 > [maxConcurrentResourceDownloads](#) () const =0

### 5.44.1 Detailed Description

Options for synchronization process.

### 5.44.2 Member Function Documentation

#### 5.44.2.1 `downloadNoteThumbnails()`

```
virtual bool quentier::synchronization::ISyncOptions::downloadNoteThumbnails ( ) const [pure virtual]
```

Flag to enable or disable downloading of note thumbnails during the sync. Note thumbnails are stored inside the local storage along with other note data.

#### 5.44.2.2 inkNoteImagesStorageDir()

```
virtual std::optional< QDir > quentier::synchronization::ISyncOptions::inkNoteImagesStorageDir  
( ) const [pure virtual]
```

Directory to store the downloaded ink note images. If this method returns `std::nullopt`, ink note images would not be downloaded during the sync.

Ink notes images data is stored inside note's resources but the format of the data is not documented, which makes it quite hard to implement note editor able to fully handle ink notes. An easier option is to visualize a static image corresponding to the last revision of the ink note. Such images need to be downloaded separately during the sync if they are required.

Ink note images are stored right in this directory without any subdirectories, file names correspond to pattern `<resource guid>.png`.

#### 5.44.2.3 maxConcurrentNoteDownloads()

```
virtual std::optional< quint32 > quentier::synchronization::ISyncOptions::maxConcurrentNote↵  
Downloads ( ) const [pure virtual]
```

Maximal number of concurrent note downloads. Allowing unlimited concurrent note downloads can lead to errors due to reaching the platform's limit on the number of open files. If `std::nullopt` is returned, the default limit is used.

#### 5.44.2.4 maxConcurrentResourceDownloads()

```
virtual std::optional< quint32 > quentier::synchronization::ISyncOptions::maxConcurrent↵  
ResourceDownloads ( ) const [pure virtual]
```

Maximal number of concurrent resource downloads. Allowing unlimited concurrent resource downloads can lead to errors due to reaching the platform's limit on the number of open files. If `std::nullopt` is returned, the default limit is used.

#### 5.44.2.5 requestContext()

```
virtual gevercloud::IRequestContextPtr quentier::synchronization::ISyncOptions::requestContext  
( ) const [pure virtual]
```

Request context with settings which should be used during the sync. If `nullptr` then request context with default settings would be used.

#### 5.44.2.6 retryPolicy()

```
virtual gevercloud::IRetryPolicyPtr quentier::synchronization::ISyncOptions::retryPolicy ( )  
const [pure virtual]
```

Retry policy which should be used during the sync. If `nullptr` then the default retry policy would be used.

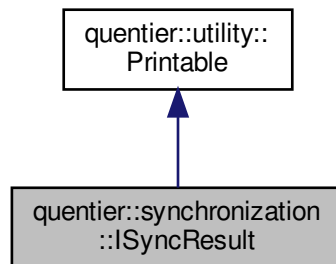
## 5.45 quantier::synchronization::ISyncOptionsBuilder Class Reference

### Public Member Functions

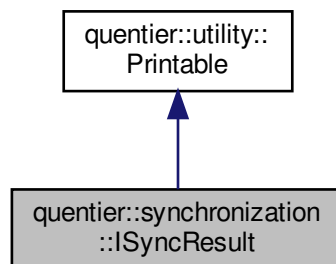
- virtual [ISyncOptionsBuilder](#) & **setDownloadNoteThumbnails** (bool value)=0
- virtual [ISyncOptionsBuilder](#) & **setLinkNoteImagesStorageDir** (std::optional< QDir > dir)=0
- virtual [ISyncOptionsBuilder](#) & **setRequestContext** (qevercloud::IRequestContextPtr ctx)=0
- virtual [ISyncOptionsBuilder](#) & **setRetryPolicy** (qevercloud::IRetryPolicyPtr retryPolicy)=0
- virtual [ISyncOptionsBuilder](#) & **setMaxConcurrentNoteDownloads** (std::optional< quint32 > max↔ ConcurrentNoteDownloads)=0
- virtual [ISyncOptionsBuilder](#) & **setMaxConcurrentResourceDownloads** (std::optional< quint32 > max↔ ConcurrentResourceDownloads)=0
- virtual ISyncOptionsPtr **build** ()=0

## 5.46 quantier::synchronization::ISyncResult Class Reference

Inheritance diagram for quantier::synchronization::ISyncResult:



Collaboration diagram for quantier::synchronization::ISyncResult:





## Public Member Functions

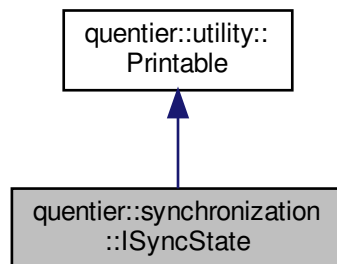
- virtual ISyncStatePtr **syncState** () const =0
- virtual ISyncChunksDataCountersPtr **userAccountSyncChunksDataCounters** () const =0
- virtual QHash< qevercloud::Guid, ISyncChunksDataCountersPtr > **linkedNotebookSyncChunksDataCounters** () const =0
- virtual bool **userAccountSyncChunksDownloaded** () const =0
- virtual QSet< qevercloud::Guid > **linkedNotebookGuidsWithSyncChunksDownloaded** () const =0
- virtual IDownloadNotesStatusPtr **userAccountDownloadNotesStatus** () const =0
- virtual QHash< qevercloud::Guid, IDownloadNotesStatusPtr > **linkedNotebookDownloadNotesStatuses** () const =0
- virtual IDownloadResourcesStatusPtr **userAccountDownloadResourcesStatus** () const =0
- virtual QHash< qevercloud::Guid, IDownloadResourcesStatusPtr > **linkedNotebookDownloadResourcesStatuses** () const =0
- virtual ISendStatusPtr **userAccountSendStatus** () const =0
- virtual QHash< qevercloud::Guid, ISendStatusPtr > **linkedNotebookSendStatuses** () const =0
- virtual StopSynchronizationError **stopSynchronizationError** () const =0

## 5.47 quantier::synchronization::ISyncState Class Reference

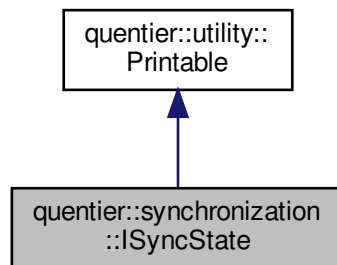
The [ISyncState](#) interface provides accessory methods to determine the sync state for the account.

```
#include <ISyncState.h>
```

Inheritance diagram for quantier::synchronization::ISyncState:



Collaboration diagram for `quentier::synchronization::ISyncState`:



## Public Member Functions

- virtual `qint32` **userDataUpdateCount** () const =0
- virtual `qevercloud::Timestamp` **userDataLastSyncTime** () const =0
- virtual `QHash< qevercloud::Guid, qint32 >` **linkedNotebookUpdateCounts** () const =0
- virtual `QHash< qevercloud::Guid, qevercloud::Timestamp >` **linkedNotebookLastSyncTimes** () const =0

### 5.47.1 Detailed Description

The [ISyncState](#) interface provides accessory methods to determine the sync state for the account.

## 5.48 quentier::synchronization::ISyncStateBuilder Class Reference

### Public Member Functions

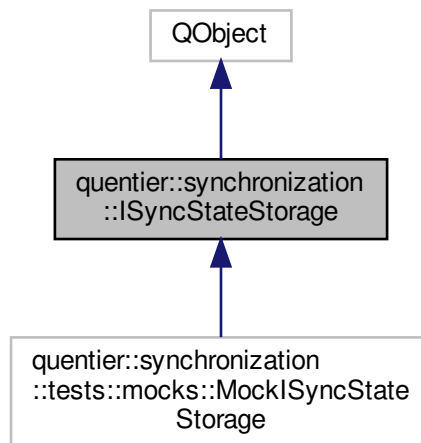
- virtual [ISyncStateBuilder](#) & **setUserDataUpdateCount** (`qint32` updateCount)=0
- virtual [ISyncStateBuilder](#) & **setUserDataLastSyncTime** (`qevercloud::Timestamp` lastSyncTime)=0
- virtual [ISyncStateBuilder](#) & **setLinkedNotebookUpdateCounts** (`QHash< qevercloud::Guid, qint32 >` updateCounts)=0
- virtual [ISyncStateBuilder](#) & **setLinkedNotebookLastSyncTimes** (`QHash< qevercloud::Guid, qevercloud::Timestamp >` lastSyncTimes)=0
- virtual `ISyncStatePtr` **build** ()=0

## 5.49 `quentier::synchronization::ISyncStateStorage` Class Reference

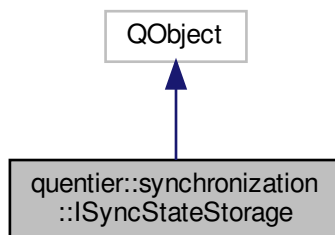
The [ISyncStateStorage](#) interface represents the interface of a class which stores sync state for given accounts persistently and provides access to previously stores sync states.

```
#include <ISyncStateStorage.h>
```

Inheritance diagram for `quentier::synchronization::ISyncStateStorage`:



Collaboration diagram for `quentier::synchronization::ISyncStateStorage`:



### Signals

- void [notifySyncStateUpdated](#) ([Account](#) account, `ISyncStatePtr` syncState)

## Public Member Functions

- virtual ISyncStatePtr **getSyncState** (const Account &account)=0
- virtual void **setSyncState** (const Account &account, ISyncStatePtr syncState)=0

## Protected Member Functions

- **ISyncStateStorage** (QObject \*parent=nullptr)

### 5.49.1 Detailed Description

The [ISyncStateStorage](#) interface represents the interface of a class which stores sync state for given accounts persistently and provides access to previously stores sync states.

### 5.49.2 Member Function Documentation

#### 5.49.2.1 notifySyncStateUpdated

```
void quantier::synchronization::ISyncStateStorage::notifySyncStateUpdated (
    Account account,
    ISyncStatePtr syncState ) [signal]
```

Classes implementing [ISyncStateStorage](#) interface are expected to emit notifySyncStateUpdated signal each time when sync state for the corresponding account is updated

## 5.50 quantier::ResourceRecognitionIndexItem::ITextItem Struct Reference

### Public Member Functions

- virtual QString **text** () const =0
- virtual int **weight** () const =0

## 5.51 quantier::synchronization::IUserStoreFactory Class Reference

### Public Member Functions

- virtual qevercloud::IUserStorePtr **createUserStore** (QString userStoreUrl={}, qevercloud::IRequest↵ ContextPtr ctx={}, qevercloud::IRetryPolicyPtr retryPolicy={})=0

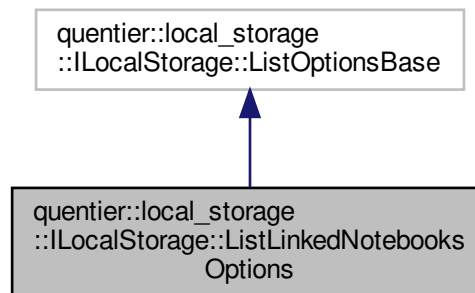
## 5.52 quantier::local\_storage::ILocalStorage::ListGuidsFilters Struct Reference

### Public Attributes

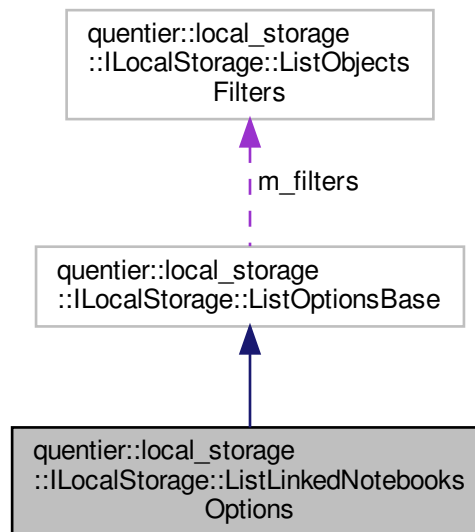
- std::optional< ListObjectsFilter > **m\_locallyModifiedFilter**
- std::optional< ListObjectsFilter > **m\_locallyFavoritedFilter**

## 5.53 quantier::local\_storage::ILocalStorage::ListLinkedNotebooksOptions Struct Reference

Inheritance diagram for quantier::local\_storage::ILocalStorage::ListLinkedNotebooksOptions:



Collaboration diagram for `quentier::local_storage::ILocalStorage::ListLinkedNotebooksOptions`:

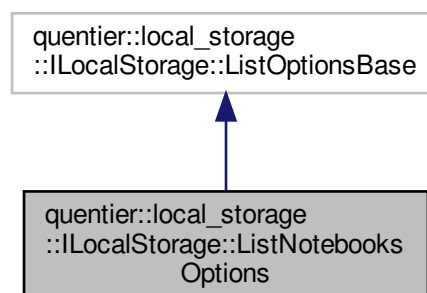


## Public Attributes

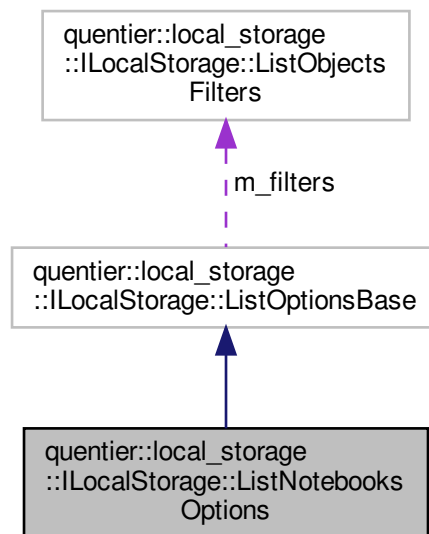
- `ListLinkedNotebooksOrder` **m\_order** = `ListLinkedNotebooksOrder::NoOrder`

## 5.54 quentier::local\_storage::ILocalStorage::ListNotebooksOptions Struct Reference

Inheritance diagram for `quentier::local_storage::ILocalStorage::ListNotebooksOptions`:



Collaboration diagram for quantier::local\_storage::ILocalStorage::ListNotebooksOptions:

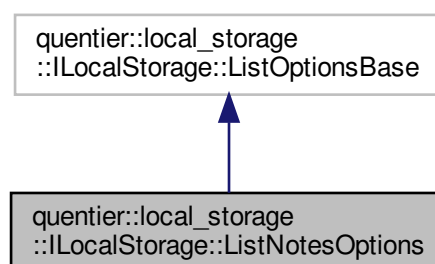


### Public Attributes

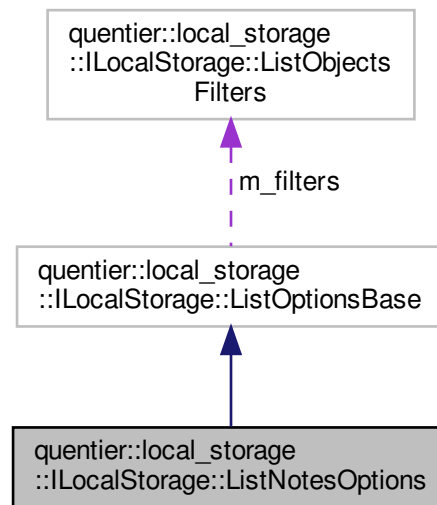
- ListNotebooksOrder **m\_order** = ListNotebooksOrder::NoOrder
- [Affiliation](#) **m\_affiliation** = Affiliation::Any
- `QList< qevercloud::Guid >` **m\_linkedNotebookGuids**

## 5.55 quantier::local\_storage::ILocalStorage::ListNotesOptions Struct Reference

Inheritance diagram for quantier::local\_storage::ILocalStorage::ListNotesOptions:



Collaboration diagram for `quentier::local_storage::ILocalStorage::ListNotesOptions`:



## Public Attributes

- ListNotesOrder **m\_order** = ListNotesOrder::NoOrder

## 5.56 quentier::local\_storage::ILocalStorage::ListObjectsFilters Struct Reference

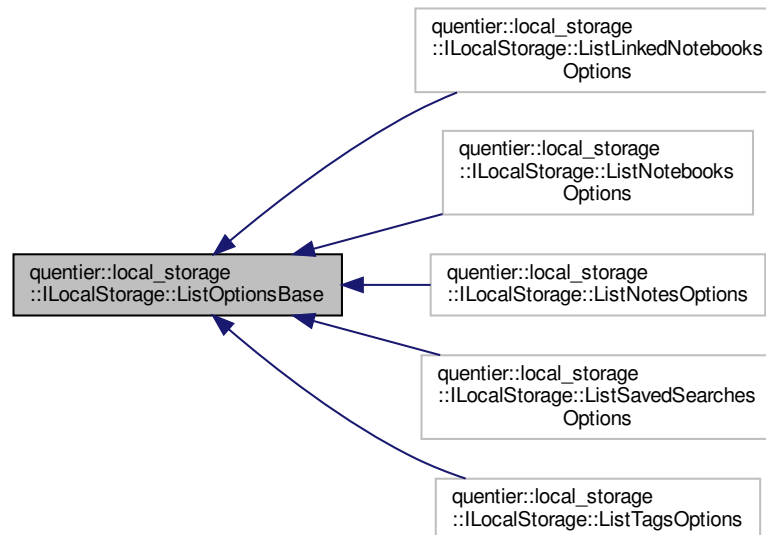
### Public Attributes

- `std::optional< ListObjectsFilter >` **m\_locallyModifiedFilter**
- `std::optional< ListObjectsFilter >` **m\_withGuidFilter**
- `std::optional< ListObjectsFilter >` **m\_localOnlyFilter**
- `std::optional< ListObjectsFilter >` **m\_locallyFavoritedFilter**

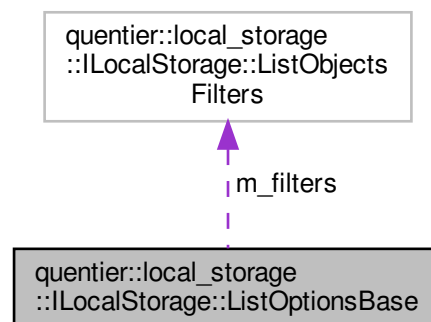


## 5.57 quantier::local\_storage::ILocalStorage::ListOptionsBase Struct Reference

Inheritance diagram for quantier::local\_storage::ILocalStorage::ListOptionsBase:



Collaboration diagram for quantier::local\_storage::ILocalStorage::ListOptionsBase:

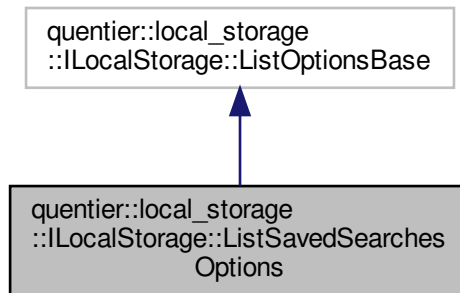


### Public Attributes

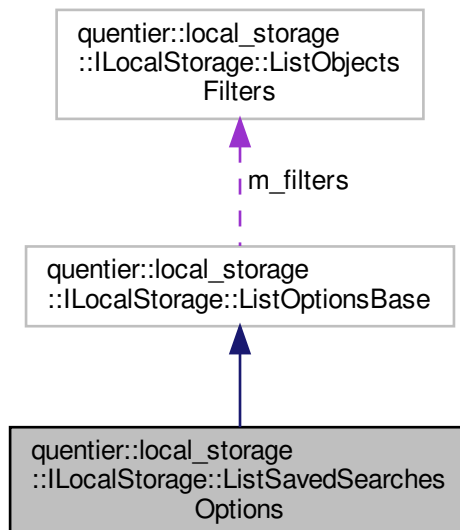
- [ListObjectsFilters](#) `m_filters` = {}
- quint64 `m_limit` = 0UL
- quint64 `m_offset` = 0UL
- OrderDirection `m_direction` = OrderDirection::Ascending

## 5.58 quantier::local\_storage::ILocalStorage::ListSavedSearchesOptions Struct Reference

Inheritance diagram for quantier::local\_storage::ILocalStorage::ListSavedSearchesOptions:



Collaboration diagram for quantier::local\_storage::ILocalStorage::ListSavedSearchesOptions:

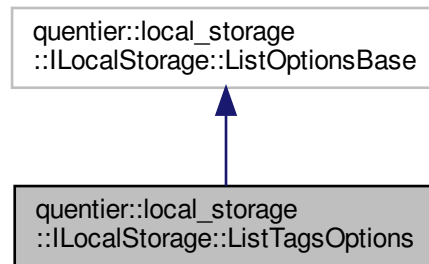


### Public Attributes

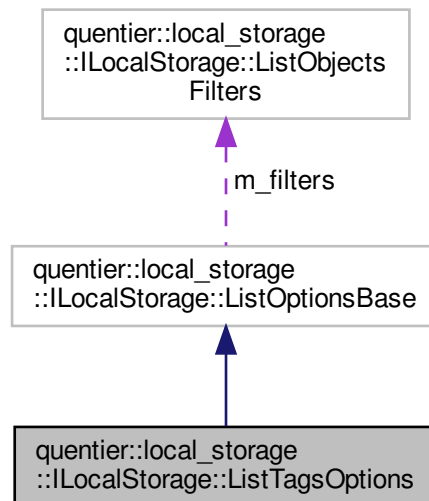
- ListSavedSearchesOrder **m\_order** = ListSavedSearchesOrder::NoOrder

## 5.59 quantier::local\_storage::ILocalStorage::ListTagsOptions Struct Reference

Inheritance diagram for quantier::local\_storage::ILocalStorage::ListTagsOptions:



Collaboration diagram for quantier::local\_storage::ILocalStorage::ListTagsOptions:



### Public Attributes

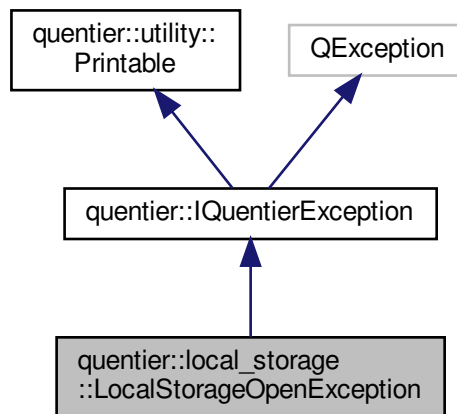
- ListTagsOrder **m\_order** = ListTagsOrder::NoOrder
- [Affiliation](#) **m\_affiliation** = Affiliation::Any
- QList< qevercloud::Guid > **m\_linkedNotebookGuids**
- [TagNotesRelation](#) **m\_tagNotesRelation** = [TagNotesRelation::Any](#)

## 5.60 quantier::local\_storage::LocalStorageOpenException Class Reference

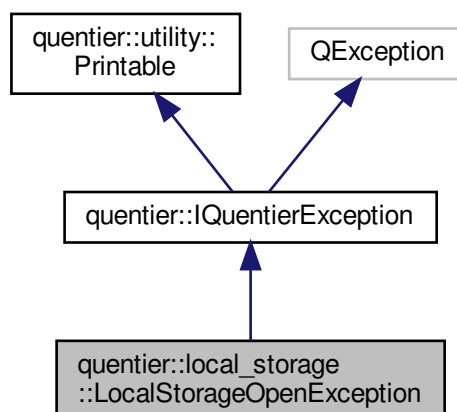
The [LocalStorageOpenException](#) is thrown on failure to open the local storage database.

```
#include <LocalStorageOpenException.h>
```

Inheritance diagram for quantier::local\_storage::LocalStorageOpenException:



Collaboration diagram for quantier::local\_storage::LocalStorageOpenException:



## Public Member Functions

- **LocalStorageOperationException** (const [ErrorString](#) &message)
- [LocalStorageOperationException](#) \* **clone** () const override
- void **raise** () const override

## Protected Member Functions

- QString [exceptionDisplayName](#) () const override

### 5.60.1 Detailed Description

The [LocalStorageOperationException](#) is thrown on failure to open the local storage database.

### 5.60.2 Member Function Documentation

#### 5.60.2.1 exceptionDisplayName()

```
QString quantier::local_storage::LocalStorageOperationException::exceptionDisplayName ( ) const
[override], [protected], [virtual]
```

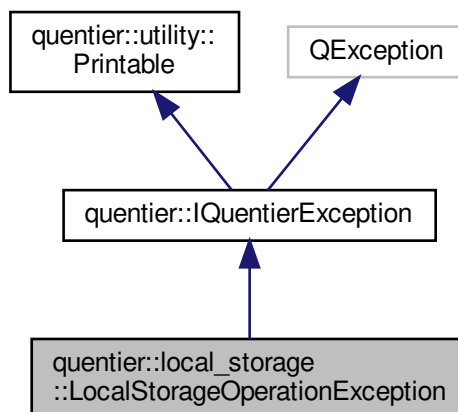
Implements [quantier::IQuantierException](#).

## 5.61 quantier::local\_storage::LocalStorageOperationException Class Reference

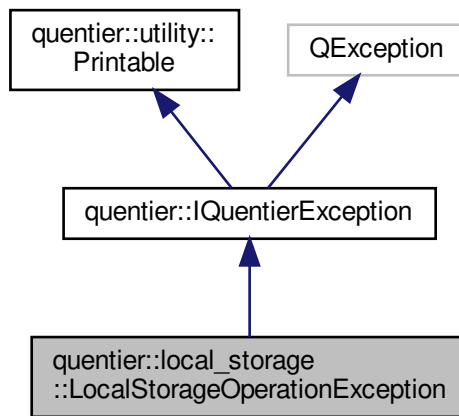
The [LocalStorageOperationException](#) is thrown when the local storage encounters some internal error during the attempt to process some operation.

```
#include <LocalStorageOperationException.h>
```

Inheritance diagram for quantier::local\_storage::LocalStorageOperationException:



Collaboration diagram for `quentier::local_storage::LocalStorageOperationException`:



## Public Member Functions

- `LocalStorageOperationException` ([ErrorString](#) message)
- `LocalStorageOperationException * clone ()` const override
- `void raise ()` const override

## Protected Member Functions

- `QString exceptionDisplayName ()` const override

### 5.61.1 Detailed Description

The [LocalStorageOperationException](#) is thrown when the local storage encounters some internal error during the attempt to process some operation.

### 5.61.2 Member Function Documentation

#### 5.61.2.1 exceptionDisplayName()

```

QString quentier::local_storage::LocalStorageOperationException::exceptionDisplayName ( )
const [override], [protected], [virtual]

```

Implements [quentier::IQuentierException](#).

## 5.62 quotient::utility::LRUCache< Key, Value, Allocator > Class Template Reference

### Public Types

- using **key\_type** = Key
- using **mapped\_type** = Value
- using **allocator\_type** = Allocator
- using **value\_type** = std::pair< key\_type, mapped\_type >
- using **container\_type** = std::list< value\_type, allocator\_type >
- using **size\_type** = typename container\_type::size\_type
- using **difference\_type** = typename container\_type::difference\_type
- using **iterator** = typename container\_type::iterator
- using **const\_iterator** = typename container\_type::const\_iterator
- using **reverse\_iterator** = std::reverse\_iterator< iterator >
- using **const\_reverse\_iterator** = std::reverse\_iterator< const\_iterator >
- using **reference** = value\_type &
- using **const\_reference** = const value\_type &
- using **pointer** = typename std::allocator\_traits< allocator\_type >::pointer
- using **const\_pointer** = typename std::allocator\_traits< allocator\_type >::const\_pointer

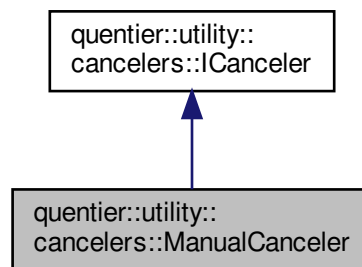
### Public Member Functions

- **LRUCache** (const std::size\_t maxSize=100)
- iterator **begin** () noexcept
- const\_iterator **begin** () const noexcept
- reverse\_iterator **rbegin** () noexcept
- const\_reverse\_iterator **rbegin** () const noexcept
- iterator **end** () noexcept
- const\_iterator **end** () const noexcept
- reverse\_iterator **rend** () noexcept
- const\_reverse\_iterator **rend** () const noexcept
- bool **empty** () const noexcept
- std::size\_t **size** () const noexcept
- std::size\_t **max\_size** () const noexcept
- void **clear** ()
- void **put** (const key\_type &key, const mapped\_type &value)
- const mapped\_type \* **get** (const key\_type &key) const noexcept
- bool **exists** (const key\_type &key) const noexcept
- bool **remove** (const key\_type &key) noexcept
- void **setMaxSize** (const std::size\_t maxSize)

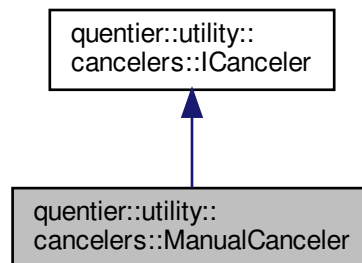
## 5.63 quantier::utility::cancelers::ManualCanceler Class Reference

```
#include <ManualCanceler.h>
```

Inheritance diagram for quantier::utility::cancelers::ManualCanceler:



Collaboration diagram for quantier::utility::cancelers::ManualCanceler:



### Public Member Functions

- **ManualCanceler** ([ManualCanceler](#) &&other) noexcept
- **ManualCanceler** & **operator=** ([ManualCanceler](#) &&other) noexcept
- void **cancel** () noexcept
- bool **isCanceled** () const noexcept override

#### 5.63.1 Detailed Description

[ICanceler](#) which allows one to manually call cancel method to cancel some task



## 5.63.2 Member Function Documentation

### 5.63.2.1 `cancel()`

```
void quentier::utility::cancelers::ManualCanceler::cancel ( ) [noexcept]
```

Manually cancel a task

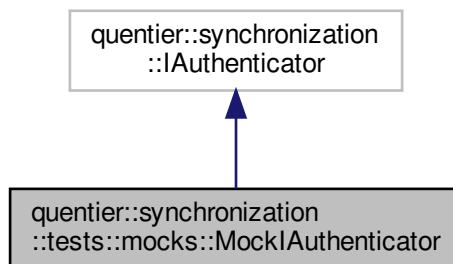
### 5.63.2.2 `isCanceled()`

```
bool quentier::utility::cancelers::ManualCanceler::isCanceled ( ) const [override], [virtual],  
[noexcept]
```

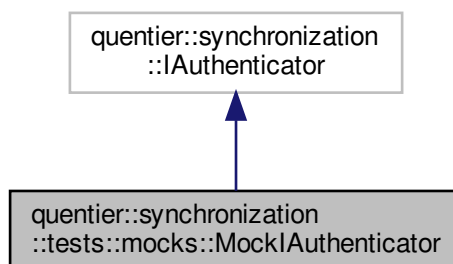
Implements [quentier::utility::cancelers::ICanceler](#).

## 5.64 `quentier::synchronization::tests::mocks::MockIAuthenticator` Class Reference

Inheritance diagram for `quentier::synchronization::tests::mocks::MockIAuthenticator`:



Collaboration diagram for `quentier::synchronization::tests::mocks::MockIAuthenticator`:

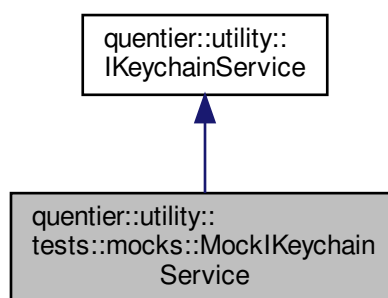


## Public Member Functions

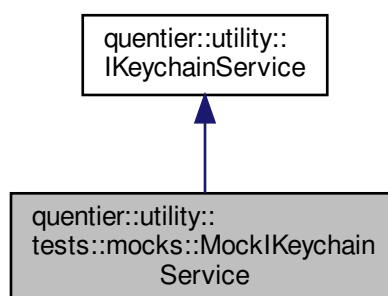
- **MOCK\_METHOD** (QFuture< IAuthenticationInfoPtr >, authenticateNewAccount,(),(override))
- **MOCK\_METHOD** (QFuture< IAuthenticationInfoPtr >, authenticateAccount,(Account account),(override))

## 5.65 quantier::utility::tests::mocks::MockIKeychainService Class Reference

Inheritance diagram for quantier::utility::tests::mocks::MockIKeychainService:



Collaboration diagram for quantier::utility::tests::mocks::MockIKeychainService:



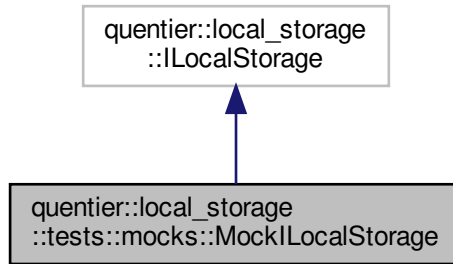
## Public Member Functions

- **MOCK\_METHOD** (QFuture< void >, writePassword,(QString service, QString key, QString password),(override))
- **MOCK\_METHOD** (QFuture< QString >, readPassword,(QString service, QString key),(const, override))
- **MOCK\_METHOD** (QFuture< void >, deletePassword,(QString service, QString key),(override))

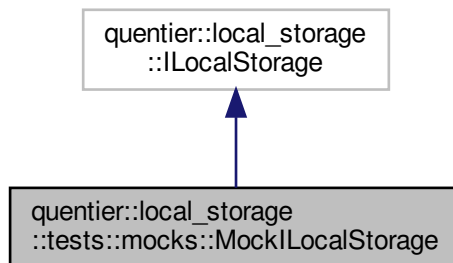
## Additional Inherited Members

## 5.66 quantier::local\_storage::tests::mocks::MockILocalStorage Class Reference

Inheritance diagram for quantier::local\_storage::tests::mocks::MockILocalStorage:



Collaboration diagram for quantier::local\_storage::tests::mocks::MockILocalStorage:



## Public Member Functions

- **MOCK\_METHOD** (QFuture< bool >, isVersionTooHigh,(),(const, override))
- **MOCK\_METHOD** (QFuture< bool >, requiresUpgrade,(),(const, override))
- **MOCK\_METHOD** (QFuture< QList< IPatchPtr > >, requiredPatches,(),(const, override))
- **MOCK\_METHOD** (QFuture< qint32 >, version,(),(const, override))
- **MOCK\_METHOD** (QFuture< qint32 >, highestSupportedVersion,(),(const, override))
- **MOCK\_METHOD** (QFuture< quint32 >, userCount,(),(const, override))
- **MOCK\_METHOD** (QFuture< void >, putUser,(qevercloud::User user),(override))
- **MOCK\_METHOD** (QFuture< std::optional< qevercloud::User > >, findUserById,(qevercloud::UserID userId),(const, override))

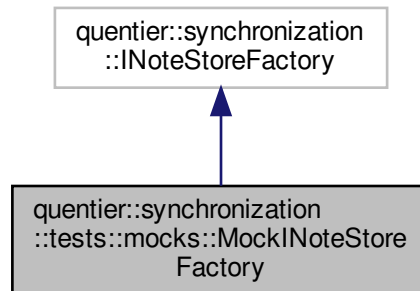
- **MOCK\_METHOD** (QFuture< void >, expungeUserById,(qevercloud::UserID userId),(override))
- **MOCK\_METHOD** (QFuture< quint32 >, notebookCount,(),(const, override))
- **MOCK\_METHOD** (QFuture< void >, putNotebook,(qevercloud::Notebook notebook),(override))
- **MOCK\_METHOD** (QFuture< std::optional< qevercloud::Notebook > >, findNotebookByLocalId,(QString localId),(const, override))
- **MOCK\_METHOD** (QFuture< std::optional< qevercloud::Notebook > >, findNotebookByGuid,(qevercloud::Guid guid),(const, override))
- **MOCK\_METHOD** (QFuture< std::optional< qevercloud::Notebook > >, findNotebookByName,(QString name, std::optional< qevercloud::Guid > linkedNotebookGuid),(const, override))
- **MOCK\_METHOD** (QFuture< std::optional< qevercloud::Notebook > >, findDefaultNotebook,(),(const, override))
- **MOCK\_METHOD** (QFuture< void >, expungeNotebookByLocalId,(QString localId),(override))
- **MOCK\_METHOD** (QFuture< void >, expungeNotebookByGuid,(qevercloud::Guid guid),(override))
- **MOCK\_METHOD** (QFuture< void >, expungeNotebookByName,(QString name, std::optional< qevercloud::Guid > linkedNotebookGuid),(override))
- **MOCK\_METHOD** (QFuture< QList< qevercloud::Notebook > >, listNotebooks,(ListNotebooksOptions options),(const, override))
- **MOCK\_METHOD** (QFuture< QList< qevercloud::SharedNotebook > >, listSharedNotebooks,(qevercloud::Guid notebookGuid),(const, override))
- **MOCK\_METHOD** (QFuture< QSet< qevercloud::Guid > >, listNotebookGuids,(ListGuidsFilters filters, std::optional< qevercloud::Guid > linkedNotebookGuid),(const, override))
- **MOCK\_METHOD** (QFuture< quint32 >, linkedNotebookCount,(),(const, override))
- **MOCK\_METHOD** (QFuture< void >, putLinkedNotebook,(qevercloud::LinkedNotebook linkedNotebook),(override))
- **MOCK\_METHOD** (QFuture< std::optional< qevercloud::LinkedNotebook > >, findLinkedNotebookByGuid,(qevercloud::Guid guid),(const, override))
- **MOCK\_METHOD** (QFuture< void >, expungeLinkedNotebookByGuid,(qevercloud::Guid guid),(override))
- **MOCK\_METHOD** (QFuture< QList< qevercloud::LinkedNotebook > >, listLinkedNotebooks,(ListLinkedNotebooksOptions options),(const, override))
- **MOCK\_METHOD** (QFuture< quint32 >, noteCount,(NoteCountOptions options),(const, override))
- **MOCK\_METHOD** (QFuture< quint32 >, noteCountPerNotebookLocalId,(QString notebookLocalId, NoteCountOptions options),(const, override))
- **MOCK\_METHOD** (QFuture< quint32 >, noteCountPerTagLocalId,(QString tagLocalId, NoteCountOptions options),(const, override))
- **MOCK\_METHOD** ((QFuture< QHash< QString, quint32 > >), noteCountsPerTags,(ListTagsOptions listTagsOptions, NoteCountOptions options),(const, override))
- **MOCK\_METHOD** (QFuture< quint32 >, noteCountPerNotebookAndTagLocalIds,(QStringList notebookLocalIds, QStringList tagLocalIds, NoteCountOptions options),(const, override))
- **MOCK\_METHOD** (QFuture< void >, putNote,(qevercloud::Note note),(override))
- **MOCK\_METHOD** (QFuture< void >, updateNote,(qevercloud::Note note, UpdateNoteOptions options),(override))
- **MOCK\_METHOD** (QFuture< std::optional< qevercloud::Note > >, findNoteByLocalId,(QString localId, FetchNoteOptions options),(const, override))
- **MOCK\_METHOD** (QFuture< std::optional< qevercloud::Note > >, findNoteByGuid,(qevercloud::Guid guid, FetchNoteOptions options),(const, override))
- **MOCK\_METHOD** (QFuture< void >, expungeNoteByLocalId,(QString localId),(override))
- **MOCK\_METHOD** (QFuture< void >, expungeNoteByGuid,(qevercloud::Guid guid),(override))
- **MOCK\_METHOD** (QFuture< QList< qevercloud::Note > >, listNotes,(FetchNoteOptions fetchOptions, ListNotesOptions options),(const, override))
- **MOCK\_METHOD** (QFuture< QList< qevercloud::Note > >, listNotesPerNotebookLocalId,(QString notebookLocalId, FetchNoteOptions fetchOptions, ListNotesOptions options),(const, override))
- **MOCK\_METHOD** (QFuture< QList< qevercloud::Note > >, listNotesPerTagLocalId,(QString tagLocalId, FetchNoteOptions fetchOptions, ListNotesOptions options),(const, override))
- **MOCK\_METHOD** (QFuture< QList< qevercloud::Note > >, listNotesPerNotebookAndTagLocalIds,(QStringList notebookLocalIds, QStringList tagLocalIds, FetchNoteOptions fetchOptions, ListNotesOptions options),(const, override))

- **MOCK\_METHOD** (QFuture< QList< qevercloud::Note > >, listNotesByLocalIds,(QStringList noteLocalIds, FetchNoteOptions fetchOptions, [ListNotesOptions](#) options),(const, override))
- **MOCK\_METHOD** (QFuture< QSet< qevercloud::Guid > >, listNoteGuids,([ListGuidsFilters](#) filters, std::optional< qevercloud::Guid > linkedNotebookGuid),(const, override))
- **MOCK\_METHOD** (QFuture< QList< qevercloud::Note > >, queryNotes,([NoteSearchQuery](#) query, FetchNoteOptions fetchOptions),(const, override))
- **MOCK\_METHOD** (QFuture< QStringList >, queryNoteLocalIds,([NoteSearchQuery](#) query),(const, override))
- **MOCK\_METHOD** (QFuture< quint32 >, tagCount(),(const, override))
- **MOCK\_METHOD** (QFuture< void >, putTag,(qevercloud::Tag tag),(override))
- **MOCK\_METHOD** (QFuture< std::optional< qevercloud::Tag > >, findTagByLocalId,(QString tagLocalId),(const, override))
- **MOCK\_METHOD** (QFuture< std::optional< qevercloud::Tag > >, findTagByGuid,(qevercloud::Guid tagGuid),(const, override))
- **MOCK\_METHOD** (QFuture< std::optional< qevercloud::Tag > >, findTagByName,(QString tagName, std::optional< QString > linkedNotebookGuid),(const, override))
- **MOCK\_METHOD** (QFuture< QList< qevercloud::Tag > >, listTags,([ListTagsOptions](#) options),(const, override))
- **MOCK\_METHOD** (QFuture< QList< qevercloud::Tag > >, listTagsPerNoteLocalId,(QString noteLocalId, [ListTagsOptions](#) options),(const, override))
- **MOCK\_METHOD** (QFuture< QSet< qevercloud::Guid > >, listTagGuids,([ListGuidsFilters](#) filters, std::optional< qevercloud::Guid > linkedNotebookGuid),(const, override))
- **MOCK\_METHOD** (QFuture< void >, expungeTagByLocalId,(QString tagLocalId),(override))
- **MOCK\_METHOD** (QFuture< void >, expungeTagByGuid,(qevercloud::Guid tagGuid),(override))
- **MOCK\_METHOD** (QFuture< void >, expungeTagByName,(QString name, std::optional< qevercloud::Guid > linkedNotebookGuid),(override))
- **MOCK\_METHOD** (QFuture< quint32 >, resourceCount,(NoteCountOptions options),(const, override))
- **MOCK\_METHOD** (QFuture< quint32 >, resourceCountPerNoteLocalId,(QString noteLocalId),(const, override))
- **MOCK\_METHOD** (QFuture< void >, putResource,(qevercloud::Resource resource),(override))
- **MOCK\_METHOD** (QFuture< std::optional< qevercloud::Resource > >, findResourceByLocalId,(QString resourceLocalId, FetchResourceOptions options),(const, override))
- **MOCK\_METHOD** (QFuture< std::optional< qevercloud::Resource > >, findResourceByGuid,(qevercloud::Guid resourceGuid, FetchResourceOptions options),(const, override))
- **MOCK\_METHOD** (QFuture< void >, expungeResourceByLocalId,(QString resourceLocalId),(override))
- **MOCK\_METHOD** (QFuture< void >, expungeResourceByGuid,(qevercloud::Guid resourceGuid),(override))
- **MOCK\_METHOD** (QFuture< quint32 >, savedSearchCount(),(const, override))
- **MOCK\_METHOD** (QFuture< void >, putSavedSearch,(qevercloud::SavedSearch search),(override))
- **MOCK\_METHOD** (QFuture< std::optional< qevercloud::SavedSearch > >, findSavedSearchByLocalId,(QString localId),(const, override))
- **MOCK\_METHOD** (QFuture< std::optional< qevercloud::SavedSearch > >, findSavedSearchByGuid,(qevercloud::Guid guid),(const, override))
- **MOCK\_METHOD** (QFuture< std::optional< qevercloud::SavedSearch > >, findSavedSearchByName,(QString name),(const, override))
- **MOCK\_METHOD** (QFuture< QList< qevercloud::SavedSearch > >, listSavedSearches,([ListSavedSearchesOptions](#) options),(const, override))
- **MOCK\_METHOD** (QFuture< QSet< qevercloud::Guid > >, listSavedSearchGuids,([ListGuidsFilters](#) filters),(const, override))
- **MOCK\_METHOD** (QFuture< void >, expungeSavedSearchByLocalId,(QString localId),(override))
- **MOCK\_METHOD** (QFuture< void >, expungeSavedSearchByGuid,(qevercloud::Guid guid),(override))
- **MOCK\_METHOD** (QFuture< qint32 >, highestUpdateSequenceNumber,(HighestUsnOption option),(const, override))
- **MOCK\_METHOD** (QFuture< qint32 >, highestUpdateSequenceNumber,(qevercloud::Guid linkedNotebookGuid),(const, override))
- **MOCK\_METHOD** ([ILocalStorageNotifier](#) \*, [notifier](#),(),(const, override))

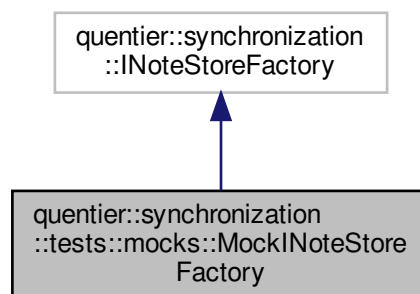
## Additional Inherited Members

### 5.67 quantier::synchronization::tests::mocks::MockINoteStoreFactory Class Reference

Inheritance diagram for quantier::synchronization::tests::mocks::MockINoteStoreFactory:



Collaboration diagram for quantier::synchronization::tests::mocks::MockINoteStoreFactory:

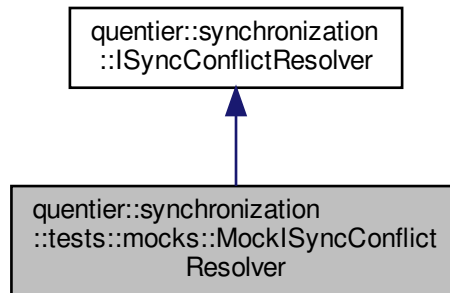


## Public Member Functions

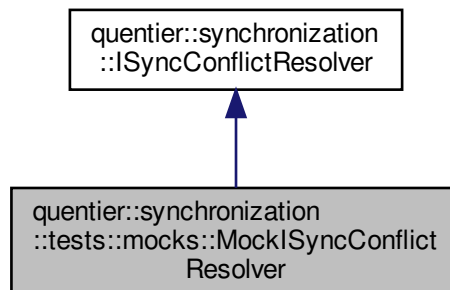
- **MOCK\_METHOD** (::qevercloud::INoteStorePtr, createNoteStore,(QString noteStoreUrl, std::optional<↵  
::qevercloud::Guid > linkedNotebookGuid, ::qevercloud::IRequestContextPtr ctx, ::qevercloud::IRetryPolicy<↵  
Ptr retryPolicy),(override))

## 5.68 quantier::synchronization::tests::mocks::MockISyncConflictResolver Class Reference

Inheritance diagram for quantier::synchronization::tests::mocks::MockISyncConflictResolver:



Collaboration diagram for quantier::synchronization::tests::mocks::MockISyncConflictResolver:



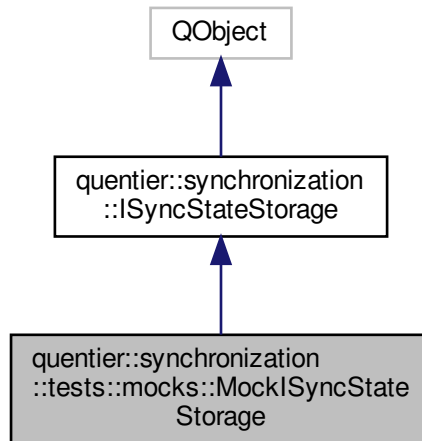
### Public Member Functions

- **MOCK\_METHOD** (QFuture< NotebookConflictResolution >, resolveNotebookConflict, (::qevercloud::Notebook theirs, ::qevercloud::Notebook mine), (override))
- **MOCK\_METHOD** (QFuture< NoteConflictResolution >, resolveNoteConflict, (::qevercloud::Note theirs, ::qevercloud::Note mine), (override))
- **MOCK\_METHOD** (QFuture< SavedSearchConflictResolution >, resolveSavedSearchConflict, (::qevercloud::SavedSearch theirs, ::qevercloud::SavedSearch mine), (override))
- **MOCK\_METHOD** (QFuture< TagConflictResolution >, resolveTagConflict, (::qevercloud::Tag theirs, ::qevercloud::Tag mine), (override))

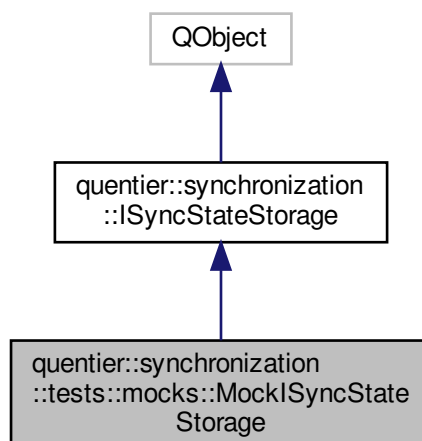
## Additional Inherited Members

### 5.69 `quentier::synchronization::tests::mocks::MockISyncStateStorage` Class Reference

Inheritance diagram for `quentier::synchronization::tests::mocks::MockISyncStateStorage`:



Collaboration diagram for `quentier::synchronization::tests::mocks::MockISyncStateStorage`:





## Public Member Functions

- **MOCK\_METHOD** (`ISyncStatePtr`, `getSyncState`, (`const Account &account`), (`override`))
- **MOCK\_METHOD** (`void`, `setSyncState`, (`const Account &account`, `ISyncStatePtr syncState`), (`override`))

## Additional Inherited Members

## 5.70 `quentier::synchronization::ISyncConflictResolver::ConflictResolution::MoveMine< T > Struct` Template Reference

The `MoveMine` conflict resolution means "before using theirs version change mine version as specified". Note: the data item inside this conflict resolution might refer to something different than mine version passed to the conflict resolution function. It can be that way because the actual conflict might be with another local data item instead of the passed one.

```
#include <ISyncConflictResolver.h>
```

## Public Types

- using `value_type` = `T`

## Public Attributes

- `T mine`

### 5.70.1 Detailed Description

```
template<class T>
struct quentier::synchronization::ISyncConflictResolver::ConflictResolution::MoveMine< T >
```

The `MoveMine` conflict resolution means "before using theirs version change mine version as specified". Note: the data item inside this conflict resolution might refer to something different than mine version passed to the conflict resolution function. It can be that way because the actual conflict might be with another local data item instead of the passed one.

### 5.70.2 Member Data Documentation

#### 5.70.2.1 `mine`

```
template<class T >
T quentier::synchronization::ISyncConflictResolver::ConflictResolution::MoveMine< T >::mine
```

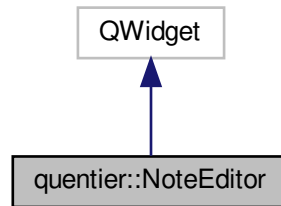
The changed value of mine data item.

## 5.71 quantier::NoteEditor Class Reference

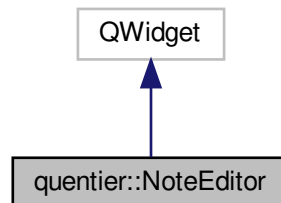
The [NoteEditor](#) class is a widget encapsulating all the functionality necessary for showing and editing notes.

```
#include <NoteEditor.h>
```

Inheritance diagram for quantier::NoteEditor:



Collaboration diagram for quantier::NoteEditor:



### Public Slots

- void [convertToNote](#) ()
- void [saveNoteToLocalStorage](#) ()
- void [setNoteTitle](#) (const QString &noteTitle)
- void [setTagIds](#) (const QStringList &tagLocalIds, const QStringList &tagGuids)
- void **undo** ()
- void **redo** ()
- void **cut** ()
- void **copy** ()
- void **paste** ()
- void **pasteUnformatted** ()
- void **selectAll** ()
- void **formatSelectionAsSourceCode** ()

- void **fontMenu** ()
- void **textBold** ()
- void **textItalic** ()
- void **textUnderline** ()
- void **textStrikethrough** ()
- void **textHighlight** ()
- void **alignLeft** ()
- void **alignCenter** ()
- void **alignRight** ()
- void **alignFull** ()
- void **findNext** (const QString &text, bool matchCase) const
- void **findPrevious** (const QString &text, bool matchCase) const
- void **replace** (const QString &textToReplace, const QString &replacementText, bool matchCase)
- void **replaceAll** (const QString &textToReplace, const QString &replacementText, bool matchCase)
- void **insertToDoCheckbox** ()
- void **insertInAppNoteLink** (const QString &userId, const QString &shardId, const QString &noteGuid, const QString &linkText)
- void **setSpellcheck** (bool enabled)
- void **setFont** (const QFont &font)
- void **setFontHeight** (int height)
- void **setFontColor** (const QColor &color)
- void **setBackgroundColor** (const QColor &color)
- void **setDefaultPalette** (const QPalette &pal)
- void **setDefaultFont** (const QFont &font)
- void **insertHorizontalLine** ()
- void **increaseFontSize** ()
- void **decreaseFontSize** ()
- void **increaseIndentation** ()
- void **decreaseIndentation** ()
- void **insertBulletedList** ()
- void **insertNumberedList** ()
- void **insertTableDialog** ()
- void **insertFixedWidthTable** (int rows, int columns, int widthInPixels)
- void **insertRelativeWidthTable** (int rows, int columns, double relativeWidth)
- void **insertTableRow** ()
- void **insertTableColumn** ()
- void **removeTableRow** ()
- void **removeTableColumn** ()
- void **addAttachmentDialog** ()
- void **saveAttachmentDialog** (const QByteArray &resourceHash)
- void **saveAttachmentUnderCursor** ()
- void **openAttachment** (const QByteArray &resourceHash)
- void **openAttachmentUnderCursor** ()
- void **copyAttachment** (const QByteArray &resourceHash)
- void **copyAttachmentUnderCursor** ()
- void **encryptSelectedText** ()
- void **decryptEncryptedTextUnderCursor** ()
- void **editHyperlinkDialog** ()
- void **copyHyperlink** ()
- void **removeHyperlink** ()
- void **onNoteLoadCancelled** ()

## Signals

- void **contentChanged** ()  
*contentChanged signal is emitted when the note's content (text) gets modified via manual editing (i.e. not any action like paste or cut)*
- void **noteAndNotebookFoundInLocalStorage** (qevercloud::Note note, qevercloud::Notebook notebook)  
*noteAndNotebookFoundInLocalStorage signal is emitted when note and its corresponding notebook were found within the local storage right before the note editor starts to load the note into the editor*
- void **noteNotFound** (QString noteLocalId)  
*noteNotFound signal is emitted when the note could not be found within the local storage by the provided local id*
- void **noteDeleted** (QString noteLocalId)  
*noteDeleted signal is emitted when the note displayed within the note editor is deleted. The note editor stops displaying the note in this case shortly after emitting this signal*
- void **noteModified** ()  
*noteModified signal is emitted when the note's content within the editor gets modified via some way - either via manual editing or via some action (like paste or cut)*
- void **notifyError** (ErrorString error)  
*notifyError signal is emitted when [NoteEditor](#) encounters some problem worth letting the user to know about*
- void **inAppNoteLinkClicked** (QString userId, QString shardId, QString noteGuid)  
*inAppNoteLinkClicked signal is emitted when the in-app note link is clicked within the note editor*
- void **inAppNoteLinkPasteRequested** (QString url, QString userId, QString shardId, QString noteGuid)
- void **convertedToNote** (qevercloud::Note note)
- void **cantConvertToNote** (ErrorString error)
- void **noteEditorHtmlUpdated** (QString html)
- void **currentNoteChanged** (qevercloud::Note note)
- void **spellCheckerNotReady** ()
- void **spellCheckerReady** ()
- void **noteLoaded** ()
- void **noteSavedToLocalStorage** (QString noteLocalId)  
*noteSavedToLocalStorage signal is emitted when the note has been saved within the local storage. [NoteEditor](#) doesn't do this on its own unless it's explicitly asked to do this via invoking its `saveNoteToLocalStorage` slot*
- void **failedToSaveNoteToLocalStorage** (ErrorString errorDescription, QString noteLocalId)  
*failedToSaveNoteToLocalStorage signal is emitted in case of failure to save the note to local storage*
- void **textBoldState** (bool state)
- void **textItalicState** (bool state)
- void **textUnderlineState** (bool state)
- void **textStrikethroughState** (bool state)
- void **textAlignLeftState** (bool state)
- void **textAlignCenterState** (bool state)
- void **textAlignRightState** (bool state)
- void **textAlignFullState** (bool state)
- void **textInsideOrderedListState** (bool state)
- void **textInsideUnorderedListState** (bool state)
- void **textInsideTableState** (bool state)
- void **textFontFamilyChanged** (QString fontFamily)
- void **textFontSizeChanged** (int fontSize)
- void **insertTableDialogRequested** ()

## Public Member Functions

- **NoteEditor** (QWidget \*parent=nullptr, Qt::WindowFlags flags={})
- void **initialize** (local\_storage::ILocalStoragePtr localStorage, [SpellChecker](#) &spellChecker, const [Account](#) &account, QThread \*backgroundJobsThread=nullptr, enml::IDecryptedTextCachePtr decryptedTextCache=nullptr)
- [INoteEditorBackend](#) \* **backend** () noexcept
- void **setBackend** ([INoteEditorBackend](#) \*backend)
- void **setAccount** (const [Account](#) &account)
- const QUndoStack \* **undoStack** () const noexcept
- void **setUndoStack** (QUndoStack \*pUndoStack)
- void **setInitialPageHtml** (const QString &html)
- void **setNoteNotFoundPageHtml** (const QString &html)
- void **setNoteDeletedPageHtml** (const QString &html)
- void **setNoteLoadingPageHtml** (const QString &html)
- QString **currentNoteLocalId** () const
- void **setCurrentNoteLocalId** (const QString &noteLocalId)
- void **clear** ()
- bool **isModified** () const noexcept
- bool **isEditorPageModified** () const noexcept
- bool **isNoteLoaded** () const noexcept
- qint64 **idleTime** () const noexcept
- void **setFocus** ()
- QString **selectedText** () const noexcept
- bool **hasSelection** () const noexcept
- bool **spellCheckEnabled** () const noexcept
- bool **print** (QPrinter &printer, [ErrorString](#) &errorDescription)
- bool **exportToPdf** (const QString &absoluteFilePath, [ErrorString](#) &errorDescription)
- bool **exportToEnex** (const QStringList &tagNames, QString &enex, [ErrorString](#) &errorDescription)
- QPalette **defaultPalette** () const
- const QFont \* **defaultFont** () const

## Protected Member Functions

- void **dragMoveEvent** (QDragMoveEvent \*pEvent) override
- void **dropEvent** (QDropEvent \*pEvent) override

### 5.71.1 Detailed Description

The [NoteEditor](#) class is a widget encapsulating all the functionality necessary for showing and editing notes.

### 5.71.2 Member Function Documentation

#### 5.71.2.1 backend()

```
INoteEditorBackend * quentier::NoteEditor::backend ( ) [noexcept]
```

#### Returns

the pointer to the note editor's backend

### 5.71.2.2 clear()

```
void quentier::NoteEditor::clear ( )
```

Clear the contents of the note editor

### 5.71.2.3 convertToNote

```
void quentier::NoteEditor::convertToNote ( ) [slot]
```

Invoke this slot to launch the asynchronous procedure of converting the current contents of the note editor to note; the convertedToNote signal would be emitted in response when the conversion is done

### 5.71.2.4 currentNoteLocalId()

```
QString quentier::NoteEditor::currentNoteLocalId ( ) const
```

Get the local id of the note currently set to the note editor

### 5.71.2.5 defaultFont()

```
const QFont * quentier::NoteEditor::defaultFont ( ) const
```

#### Returns

pointer to the default font used by the note editor; if no such font was set to the editor previously, returns null pointer

### 5.71.2.6 defaultPalette()

```
QPalette quentier::NoteEditor::defaultPalette ( ) const
```

#### Returns

palette containing default colors used by the editor; the palette is composed of colors from note editor widget's native palette but some of them might be overridden by colors from the palette specified previously via set↔DefaultPalette method: those colors from the specified palette which were valid

### 5.71.2.7 idleTime()

```
qint64 quentier::NoteEditor::idleTime ( ) const [noexcept]
```

#### Returns

the number of milliseconds since the last user's interaction with the note editor or -1 if there was no interaction or if no note is loaded at the moment

### 5.71.2.8 inAppNoteLinkPasteRequested

```
void quentier::NoteEditor::inAppNoteLinkPasteRequested (
    QString url,
    QString userId,
    QString shardId,
    QString noteGuid ) [signal]
```

inAppNoteLinkPasteRequested signal is emitted when the note editor detects the attempt to paste the in-app note link into the note editor; the link would not be inserted right away, instead this signal would be emitted. Whatever party managing the note editor is expected to connect some slot to this signal and provide the optionally amended link information to the note editor by sending the signal connected to its insertInAppNoteLink slot - this slot accepts both the URL of the link and the link text and performs the actual link insertion into the note. If the link text is empty, the URL itself is used as the link text.

### 5.71.2.9 initialize()

```
void quentier::NoteEditor::initialize (
    local_storage::ILocalStoragePtr localStorage,
    SpellChecker & spellChecker,
    const Account & account,
    QThread * backgroundJobsThread = nullptr,
    enml::IDecryptedTextCachePtr decryptedTextCache = nullptr )
```

[NoteEditor](#) requires [LocalStorageManagerAsync](#), [SpellChecker](#) and [Account](#) for its work but due to the particularities of Qt's .ui files processing these can't be passed right inside the constructor, hence here's a special initialization method

#### Parameters

<i>localStorage</i>	Local storage
<i>spellChecker</i>	Spell checker to be used by note editor
<i>account</i>	Current account
<i>backgroundJobsThread</i>	Pointer to the thread to be used for scheduling of background jobs of <a href="#">NoteEditor</a> ; if null, <a href="#">NoteEditor</a> 's background jobs would take place in GUI thread
<i>decryptedTextCache</i>	Decrypted text cache to be used for note rendering and text decryption. If null, a new instance would be created and used.

### 5.71.2.10 isEditorPageModified()

```
bool quentier::NoteEditor::isEditorPageModified ( ) const [noexcept]
```

#### Returns

true if there's content within the editor not yet converted to note, false otherwise

#### 5.71.2.11 isModified()

```
bool quantier::NoteEditor::isModified ( ) const [noexcept]
```

##### Returns

true if there's content within the editor not yet converted to note or not saved to local storage, false otherwise

#### 5.71.2.12 isNoteLoaded()

```
bool quantier::NoteEditor::isNoteLoaded ( ) const [noexcept]
```

##### Returns

true if the note last set to the editor has been fully loaded already, false otherwise

#### 5.71.2.13 saveNoteToLocalStorage

```
void quantier::NoteEditor::saveNoteToLocalStorage ( ) [slot]
```

Invoke this slot to launch the asynchronous procedure of saving the modified current note back to the local storage. If no note is set to the editor or if the note is not modified, no action would be performed. Otherwise `noteSaved↔ToLocalStorage` signal would be emitted in case of successful saving or `failedToSaveNoteToLocalStorage` would be emitted otherwise

#### 5.71.2.14 setAccount()

```
void quantier::NoteEditor::setAccount (
    const Account & account )
```

Set the current account to the note editor

#### 5.71.2.15 setBackend()

```
void quantier::NoteEditor::setBackend (
    INoteEditorBackend * backend )
```

This method can be used to set the backend to the note editor; the note editor has the default backend so this method is not obligatory to be called

#### 5.71.2.16 setCurrentNoteLocalId()

```
void quantier::NoteEditor::setCurrentNoteLocalId (
    const QString & noteLocalId )
```

Set note local id to the note editor. The note is being searched for within the local storage, in case of no note being found `noteNotFound` signal is emitted. Otherwise note editor page starts loading.



## Parameters

<i>note</i> ↔ <i>LocalId</i>	The local id of note
---------------------------------	----------------------

**5.71.2.17 setDefaultFont**

```
void quantier::NoteEditor::setDefaultFont (
    const QFont & font ) [slot]
```

Sets the font which would be used by the editor by default

## Parameters

<i>font</i>	The font to be used by the editor by default
-------------	--

**5.71.2.18 setDefaultPalette**

```
void quantier::NoteEditor::setDefaultPalette (
    const QPalette & pal ) [slot]
```

Sets the palette with colors to be used by the editor. New colors are applied after the note is fully loaded. If no note is set to the editor, the palette is simply remembered for the next note to be loaded into it.

Colors within the palette and their usage:

1. WindowText - used as default font color
2. Base - used as default background color
3. HighlightedText - used as font color for selected text
4. Highlight - used as background color for selected text

## Parameters

<i>pal</i>	The palette to be set. Invalid colors from it are substituted by colors from widget's palette by the editor
------------	---

**5.71.2.19 setFocus()**

```
void quantier::NoteEditor::setFocus ( )
```

Sets the focus to the backend note editor widget

#### 5.71.2.20 setInitialPageHtml()

```
void quentier::NoteEditor::setInitialPageHtml (
    const QString & html )
```

Set the html to be displayed when the note is not set to the editor

#### 5.71.2.21 setNoteDeletedPageHtml()

```
void quentier::NoteEditor::setNoteDeletedPageHtml (
    const QString & html )
```

Set the html to be displayed when the note set to the editor was deleted from the local storage (either marked as deleted or deleted permanently i.e. expunged)

#### 5.71.2.22 setNoteLoadingPageHtml()

```
void quentier::NoteEditor::setNoteLoadingPageHtml (
    const QString & html )
```

Set the html to be displayed when the note set to the editor is being loaded into it

#### 5.71.2.23 setNoteNotFoundPageHtml()

```
void quentier::NoteEditor::setNoteNotFoundPageHtml (
    const QString & html )
```

Set the html to be displayed when the note attempted to be set to the editor was not found within the local storage

#### 5.71.2.24 setNoteTitle

```
void quentier::NoteEditor::setNoteTitle (
    const QString & noteTitle ) [slot]
```

Invoke this slot to set the title to the note displayed via the note editor. The note editor itself doesn't manage the note title in any way so any external code using the note editor can set the title to the note editor's note which would be considered modified if the title is new and then eventually the note would be saved to local storage

##### Parameters

<i>noteTitle</i>	The title of the note
------------------	-----------------------

#### 5.71.2.25 setTagIds

```
void quentier::NoteEditor::setTagIds (
```

```
const QStringList & tagLocalIds,
const QStringList & tagGuids ) [slot]
```

Invoke this slot to set tag local ids and/or tag guides to the note displayed via the note editor. The note editor itself doesn't manage the note tags in any way so any external code using the note editor can set the tag ids to the note editor's internal note which would be considered modified if the tag ids are new and then eventually the note would be saved to local storage

#### Parameters

<i>tagLocalIds</i>	The list of tag local ids for the note
<i>tagGuids</i>	The list of tag guides for the note

#### 5.71.2.26 setUndoStack()

```
void quantier::NoteEditor::setUndoStack (
    QUndoStack * pUndoStack )
```

Set the undo stack for the note editor to use

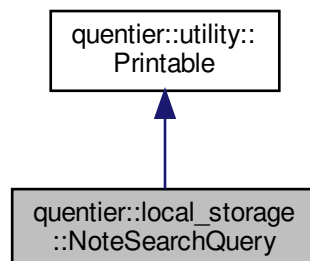
#### 5.71.2.27 undoStack()

```
const QUndoStack * quantier::NoteEditor::undoStack ( ) const [noexcept]
```

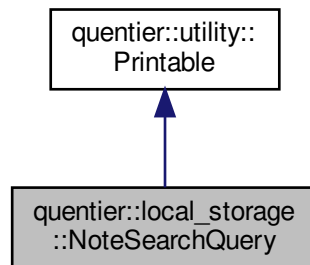
Get the undo stack serving to the note editor

## 5.72 quantier::local\_storage::NoteSearchQuery Class Reference

Inheritance diagram for quantier::local\_storage::NoteSearchQuery:



Collaboration diagram for `quentier::local_storage::NoteSearchQuery`:



## Public Member Functions

- **NoteSearchQuery** (const [NoteSearchQuery](#) &other)
- **NoteSearchQuery** ([NoteSearchQuery](#) &&other) noexcept
- [NoteSearchQuery](#) & **operator=** (const [NoteSearchQuery](#) &other)
- [NoteSearchQuery](#) & **operator=** ([NoteSearchQuery](#) &&other) noexcept
- bool **isEmpty** () const
- void **clear** ()
- QString **queryString** () const
- bool **setQueryString** (const QString &[queryString](#), [ErrorString](#) &error)
- QString **notebookModifier** () const
- bool **hasAnyModifier** () const
- const QStringList & **tagNames** () const
- const QStringList & **negatedTagNames** () const
- bool **hasAnyTag** () const
- bool **hasNegatedAnyTag** () const
- const QStringList & **titleNames** () const
- const QStringList & **negatedTitleNames** () const
- bool **hasAnyTitleName** () const
- bool **hasNegatedAnyTitleName** () const
- const QList< qint64 > & **creationTimestamps** () const
- const QList< qint64 > & **negatedCreationTimestamps** () const
- bool **hasAnyCreationTimestamp** () const
- bool **hasNegatedAnyCreationTimestamp** () const
- const QList< qint64 > & **modificationTimestamps** () const
- const QList< qint64 > & **negatedModificationTimestamps** () const
- bool **hasAnyModificationTimestamp** () const
- bool **hasNegatedAnyModificationTimestamp** () const
- const QStringList & **resourceMimeTypes** () const
- const QStringList & **negatedResourceMimeTypes** () const
- bool **hasAnyResourceMimeType** () const
- bool **hasNegatedAnyResourceMimeType** () const
- const QList< qint64 > & **subjectDateTimestamps** () const
- const QList< qint64 > & **negatedSubjectDateTimestamps** () const
- bool **hasAnySubjectDateTimestamp** () const
- bool **hasNegatedAnySubjectDateTimestamp** () const

- const QList< double > & **latitudes** () const
- const QList< double > & **negatedLatitudes** () const
- bool **hasAnyLatitude** () const
- bool **hasNegatedAnyLatitude** () const
- const QList< double > & **longitudes** () const
- const QList< double > & **negatedLongitudes** () const
- bool **hasAnyLongitude** () const
- bool **hasNegatedAnyLongitude** () const
- const QList< double > & **altitudes** () const
- const QList< double > & **negatedAltitudes** () const
- bool **hasAnyAltitude** () const
- bool **hasNegatedAnyAltitude** () const
- const QStringList & **authors** () const
- const QStringList & **negatedAuthors** () const
- bool **hasAnyAuthor** () const
- bool **hasNegatedAnyAuthor** () const
- const QStringList & **sources** () const
- const QStringList & **negatedSources** () const
- bool **hasAnySource** () const
- bool **hasNegatedAnySource** () const
- const QStringList & **sourceApplications** () const
- const QStringList & **negatedSourceApplications** () const
- bool **hasAnySourceApplication** () const
- bool **hasNegatedAnySourceApplication** () const
- const QStringList & **contentClasses** () const
- const QStringList & **negatedContentClasses** () const
- bool **hasAnyContentClass** () const
- bool **hasNegatedAnyContentClass** () const
- const QStringList & **placeNames** () const
- const QStringList & **negatedPlaceNames** () const
- bool **hasAnyPlaceName** () const
- bool **hasNegatedAnyPlaceName** () const
- const QStringList & **applicationData** () const
- const QStringList & **negatedApplicationData** () const
- bool **hasAnyApplicationData** () const
- bool **hasNegatedAnyApplicationData** () const
- const QList< qint64 > & **reminderOrders** () const
- const QList< qint64 > & **negatedReminderOrders** () const
- bool **hasAnyReminderOrder** () const
- bool **hasNegatedAnyReminderOrder** () const
- const QList< qint64 > & **reminderTimes** () const
- const QList< qint64 > & **negatedReminderTimes** () const
- bool **hasAnyReminderTime** () const
- bool **hasNegatedAnyReminderTime** () const
- const QList< qint64 > & **reminderDoneTimes** () const
- const QList< qint64 > & **negatedReminderDoneTimes** () const
- bool **hasAnyReminderDoneTime** () const
- bool **hasNegatedAnyReminderDoneTime** () const
- bool **hasUnfinishedToDo** () const
- bool **hasNegatedUnfinishedToDo** () const
- bool **hasFinishedToDo** () const
- bool **hasNegatedFinishedToDo** () const
- bool **hasAnyToDo** () const
- bool **hasNegatedAnyToDo** () const
- bool **hasEncryption** () const

- bool **hasNegatedEncryption** () const
- const QStringList & **contentSearchTerms** () const
- const QStringList & **negatedContentSearchTerms** () const
- bool **hasAnyContentSearchTerms** () const
- bool **isMatcheable** () const
- QTextStream & **print** (QTextStream &strm) const override

## 5.72.1 Member Function Documentation

### 5.72.1.1 notebookModifier()

```
QString quentier::local_storage::NoteSearchQuery::notebookModifier ( ) const
```

If query string has "notebook:<notebook name>" scope modifier, this method returns the name of the notebook, otherwise it returns empty string

### 5.72.1.2 print()

```
QTextStream & quentier::local_storage::NoteSearchQuery::print (
    QTextStream & strm ) const [override], [virtual]
```

Implements [quentier::utility::Printable](#).

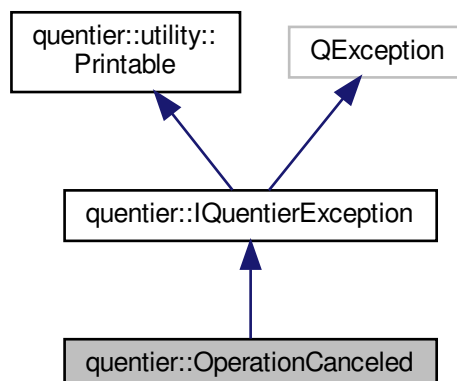
### 5.72.1.3 queryString()

```
QString quentier::local_storage::NoteSearchQuery::queryString ( ) const
```

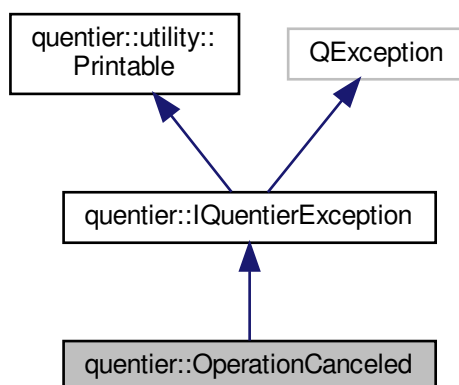
Returns the original non-parsed query string

## 5.73 quentier::OperationCanceled Class Reference

Inheritance diagram for quentier::OperationCanceled:



Collaboration diagram for quantier::OperationCanceled:



## Public Member Functions

- [OperationCanceled](#) \* `clone` () const override
- void `raise` () const override

## Protected Member Functions

- QString `exceptionDisplayName` () const override

### 5.73.1 Member Function Documentation

#### 5.73.1.1 exceptionDisplayName()

```
QString quantier::OperationCanceled::exceptionDisplayName ( ) const [override], [protected],  
[virtual]
```

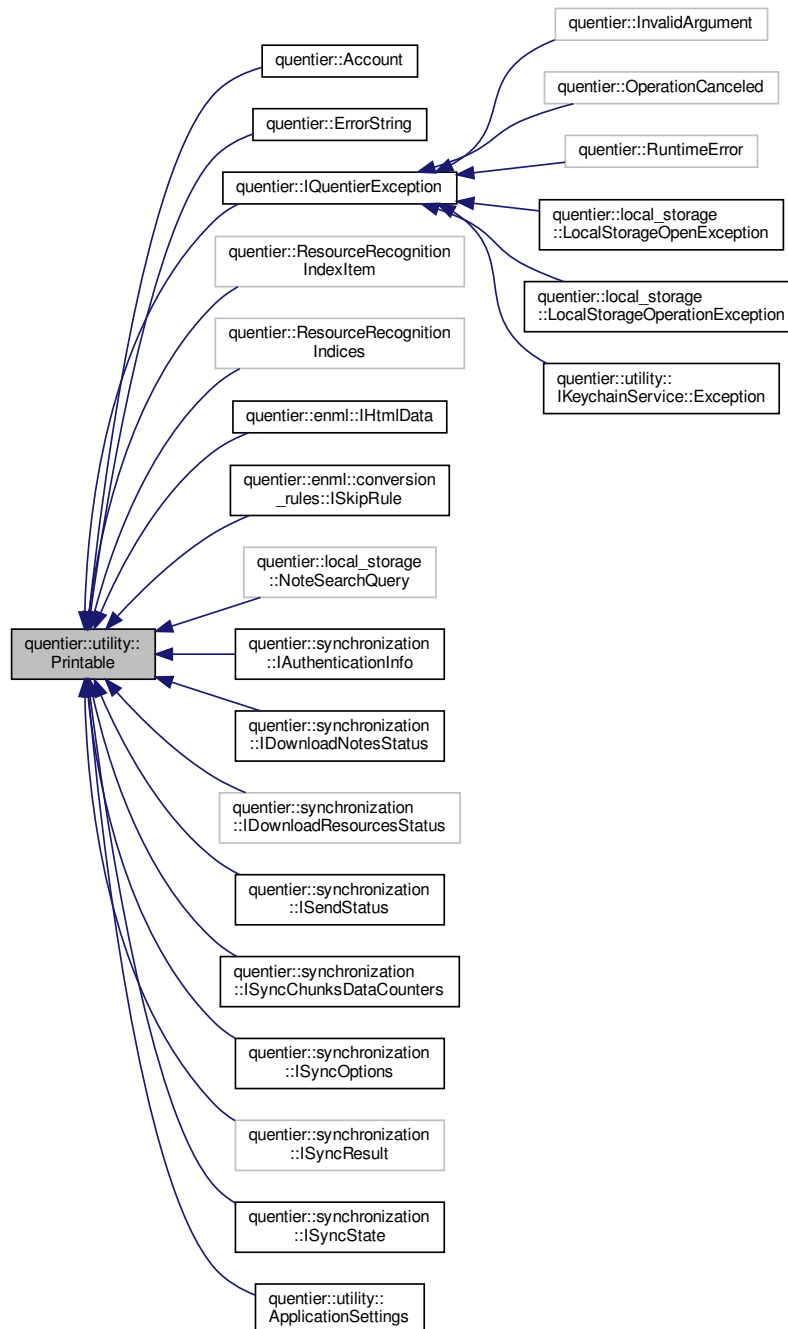
Implements [quantier::IQuantierException](#).

## 5.74 quantier::utility::Printable Class Reference

The [Printable](#) class is the interface for Quantier's internal classes which should be able to write themselves into QTextStream and/or convert to QString.

```
#include <Printable.h>
```

Inheritance diagram for quantier::utility::Printable:





## Public Member Functions

- virtual QTextStream & **print** (QTextStream &strm) const =0
- QString **toString** () const

## Friends

- QUENTIER\_EXPORT QTextStream & **operator**<< (QTextStream &strm, const Printable &printable)
- QUENTIER\_EXPORT QDebug & **operator**<< (QDebug &debug, const Printable &printable)

### 5.74.1 Detailed Description

The [Printable](#) class is the interface for Quentier's internal classes which should be able to write themselves into QTextStream and/or convert to QString.

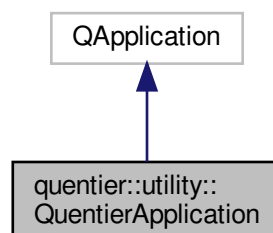
## 5.75 QPromise< T > Class Template Reference

### Public Member Functions

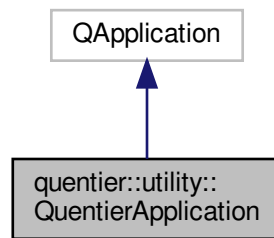
- **QPromise** (QPromise< T > &&other) noexcept
- **QPromise** (QFutureInterface< T > &other)
- **QPromise** & **operator=** (QPromise< T > &&other) noexcept
- QFuture< T > **future** () const
- template<typename U , typename = std::enable\_if\_t< std::is\_same\_v<U, T> || std::is\_convertible\_v<U, T>>> void **addResult** (U &&result, int index=-1)
- void **setException** (const QException &e)
- void **start** ()
- void **finish** ()
- void **suspendIfRequested** ()
- bool **isCanceled** () const
- void **setProgressRange** (int minimum, int maximum)
- void **setProgressValue** (int progressValue)
- void **setProgressValueAndText** (int progressValue, const QString &progressText)
- void **swap** (QPromise< T > &other) noexcept

## 5.76 quentier::utility::QuentierApplication Class Reference

Inheritance diagram for quentier::utility::QuentierApplication:



Collaboration diagram for `quentier::utility::QuentierApplication`:



### Public Member Functions

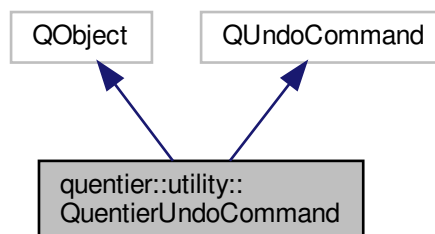
- **QuentierApplication** (int &argc, char \*argv[])
- bool **notify** (QObject \*object, QEvent \*event) override
- bool **event** (QEvent \*event) override

## 5.77 quentier::utility::QuentierUndoCommand Class Reference

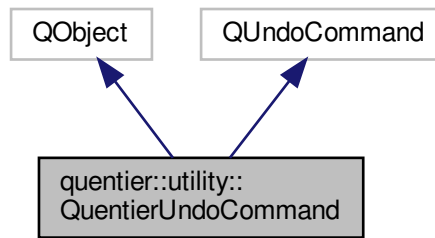
The [QuentierUndoCommand](#) class has the sole purpose of working around one quirky aspect of Qt's undo/redo framework: when you push `QUndoCommand` to `QUndoStack`, it calls "redo" method of that command. This class offers subclasses to implement their own methods for actual "undo" and "redo" commands while ignoring the attempts to "redo" anything if there were no previous "undo" call prior to that.

```
#include <QuentierUndoCommand.h>
```

Inheritance diagram for `quentier::utility::QuentierUndoCommand`:



Collaboration diagram for `quentier::utility::QuentierUndoCommand`:



## Signals

- void **notifyError** ([ErrorString](#) error)

## Public Member Functions

- **QuentierUndoCommand** (`QUndoCommand *parent=nullptr`)
- **QuentierUndoCommand** (`const QString &text, QUndoCommand *parent=nullptr`)
- void **undo** () final
- void **redo** () final
- bool **onceUndoExecuted** () const noexcept

## Protected Member Functions

- virtual void **undolmpl** ()=0
- virtual void **redolmpl** ()=0

### 5.77.1 Detailed Description

The [QuentierUndoCommand](#) class has the sole purpose of working around one quirky aspect of Qt's undo/redo framework: when you push `QUndoCommand` to `QUndoStack`, it calls "redo" method of that command. This class offers subclasses to implement their own methods for actual "undo" and "redo" commands while ignoring the attempts to "redo" anything if there were no previous "undo" call prior to that.

The rationale behind the current behaviour seems to be the compliance with "command pattern behaviour" when you create the command to execute the action instead of just executing it immediately. This design is enforced by Qt's undo/redo framework, there's no option to choose not to call "redo" when pushing to the stack.

One thing which this design fails to see is the fact that the command may be already executed externally by the moment the `QUndoCommand` can be created. Suppose we can get the information about how to undo (and then again redo) that command. We create the corresponding `QUndoCommand`, set up the stuff for its undo/redo methods and push it to `QUndoStack` for future use... But at the same time `QUndoStack` calls "redo" method of the command. Really not the behaviour you'd like to have.

[QuentierUndoCommand](#) is also `QObject`, it is for error reporting via `notifyError` signal

## 5.78 `quentier::synchronization::RateLimitReachedError` Struct Reference

```
#include <Errors.h>
```

### Public Attributes

- `std::optional< quint32 > rateLimitDurationSec`

### 5.78.1 Detailed Description

Information about "API rate limit reached" error which Evernote servers might return if too much of their API calls were made recently. In case of such error synchronization should be repeated later, after some time passes.

### 5.78.2 Member Data Documentation

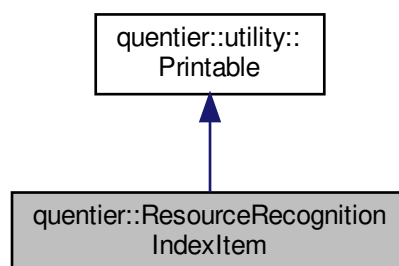
#### 5.78.2.1 `rateLimitDurationSec`

```
std::optional<quint32> quentier::synchronization::RateLimitReachedError::rateLimitDurationSec
```

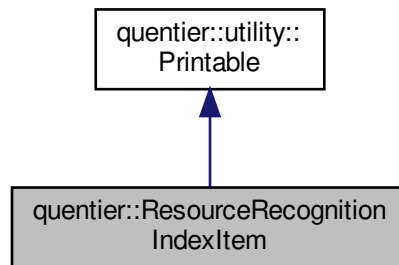
Number of seconds during which since the current moment during which any call to Evernote API would again result in "API rate limit reached" error i.e. the number of seconds to wait for before the next attempt to run synchronization

## 5.79 `quentier::ResourceRecognitionIndexItem` Class Reference

Inheritance diagram for `quentier::ResourceRecognitionIndexItem`:



Collaboration diagram for quantier::ResourceRecognitionIndexItem:



## Classes

- struct [IBarcodeItem](#)
- struct [IObjectItem](#)
- struct [IShapeItem](#)
- struct [ITextItem](#)

## Public Types

- using `ITextItemPtr` = `std::shared_ptr< ITextItem >`
- using `IObjectItemPtr` = `std::shared_ptr< IObjectItem >`
- using `IShapeItemPtr` = `std::shared_ptr< IShapeItem >`
- using `IBarcodeItemPtr` = `std::shared_ptr< IBarcodeItem >`

## Public Member Functions

- `ResourceRecognitionIndexItem` (const [ResourceRecognitionIndexItem](#) &other)
- `ResourceRecognitionIndexItem` ([ResourceRecognitionIndexItem](#) &&other) noexcept
- [ResourceRecognitionIndexItem](#) & `operator=` (const [ResourceRecognitionIndexItem](#) &other)
- [ResourceRecognitionIndexItem](#) & `operator=` ([ResourceRecognitionIndexItem](#) &&other) noexcept
- bool `isValid` () const
- int `x` () const
- void `setX` (int x)
- int `y` () const
- void `setY` (int y)
- int `h` () const
- void `setH` (int h)
- int `w` () const
- void `setW` (int w)
- int `offset` () const
- void `setOffset` (int offset)
- int `duration` () const
- void `setDuration` (int duration)
- QList< int > `strokes` () const

- void **setStrokes** (QList< int > strokes)
- QList< ITextItemPtr > **textItems** () const
- void **setTextItems** (QList< ITextItemPtr > textItems)
- QList< IObjectItemPtr > **objectItems** () const
- void **setObjectItems** (QList< IObjectItemPtr > objectItems)
- QList< IShapeItemPtr > **shapeItems** () const
- void **setShapeItems** (QList< IShapeItemPtr > shapeItems)
- QList< IBarcodeItemPtr > **barcodeItems** () const
- void **setBarcodeItems** (QList< IBarcodeItemPtr > barcodeItems)
- QTextStream & **print** (QTextStream &strm) const override

### 5.79.1 Member Function Documentation

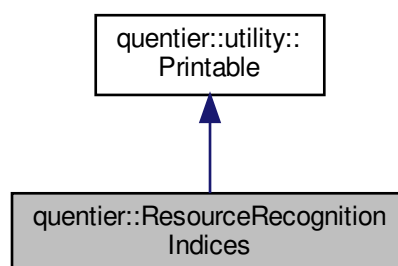
#### 5.79.1.1 print()

```
QTextStream & quentier::ResourceRecognitionIndexItem::print (
    QTextStream & strm ) const [override], [virtual]
```

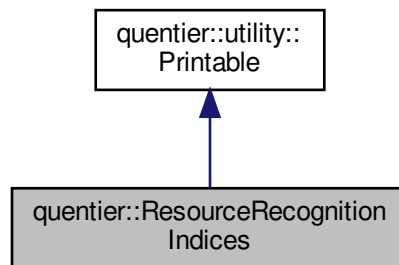
Implements [quentier::utility::Printable](#).

## 5.80 quentier::ResourceRecognitionIndices Class Reference

Inheritance diagram for quentier::ResourceRecognitionIndices:



Collaboration diagram for quantier::ResourceRecognitionIndices:



## Public Member Functions

- **ResourceRecognitionIndices** (const QByteArray &rawRecognitionIndicesData)
- **ResourceRecognitionIndices** (const [ResourceRecognitionIndices](#) &other)
- **ResourceRecognitionIndices** ([ResourceRecognitionIndices](#) &&other) noexcept
- [ResourceRecognitionIndices](#) & **operator=** (const [ResourceRecognitionIndices](#) &other)
- [ResourceRecognitionIndices](#) & **operator=** ([ResourceRecognitionIndices](#) &&other) noexcept
- bool **isNull** () const
- bool **isValid** () const
- QString **objectId** () const
- QString **objectType** () const
- QString **recoType** () const
- QString **engineVersion** () const
- QString **docType** () const
- QString **lang** () const
- int **objectHeight** () const
- int **objectWidth** () const
- QVector< [ResourceRecognitionIndexItem](#) > **items** () const
- bool **setData** (const QByteArray &rawRecognitionIndicesData)
- QTextStream & **print** (QTextStream &strm) const override

### 5.80.1 Member Function Documentation

#### 5.80.1.1 print()

```
QTextStream & quantier::ResourceRecognitionIndices::print (
    QTextStream & strm ) const [override], [virtual]
```

Implements [quantier::utility::Printable](#).

## 5.81 `quantier::Result< ValueType, ErrorType, typename >` Class Template Reference

### Public Member Functions

- `template<typename T1 = ValueType, typename std::enable_if_t<!std::is_void_v< std::decay_t< T1 > > > * = nullptr>`  
`Result (T1 t)`
- `Result (ErrorType error)`
- `Result (const Result< ValueType, ErrorType > &other)`
- `Result (Result< ValueType, ErrorType > &&other)`
- `Result & operator= (const Result< ValueType, ErrorType > &other)`
- `Result & operator= (Result< ValueType, ErrorType > &&other)`
- `bool isValid () const noexcept`
- `operator bool () const noexcept`
- `template<typename T1 = ValueType, typename std::enable_if_t<!std::is_void_v< std::decay_t< T1 > > > * = nullptr>`  
`T1 & get ()`
- `template<typename T1 = ValueType, typename std::enable_if_t<!std::is_void_v< std::decay_t< T1 > > > * = nullptr>`  
`const T1 & get () const`
- `template<typename T1 = ValueType, typename std::enable_if_t<!std::is_void_v< std::decay_t< T1 > > > * = nullptr>`  
`T1 & operator* ()`
- `template<typename T1 = ValueType, typename std::enable_if_t<!std::is_void_v< std::decay_t< T1 > > > * = nullptr>`  
`const T1 & operator* () const`
- `const ErrorType & error () const`
- `ErrorType & error ()`

### 5.81.1 Member Function Documentation

#### 5.81.1.1 `isValid()`

```
template<class ValueType , class ErrorType , typename = typename std::enable_if_t<!std::is_↵
void_v<std::decay_t<ErrorType>>>>
bool quantier::Result< ValueType, ErrorType, typename >::isValid ( ) const [inline], [noexcept]
```

#### Returns

boolean value indicating whether the result contains a value

## 5.82 `quantier::threading::detail::ResultTypeHelper< F, Arg, Enable >` Struct Template Reference

## 5.83 `quantier::threading::detail::ResultTypeHelper< F, Arg, typename std::enable_if_t< !std::is_invocable_v< std::decay_t< F >, QFuture< Arg > > > >` Struct Template Reference

### Public Types

- using `ResultType = std::invoke_result_t< std::decay_t< F >, std::decay_t< Arg > >`



## 5.84 `quentier::threading::detail::ResultTypeHelper< F, Arg, typename std::enable_if_t< std::is_invocable_v< std::decay_t< F >, QFuture< Arg > > > > Struct Template Reference`

### Public Types

- using **ResultType** = `std::invoke_result_t< std::decay_t< F >, QFuture< Arg > >`

## 5.85 `quentier::threading::detail::ResultTypeHelper< F, void, typename std::enable_if_t< !std::is_invocable_v< std::decay_t< F >, QFuture< void > > > > Struct Template Reference`

### Public Types

- using **ResultType** = `std::invoke_result_t< std::decay_t< F > >`

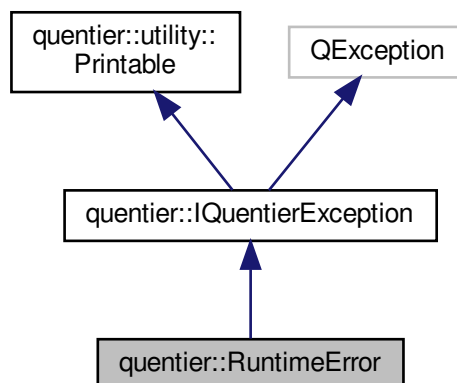
## 5.86 `quentier::threading::detail::ResultTypeHelper< F, void, typename std::enable_if_t< std::is_invocable_v< std::decay_t< F >, QFuture< void > > > > Struct Template Reference`

### Public Types

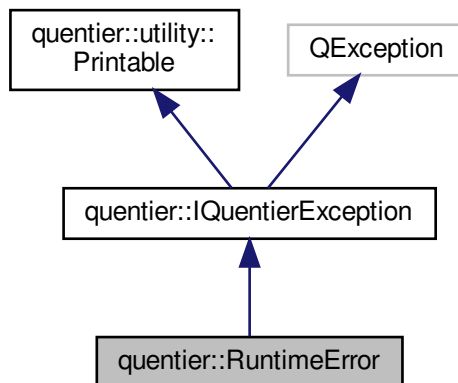
- using **ResultType** = `std::invoke_result_t< std::decay_t< F >, QFuture< void > >`

## 5.87 `quentier::RuntimeError` Class Reference

Inheritance diagram for `quentier::RuntimeError`:



Collaboration diagram for `quentier::RuntimeError`:



## Public Member Functions

- **RuntimeError** ([ErrorString](#) message)
- [RuntimeError](#) \* **clone** () const override
- void **raise** () const override

## Protected Member Functions

- QString [exceptionDisplayName](#) () const override

## 5.87.1 Member Function Documentation

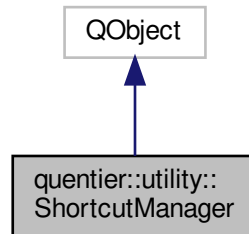
### 5.87.1.1 exceptionDisplayName()

```
QString quentier::RuntimeError::exceptionDisplayName ( ) const [override], [protected], [virtual]
```

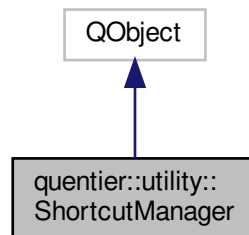
Implements [quentier::IQuentierException](#).

## 5.88 quantier::utility::ShortcutManager Class Reference

Inheritance diagram for quantier::utility::ShortcutManager:



Collaboration diagram for quantier::utility::ShortcutManager:



### Public Types

- enum **QuantierShortcutKey** {  
**NewNote** = 5000 , **NewTag** , **NewNotebook** , **NewSavedSearch** ,  
**AddAttachment** , **SaveAttachment** , **OpenAttachment** , **CopyAttachment** ,  
**CutAttachment** , **RemoveAttachment** , **RenameAttachment** , **AddAccount** ,  
**ExitAccount** , **SwitchAccount** , **AccountInfo** , **NoteSearch** ,  
**NewNoteSearch** , **ShowNotes** , **ShowNotebooks** , **ShowTags** ,  
**ShowSavedSearches** , **ShowDeletedNotes** , **ShowStatusBar** , **ShowToolBar** ,  
**PasteUnformatted** , **Font** , **UpperIndex** , **LowerIndex** ,  
**AlignLeft** , **AlignCenter** , **AlignRight** , **AlignFull** ,  
**IncreaseIndentation** , **DecreaseIndentation** , **IncreaseFontSize** , **DecreaseFontSize** ,  
**InsertNumberedList** , **InsertBulletedList** , **Strikethrough** , **Highlight** ,  
**InsertTable** , **InsertRow** , **InsertColumn** , **RemoveRow** ,  
**RemoveColumn** , **InsertHorizontalLine** , **InsertToDoTag** , **EditHyperlink** ,  
**CopyHyperlink** , **RemoveHyperlink** , **Encrypt** , **Decrypt** ,  
**DecryptPermanently** , **BackupLocalStorage** , **RestoreLocalStorage** , **UpgradeLocalStorage** ,

**LocalStorageStatus** , **SpellCheck** , **SpellCheckIgnoreWord** , **SpellCheckAddWordToUserDictionary** , **SaveImage** , **AnnotateImage** , **ImageRotateClockwise** , **ImageRotateCounterClockwise** , **Synchronize** , **FullSync** , **ImportFolders** , **Preferences** , **ReleaseNotes** , **ViewLogs** , **About** , **UnknownKey** = 100000 }

## Public Slots

- void **setUserShortcut** (int key, const QKeySequence &[shortcut](#), const [Account](#) &account, QString context={})
- void **setNonStandardUserShortcut** (QString nonStandardKey, const QKeySequence &[shortcut](#), const [Account](#) &account, QString context={})
- void **setDefaultShortcut** (int key, const QKeySequence &[shortcut](#), const [Account](#) &account, QString context={})
- void **setNonStandardDefaultShortcut** (QString nonStandardKey, const QKeySequence &[shortcut](#), const [Account](#) &account, QString context={})

## Signals

- void **shortcutChanged** (int key, QKeySequence [shortcut](#), const [Account](#) &account, QString context)
- void **nonStandardShortcutChanged** (QString nonStandardKey, QKeySequence [shortcut](#), const [Account](#) &account, QString context)

## Public Member Functions

- **ShortcutManager** (QObject \*parent=nullptr)
- QKeySequence [shortcut](#) (int key, const [Account](#) &account, const QString &context={}) const
- QKeySequence [shortcut](#) (const QString &nonStandardKey, const [Account](#) &account, const QString &context={}) const
- QKeySequence [defaultShortcut](#) (int key, const [Account](#) &account, const QString &context={}) const
- QKeySequence [defaultShortcut](#) (const QString &nonStandardKey, const [Account](#) &account, const QString &context={}) const
- QKeySequence [userShortcut](#) (int key, const [Account](#) &account, const QString &context={}) const
- QKeySequence [userShortcut](#) (const QString &nonStandardKey, const [Account](#) &account, const QString &context={}) const

## 5.88.1 Member Function Documentation

### 5.88.1.1 defaultShortcut() [1/2]

```
QKeySequence quentier::utility::ShortcutManager::defaultShortcut (
    const QString & nonStandardKey,
    const Account & account,
    const QString & context = {} ) const
```

#### Returns

Default shortcut for the non-standard key if present, otherwise empty key sequence

### 5.88.1.2 defaultShortcut() [2/2]

```
QKeySequence quotientier::utility::ShortcutManager::defaultShortcut (
    int key,
    const Account & account,
    const QString & context = {} ) const
```

#### Returns

Default shortcut for the standard key if present, otherwise empty key sequence

### 5.88.1.3 shortcut() [1/2]

```
QKeySequence quotientier::utility::ShortcutManager::shortcut (
    const QString & nonStandardKey,
    const Account & account,
    const QString & context = {} ) const
```

#### Returns

Active shortcut for the non-standard key - either the user defined shortcut (if present) or the default one (if present as well)

### 5.88.1.4 shortcut() [2/2]

```
QKeySequence quotientier::utility::ShortcutManager::shortcut (
    int key,
    const Account & account,
    const QString & context = {} ) const
```

#### Returns

Active shortcut for the standard key - either the user defined shortcut (if present) or the default one (if present as well)

### 5.88.1.5 userShortcut() [1/2]

```
QKeySequence quotientier::utility::ShortcutManager::userShortcut (
    const QString & nonStandardKey,
    const Account & account,
    const QString & context = {} ) const
```

#### Returns

User defined shortcut for the non-standard key if present, otherwise empty key sequence

### 5.88.1.6 userShortcut() [2/2]

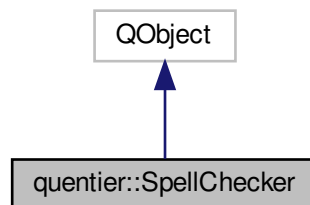
```
QKeySequence quentier::utility::ShortcutManager::userShortcut (
    int key,
    const Account & account,
    const QString & context = {} ) const
```

#### Returns

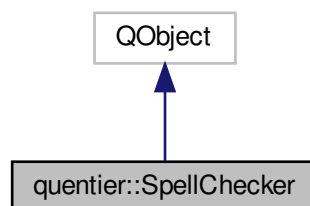
User defined shortcut for the standard key if present, otherwise empty key sequence

## 5.89 quentier::SpellChecker Class Reference

Inheritance diagram for quentier::SpellChecker:



Collaboration diagram for quentier::SpellChecker:



## Signals

- void **ready** ()

## Public Member Functions

- **SpellChecker** ([utility::FileIOProcessorAsync](#) \*fileIOProcessorAsync, [Account](#) account, QObject \*parent=nullptr, const QString &userDictionaryPath={})
- QList< std::pair< QString, bool > > **listAvailableDictionaries** () const
- void **setAccount** (const [Account](#) &account)
- void **enableDictionary** (const QString &language)
- void **disableDictionary** (const QString &language)
- bool **checkSpell** (const QString &word) const
- QStringList **spellCorrectionSuggestions** (const QString &misSpelledWord) const
- void **addToUserWordlist** (const QString &word)
- void **removeFromUserWordList** (const QString &word)
- void **ignoreWord** (const QString &word)
- void **removeWord** (const QString &word)
- bool **isReady** () const noexcept

## 5.90 quotient::utility::StringUtils Class Reference

### Public Member Functions

- void **removePunctuation** (QString &str, const QList< QChar > &charactersToPreserve={}) const
- void **removeDiacritics** (QString &str) const
- void **removeNewlines** (QString &str) const

## 5.91 quotient::utility::SysInfo Class Reference

### Public Member Functions

- qint64 **pageSize** ()
- qint64 **totalMemory** ()
- qint64 **freeMemory** ()
- QString **stackTrace** ()
- QString **platformName** ()

## 5.92 quotient::threading::TrackedTask< LockableObject, Function > Class Template Reference

```
#include <TrackedTask.h>
```

### Public Member Functions

- template<typename SomeLockableObject, typename SomeFunction >  
constexpr **TrackedTask** (SomeLockableObject &&someLockableObject, SomeFunction &&function)
- template<typename... Arguments, typename = std::enable\_if\_t< std::is\_invocable\_v<Function, Arguments...> || std::is\_member\_↵  
function\_pointer\_v<Function>>>>  
constexpr void **operator()** (Arguments &&... arguments)
- template<typename... Arguments, typename = std::enable\_if\_t< std::is\_invocable\_v<Function, Arguments...> || std::is\_member\_↵  
function\_pointer\_v<Function>>>>  
constexpr void **operator()** (Arguments &&... arguments) const

### 5.92.1 Detailed Description

```
template<typename LockableObject, typename Function>
class quantier::threading::TrackedTask< LockableObject, Function >
```

Wrapper class which automates checking for the state of a lockable object. With this class code like this

```
auto task = [selfWeak = weak_from_this()] { auto self = selfWeak.lock(); if (!self) { return; } // otherwise do something
};
```

can be written like this:

```
auto task = threading::TrackedTask{weak_from_this(), &MyClass::someMethod};
```

## 5.93 quantier::utility::UuidGenerator Class Reference

### Static Public Member Functions

- static QString **generate** ()
- static QString **uidToString** (const QUuid &uid)

## 5.94 quantier::synchronization::ISyncConflictResolver::ConflictResolution::UseMine Struct Reference

The [UseMine](#) conflict resolution means "override theirs version with mine version".

```
#include <ISyncConflictResolver.h>
```

### 5.94.1 Detailed Description

The [UseMine](#) conflict resolution means "override theirs version with mine version".

## 5.95 quantier::synchronization::ISyncConflictResolver::ConflictResolution::UseTheirs Struct Reference

The [UseTheirs](#) conflict resolution means "override mine version with theirs version".

```
#include <ISyncConflictResolver.h>
```

### 5.95.1 Detailed Description

The [UseTheirs](#) conflict resolution means "override mine version with theirs version".



## Chapter 6

# File Documentation

### 6.1 ISkipRule.h

```
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16 * along with libquentier. If not, see <http://www.gnu.org/licenses/>.
17 */
18
19 #pragma once
20
21 #include <quentier/enml/conversion_rules/MatchMode.h>
22 #include <quentier/utility/Printable.h>
23
24 #include <QtGlobal>
25
26 namespace quentier::enml::conversion_rules {
27
28 class ISkipRule : public utility::Printable
29 {
30 public:
31     ~ISkipRule() override;
32
33     enum class Target
34     {
35         Element,
36         AttributeName,
37         AttributeValue
38     };
39
40     friend QUINTIER_EXPORT QTextStream & operator<<(
41         QTextStream & strm, Target target);
42
43     friend QUINTIER_EXPORT QDebug & operator<<(QDebug & dbg, Target target);
44
45     [[nodiscard]] virtual Target target() const = 0;
46
47     [[nodiscard]] virtual QString value() const = 0;
48
49     [[nodiscard]] virtual MatchMode matchMode() const = 0;
50
51     [[nodiscard]] virtual bool includeContents() const = 0;
52
53     [[nodiscard]] virtual Qt::CaseSensitivity caseSensitivity() const = 0;
54
55 public: // utility::Printable
56     QTextStream & print(QTextStream & strm) const override;
57 };
58
59 } // namespace quentier::enml::conversion_rules
```

## 6.2 ISkipRuleBuilder.h

```

1  /*
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17 */
18
19 #pragma once
20
21 #include <quentier/enml/conversion_rules/Fwd.h>
22 #include <quentier/enml/conversion_rules/ISkipRule.h>
23 #include <quentier/utility/Linkage.h>
24
25 namespace quentier::enml::conversion_rules {
26
27 class QUENTIER_EXPORT ISkipRuleBuilder
28 {
29 public:
30     virtual ~ISkipRuleBuilder();
31
32     virtual ISkipRuleBuilder & setTarget(ISkipRule::Target target) = 0;
33     virtual ISkipRuleBuilder & setValue(QString value) = 0;
34     virtual ISkipRuleBuilder & setMatchMode(MatchMode matchMode) = 0;
35     virtual ISkipRuleBuilder & setIncludeContents(bool includeContents) = 0;
36     virtual ISkipRuleBuilder & setCaseSensitivity(
37         Qt::CaseSensitivity caseSensitivity) = 0;
38
39     [[nodiscard]] virtual ISkipRulePtr build() = 0;
40 };
41
42 } // namespace quentier::enml::conversion_rules

```

## 6.3 MatchMode.h

```

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13 * GNU Lesser General Public License for more details.
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15 * You should have received a copy of the GNU Lesser General Public License
16 * along with libquentier. If not, see <http://www.gnu.org/licenses/>.
17 */
18
19 #pragma once
20
21 #include <quentier/utility/Linkage.h>
22
23 class QDebug;
24 class QTextStream;
25
26 namespace quentier::enml::conversion_rules {
27
28 enum class MatchMode
29 {
30     Equals,
31     StartsWith,
32     EndsWith,
33     Contains
34 };
35
36 QUENTIER_EXPORT QTextStream & operator<<

```

```

52     QTextStream & strm, MatchMode matchMode);
53
54 QUINTIER_EXPORT QDebug & operator«(QDebug & dbg, MatchMode matchMode);
55
56 } // namespace quentier::enml::conversion_rules

```

## 6.4 HtmlUtils.h

```

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16 * along with libquentier. If not, see <http://www.gnu.org/licenses/>.
17 */
18
19 #pragma once
20
21 #include <quentier/types/ErrorMessage.h>
22 #include <quentier/types/Result.h>
23 #include <quentier/utility/Linkage.h>
24
25 #include <QFlags>
26
27 #include <memory>
28
29 namespace quentier::enml::utils {
30
31 [[nodiscard]] Result<QString, ErrorMessage> QUINTIER_EXPORT
32     convertHtmlToXml(const QString & html);
33
34 [[nodiscard]] Result<QString, ErrorMessage> QUINTIER_EXPORT
35     convertHtmlToXhtml(const QString & html);
36
37 [[nodiscard]] Result<QString, ErrorMessage> QUINTIER_EXPORT
38     cleanupHtml(const QString & html);
39
40 enum class EscapeStringOption
41 {
42     Simplify = 1 « 0,
43 };
44
45 Q_DECLARE_FLAGS(EscapeStringOptions, EscapeStringOption);
46
47 [[nodiscard]] QString QUINTIER_EXPORT htmlEscapeString(
48     QString str, EscapeStringOptions options = EscapeStringOptions{});
49
50 } // namespace quentier::enml::utils

```

## 6.5 IConverter.h

```

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16 * along with libquentier. If not, see <http://www.gnu.org/licenses/>.
17 */
18

```

```

19 #pragma once
20
21 #include <quentier/enml/Fwd.h>
22 #include <quentier/enml/conversion_rules/Fwd.h>
23 #include <quentier/types/ErrorMessage.h>
24 #include <quentier/types/Result.h>
25 #include <quentier/utility/Linkage.h>
26
27 #include <QList>
28 #include <QStringList>
29 #include <QTextDocument>
30
31 #include <qevercloud/types/Note.h>
32
33 namespace quentier::enml {
34
35 class QUENTIER_EXPORT IConverter
36 {
37 public:
38     virtual ~IConverter();
39
40     [[nodiscard]] virtual Result<QString, ErrorMessage> convertHtmlToEnml(
41         const QString & html, IDecryptedTextCache & decryptedTextCache,
42         const QList<conversion_rules::ISkipRulePtr> & skipRules = {}) const = 0;
43
44     [[nodiscard]] virtual Result<void, ErrorMessage> convertHtmlToDoc(
45         const QString & html, QTextDocument & doc,
46         const QList<conversion_rules::ISkipRulePtr> & skipRules = {}) const = 0;
47
48     [[nodiscard]] virtual Result<QString, ErrorMessage> convertHtmlToXml(
49         const QString & html) const = 0;
50
51     [[nodiscard]] virtual Result<QString, ErrorMessage> convertHtmlToXhtml(
52         const QString & html) const = 0;
53
54     [[nodiscard]] virtual Result<IHtmlDataPtr, ErrorMessage> convertEnmlToHtml(
55         const QString & enml,
56         IDecryptedTextCache & decryptedTextCache) const = 0;
57
58     [[nodiscard]] virtual Result<QString, ErrorMessage> convertEnmlToPlainText(
59         const QString & enml) const = 0;
60
61     [[nodiscard]] virtual Result<QStringList, ErrorMessage>
62         convertEnmlToWordsList(const QString & enml) const = 0;
63
64     [[nodiscard]] virtual QStringList convertPlainTextToWordsList(
65         const QString & plainText) const = 0;
66
67     [[nodiscard]] virtual Result<void, ErrorMessage> validateEnml(
68         const QString & enml) const = 0;
69
70     [[nodiscard]] virtual Result<QString, ErrorMessage> validateAndFixupEnml(
71         const QString & enml) const = 0;
72
73     enum class EnexExportTags
74     {
75         Yes = 0,
76         No
77     };
78
79     [[nodiscard]] virtual Result<QString, ErrorMessage> exportNotesToEnex(
80         const QList<qevercloud::Note> & notes,
81         const QHash<QString, QString> & tagNameByTagLocalIds,
82         EnexExportTags exportTagsOption,
83         const QString & version = {}) const = 0;
84
85     [[nodiscard]] virtual Result<QList<qevercloud::Note>, ErrorMessage>
86         importEnex(const QString & enex) const = 0;
87 };
88 } // namespace quentier::enml

```

## 6.6 IDecryptedTextCache.h

```

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```

```

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16 * along with libquentier. If not, see <http://www.gnu.org/licenses/>.
17 */
18
19 #pragma once
20
21 #include <quentier/utility/IEncryptor.h>
22 #include <quentier/utility/Linkage.h>
23
24 #include <QString>
25
26 #include <optional>
27 #include <utility>
28
29 class QDebug;
30 class QTextStream;
31
32 namespace quentier::enml {
33
34 class QUENTIER_EXPORT IDecryptedTextCache
35 {
36 public:
37     virtual ~IDecryptedTextCache();
38
39     enum class RememberForSession
40     {
41         Yes,
42         No
43     };
44
45     friend QUENTIER_EXPORT QDebug & operator<<(
46         QDebug & dbg, RememberForSession rememberForSession);
47
48     friend QUENTIER_EXPORT QTextStream & operator<<(
49         QTextStream & strm, RememberForSession rememberForSession);
50
51     virtual void addDecryptexTextInfo(
52         const QString & encryptedText, const QString & decryptedText,
53         const QString & passphrase, utility::IEncryptor::Cipher cipher,
54         RememberForSession rememberForSession) = 0;
55
56     [[nodiscard]] virtual std::optional<std::pair<QString, RememberForSession>
57         findDecryptedTextInfo(const QString & encryptedText) const = 0;
58
59     [[nodiscard]] virtual std::optional<QString> updateDecryptedTextInfo(
60         const QString & originalEncryptedText,
61         const QString & newDecryptedText) = 0;
62
63     [[nodiscard]] virtual bool containsRememberedForSessionEntries() const = 0;
64
65     virtual void removeDecryptedTextInfo(const QString & encryptedText) = 0;
66     virtual void clearNonRememberedForSessionEntries() = 0;
67 };
68
69 } // namespace quentier::enml

```

## 6.7 IENMLTagsConverter.h

```

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17 */
18
19 #pragma once
20

```

```

21 #include <quentier/types/ErrorMessage.h>
22 #include <quentier/types/Result.h>
23 #include <quentier/utility/IEncryptor.h>
24 #include <quentier/utility/Linkage.h>
25
26 #include <qevercloud/types/Fwd.h>
27
28 #include <QString>
29 #include <QtGlobal>
30
31 namespace quentier::enml {
32
33 class QUENTIER_EXPORT IENMLTagsConverter
34 {
35 public:
36     virtual ~IENMLTagsConverter();
37
38     [[nodiscard]] virtual QString convertEnToDo(
39         bool checked, quint32 index) const = 0;
40
41     [[nodiscard]] virtual QString convertEncryptedText(
42         const QString & encryptedText, const QString & hint,
43         utility::IEncryptor::Cipher cipher, quint32 index) const = 0;
44
45     [[nodiscard]] virtual QString convertDecryptedText(
46         const QString & decryptedText, const QString & encryptedText,
47         const QString & hint, utility::IEncryptor::Cipher cipher,
48         quint32 index) const = 0;
49
50     [[nodiscard]] virtual Result<QString, ErrorMessage> convertResource(
51         const qevercloud::Resource & resource) const = 0;
52 };
53
54 } // namespace quentier::enml

```

## 6.8 IHtmlData.h

```

1 /*
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3  *
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5  *
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14 *
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16 * along with libquentier. If not, see <http://www.gnu.org/licenses/>.
17 */
18
19 #pragma once
20
21 #include <quentier/utility/Linkage.h>
22 #include <quentier/utility/Printable.h>
23
24 #include <QString>
25 #include <QtGlobal>
26
27 namespace quentier::enml {
28
29 struct QUENTIER_EXPORT IHtmlData : public utility::Printable
30 {
31     [[nodiscard]] virtual QString html() const = 0;
32
33     [[nodiscard]] virtual quint32 numEnToDoNodes() const = 0;
34
35     [[nodiscard]] virtual quint32 numHyperlinkNodes() const = 0;
36
37     [[nodiscard]] virtual quint32 numEncryptNodes() const = 0;
38
39     [[nodiscard]] virtual quint32 numDecryptNodes() const = 0;
40
41 public: // utility::Printable
42     QTextStream & print(QTextStream & strm) const override;
43 };
44
45 } // namespace quentier::enml

```

## 6.9 InvalidArgument.h

```

1 /*
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3  *
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14 *
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16 * along with libquentier. If not, see <http://www.gnu.org/licenses/>.
17 */
18
19 #pragma once
20
21 #include <quentier/exception/IQuentierException.h>
22
23 namespace quentier {
24
25 class QUENTIER_EXPORT InvalidArgument : public IQuentierException
26 {
27 public:
28     explicit InvalidArgument(ErrorString message);
29
30     [[nodiscard]] InvalidArgument * clone() const override;
31     void raise() const override;
32
33 protected:
34     [[nodiscard]] QString exceptionDisplayName() const override;
35 };
36
37 } // namespace quentier

```

## 6.10 IQuentierException.h

```

1 /*
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3  *
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5  *
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13 * GNU Lesser General Public License for more details.
14 *
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16 * along with libquentier. If not, see <http://www.gnu.org/licenses/>.
17 */
18
19 #pragma once
20
21 #include <quentier/types/ErrorString.h>
22 #include <quentier/utility/Printable.h>
23
24 #include <QException>
25
26 namespace quentier {
27
28 class QUENTIER_EXPORT IQuentierException :
29     public utility::Printable,
30     public QException
31 {
32 public:
33     ~IQuentierException() noexcept override;
34
35     [[nodiscard]] ErrorString errorMessage() const;
36     [[nodiscard]] QString localizedErrorMessage() const;
37     [[nodiscard]] QString nonLocalizedErrorMessage() const;
38
39     // std::exception
40     [[nodiscard]] const char * what() const noexcept override;
41
42 };
43
44 }

```

```

50     // utility::Printable
51     QTextStream & print(QTextStream & strm) const override;
52
53 protected:
54     explicit IQuentierException(ErrorString message);
55     IQuentierException(const IQuentierException & other);
56     IQuentierException & operator=(const IQuentierException & other);
57
58     [[nodiscard]] virtual QString exceptionDisplayName() const = 0;
59
60 private:
61     ErrorString m_message;
62     char * m_whatMessage = nullptr;
63 };
64
65 } // namespace quentier

```

## 6.11 OperationCanceled.h

```

1 /*
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3  *
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13 * GNU Lesser General Public License for more details.
14 *
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16 * along with libquentier. If not, see <http://www.gnu.org/licenses/>.
17 */
18
19 #pragma once
20
21 #include <quentier/exception/IQuentierException.h>
22
23 namespace quentier {
24
25 class QUENTIER_EXPORT OperationCanceled : public IQuentierException
26 {
27 public:
28     explicit OperationCanceled();
29
30     [[nodiscard]] OperationCanceled * clone() const override;
31     void raise() const override;
32
33 protected:
34     [[nodiscard]] QString exceptionDisplayName() const override;
35 };
36
37 } // namespace quentier

```

## 6.12 RuntimeError.h

```

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3  *
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12 * MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the
13 * GNU Lesser General Public License for more details.
14 *
15 * You should have received a copy of the GNU Lesser General Public License
16 * along with libquentier. If not, see <http://www.gnu.org/licenses/>.
17 */
18
19 #pragma once
20

```



```

21 #include <quentier/exception/IQuentierException.h>
22
23 namespace quentier {
24
25 class QUENTIER_EXPORT RuntimeError : public IQuentierException
26 {
27 public:
28     explicit RuntimeError(ErrorString message);
29     ~RuntimeError() noexcept override;
30
31     [[nodiscard]] RuntimeError * clone() const override;
32     void raise() const override;
33
34 protected:
35     [[nodiscard]] QString exceptionDisplayName() const override;
36 };
37
38 } // namespace quentier

```

## 6.13 ILocalStorage.h

```

1 /*
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3  *
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13 * GNU Lesser General Public License for more details.
14 *
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16 * along with libquentier. If not, see <http://www.gnu.org/licenses/>.
17 */
18
19 #pragma once
20
21 #include <quentier/local_storage/Fwd.h>
22 #include <quentier/local_storage/NoteSearchQuery.h>
23 #include <quentier/types/Fwd.h>
24 #include <quentier/utility/Linkage.h>
25
26 #include <qevercloud/types/LinkedNotebook.h>
27 #include <qevercloud/types/Note.h>
28 #include <qevercloud/types/Notebook.h>
29 #include <qevercloud/types/Resource.h>
30 #include <qevercloud/types/SavedSearch.h>
31 #include <qevercloud/types/SharedNotebook.h>
32 #include <qevercloud/types/Tag.h>
33 #include <qevercloud/types/User.h>
34
35 #include <QFlags>
36 #include <QFuture>
37 #include <QHash>
38 #include <QList>
39 #include <QStringList>
40 #include <QThreadPool>
41
42 #include <optional>
43 #include <utility>
44
45 class QDebug;
46 class QTextStream;
47 class QThreadPool;
48
49 namespace quentier::local_storage {
50
51 class QUENTIER_EXPORT ILocalStorage
52 {
53 public:
54     virtual ~ILocalStorage() = default;
55
56 public:
57     enum class StartupOption
58     {
59         ClearDatabase = 1 « 1,
60         OverrideLock = 1 « 2
61     };
62     Q_DECLARE_FLAGS(StartupOptions, StartupOption);

```

```

63
64     friend QUINTIER_EXPORT QTextStream & operator«(
65         QTextStream & strm, StartupOption option);
66
67     friend QUINTIER_EXPORT QDebug & operator«(
68         QDebug & dbg, StartupOption option);
69
70     friend QUINTIER_EXPORT QTextStream & operator«(
71         QTextStream & strm, StartupOptions options);
72
73     friend QUINTIER_EXPORT QDebug & operator«(
74         QDebug & dbg, StartupOptions options);
75
76
77
78     enum class ListObjectsFilter
79     {
80         Include,
81         Exclude
82     };
83
84     friend QUINTIER_EXPORT QTextStream & operator«(
85         QTextStream & strm, ListObjectsFilter filter);
86
87     friend QUINTIER_EXPORT QDebug & operator«(
88         QDebug & dbg, ListObjectsFilter filter);
89
90
91
92     struct QUINTIER_EXPORT ListObjectsFilters
93     {
94         std::optional<ListObjectsFilter> m_locallyModifiedFilter;
95         std::optional<ListObjectsFilter> m_withGuidFilter;
96         std::optional<ListObjectsFilter> m_localOnlyFilter;
97         std::optional<ListObjectsFilter> m_locallyFavoritedFilter;
98     };
99
100     friend QUINTIER_EXPORT QTextStream & operator«(
101         QTextStream & strm, const ListObjectsFilters & filters);
102
103     friend QUINTIER_EXPORT QDebug & operator«(
104         QDebug & dbg, const ListObjectsFilters & filters);
105
106
107
108     struct QUINTIER_EXPORT ListGuidsFilters
109     {
110         std::optional<ListObjectsFilter> m_locallyModifiedFilter;
111         std::optional<ListObjectsFilter> m_locallyFavoritedFilter;
112     };
113
114     friend QUINTIER_EXPORT QTextStream & operator«(
115         QTextStream & strm, const ListGuidsFilters & filters);
116
117     friend QUINTIER_EXPORT QDebug & operator«(
118         QDebug & dbg, const ListGuidsFilters & filters);
119
120
121
122     enum class OrderDirection
123     {
124         Ascending,
125         Descending
126     };
127
128     friend QUINTIER_EXPORT QTextStream & operator«(
129         QTextStream & strm, OrderDirection orderDirection);
130
131     friend QUINTIER_EXPORT QDebug & operator«(
132         QDebug & dbg, OrderDirection orderDirection);
133
134
135
136     enum class ListNotebooksOrder
137     {
138         NoOrder,
139         ByUpdateSequenceNumber,
140         ByNotebookName,
141         ByCreationTimestamp,
142         ByModificationTimestamp
143     };
144
145     friend QUINTIER_EXPORT QTextStream & operator«(
146         QTextStream & strm, ListNotebooksOrder order);
147
148     friend QUINTIER_EXPORT QDebug & operator«(
149         QDebug & dbg, ListNotebooksOrder order);
150
151
152
153     enum class ListLinkedNotebooksOrder
154     {
155         NoOrder,

```

```

156         ByUpdateSequenceNumber,
157         ByShareName,
158         ByUsername,
159     };
160
161     friend QUENTIER_EXPORT QTextStream & operator<<(
162         QTextStream & strm, ListLinkedNotebooksOrder order);
163
164     friend QUENTIER_EXPORT QDebug & operator<<(
165         QDebug & dbg, ListLinkedNotebooksOrder order);
166
167
168     enum class ListTagsOrder
169     {
170     {
171         NoOrder,
172         ByUpdateSequenceNumber,
173         ByName
174     };
175
176     friend QUENTIER_EXPORT QTextStream & operator<<(
177         QTextStream & strm, ListTagsOrder order);
178
179     friend QUENTIER_EXPORT QDebug & operator<<(
180         QDebug & dbg, ListTagsOrder order);
181
182
183     enum class ListNotesOrder
184     {
185     {
186         NoOrder,
187         ByUpdateSequenceNumber,
188         ByTitle,
189         ByCreationTimestamp,
190         ByModificationTimestamp,
191         ByDeletionTimestamp,
192         ByAuthor,
193         BySource,
194         BySourceApplication,
195         ByReminderTime,
196         ByPlaceName
197     };
198
199     friend QUENTIER_EXPORT QTextStream & operator<<(
200         QTextStream & strm, ListNotesOrder order);
201
202     friend QUENTIER_EXPORT QDebug & operator<<(
203         QDebug & dbg, ListNotesOrder order);
204
205
206     enum class ListSavedSearchesOrder
207     {
208     {
209         NoOrder,
210         ByUpdateSequenceNumber,
211         ByName,
212         ByFormat
213     };
214
215     friend QUENTIER_EXPORT QTextStream & operator<<(
216         QTextStream & strm, ListSavedSearchesOrder order);
217
218     friend QUENTIER_EXPORT QDebug & operator<<(
219         QDebug & dbg, ListSavedSearchesOrder order);
220
221
222     enum class Affiliation
223     {
224     {
225         Any,
226         User,
227         AnyLinkedNotebook,
228         ParticularLinkedNotebooks
229     };
230
231     friend QUENTIER_EXPORT QTextStream & operator<<(
232         QTextStream & strm, Affiliation affiliation);
233
234     friend QUENTIER_EXPORT QDebug & operator<<(
235         QDebug & dbg, Affiliation affiliation);
236
237
238     struct QUENTIER_EXPORT ListOptionsBase
239     {
240     {
241         ListOptionsBase() noexcept {}; // NOLINT
242
243         ListObjectsFilters m_filters = {};
244         quint64 m_limit = 0UL;
245         quint64 m_offset = 0UL;
246         OrderDirection m_direction = OrderDirection::Ascending;
247     };
248
249

```

```

250
251 struct QUENTIER_EXPORT ListNotebooksOptions : public ListOptionsBase
252 {
253     ListNotebooksOptions() noexcept {}; // NOLINT
254
255     ListNotebooksOrder m_order = ListNotebooksOrder::NoOrder;
256     Affiliation m_affiliation = Affiliation::Any;
257     QList<qevercloud::Guid> m_linkedNotebookGuids;
258 };
259
260 friend QUENTIER_EXPORT QTextStream & operator<<(
261     QTextStream & strm, const ListNotebooksOptions & options);
262
263 friend QUENTIER_EXPORT QDebug & operator<<(
264     QDebug & dbg, const ListNotebooksOptions & options);
265
266 struct QUENTIER_EXPORT ListLinkedNotebooksOptions : public ListOptionsBase
267 {
268     ListLinkedNotebooksOptions() noexcept {}; // NOLINT
269
270     ListLinkedNotebooksOrder m_order = ListLinkedNotebooksOrder::NoOrder;
271 };
272
273 friend QUENTIER_EXPORT QTextStream & operator<<(
274     QTextStream & strm, const ListLinkedNotebooksOptions & options);
275
276 friend QUENTIER_EXPORT QDebug & operator<<(
277     QDebug & dbg, const ListLinkedNotebooksOptions & options);
278
279 struct QUENTIER_EXPORT ListSavedSearchesOptions : public ListOptionsBase
280 {
281     ListSavedSearchesOptions() noexcept {}; // NOLINT
282
283     ListSavedSearchesOrder m_order = ListSavedSearchesOrder::NoOrder;
284 };
285
286 friend QUENTIER_EXPORT QTextStream & operator<<(
287     QTextStream & strm, const ListSavedSearchesOptions & options);
288
289 friend QUENTIER_EXPORT QDebug & operator<<(
290     QDebug & dbg, const ListSavedSearchesOptions & options);
291
292 struct QUENTIER_EXPORT ListNotesOptions : public ListOptionsBase
293 {
294     ListNotesOptions() noexcept {}; // NOLINT
295
296     ListNotesOrder m_order = ListNotesOrder::NoOrder;
297 };
298
299 friend QUENTIER_EXPORT QTextStream & operator<<(
300     QTextStream & strm, const ListNotesOptions & options);
301
302 friend QUENTIER_EXPORT QDebug & operator<<(
303     QDebug & dbg, const ListNotesOptions & options);
304
305 enum class TagNotesRelation
306 {
307     Any,
308     WithNotes,
309     WithoutNotes
310 };
311
312 struct QUENTIER_EXPORT ListTagsOptions : public ListOptionsBase
313 {
314     ListTagsOptions() noexcept {}; // NOLINT
315
316     ListTagsOrder m_order = ListTagsOrder::NoOrder;
317     Affiliation m_affiliation = Affiliation::Any;
318     QList<qevercloud::Guid> m_linkedNotebookGuids;
319     TagNotesRelation m_tagNotesRelation = TagNotesRelation::Any;
320 };
321
322 friend QUENTIER_EXPORT QTextStream & operator<<(
323     QTextStream & strm, const ListTagsOptions & options);
324
325 friend QUENTIER_EXPORT QDebug & operator<<(
326     QDebug & dbg, const ListTagsOptions & options);
327
328 enum class NoteCountOption
329 {
330     IncludeNonDeletedNotes = 1 << 1,
331     IncludeDeletedNotes = 1 << 2
332 };
333
334 Q_DECLARE_FLAGS(NoteCountOptions, NoteCountOption)
335
336 friend QUENTIER_EXPORT QTextStream & operator<<(

```

```

343     QTextStream & strm, NoteCountOption option);
344
345 friend QUINTIER_EXPORT QDebug & operator<<
346     (QDebug & dbg, NoteCountOption option);
347
348 friend QUINTIER_EXPORT QTextStream & operator<<
349     (QTextStream & strm, NoteCountOptions options);
350
351 friend QUINTIER_EXPORT QDebug & operator<<
352     (QDebug & dbg, NoteCountOptions options);
353
354
355 enum class UpdateNoteOption
356 {
357     UpdateResourceMetadata = 1 << 1,
358     UpdateResourceBinaryData = 1 << 2,
359     UpdateTags = 1 << 3
360 };
361 Q_DECLARE_FLAGS(UpdateNoteOptions, UpdateNoteOption)
362
363 friend QUINTIER_EXPORT QTextStream & operator<<
364     (QTextStream & strm, UpdateNoteOption option);
365
366 friend QUINTIER_EXPORT QDebug & operator<<
367     (QDebug & dbg, UpdateNoteOption option);
368
369 friend QUINTIER_EXPORT QTextStream & operator<<
370     (QTextStream & strm, UpdateNoteOptions options);
371
372 friend QUINTIER_EXPORT QDebug & operator<<
373     (QDebug & dbg, UpdateNoteOptions options);
374
375
376 enum class FetchNoteOption
377 {
378     WithResourceMetadata = 1 << 1,
379     WithResourceBinaryData = 1 << 2
380 };
381 Q_DECLARE_FLAGS(FetchNoteOptions, FetchNoteOption)
382
383 friend QUINTIER_EXPORT QTextStream & operator<<
384     (QTextStream & strm, FetchNoteOption option);
385
386 friend QUINTIER_EXPORT QDebug & operator<<
387     (QDebug & dbg, FetchNoteOption option);
388
389 friend QUINTIER_EXPORT QTextStream & operator<<
390     (QTextStream & strm, FetchNoteOptions options);
391
392 friend QUINTIER_EXPORT QDebug & operator<<
393     (QDebug & dbg, FetchNoteOptions options);
394
395
396 enum class FetchResourceOption
397 {
398     WithBinaryData = 1 << 1
399 };
400 Q_DECLARE_FLAGS(FetchResourceOptions, FetchResourceOption)
401
402 friend QUINTIER_EXPORT QTextStream & operator<<
403     (QTextStream & strm, FetchResourceOption option);
404
405 friend QUINTIER_EXPORT QDebug & operator<<
406     (QDebug & dbg, FetchResourceOption option);
407
408 friend QUINTIER_EXPORT QTextStream & operator<<
409     (QTextStream & strm, FetchResourceOptions options);
410
411 friend QUINTIER_EXPORT QDebug & operator<<
412     (QDebug & dbg, FetchResourceOptions options);
413
414
415 enum class HighestUsnOption
416 {
417     WithinUserOwnContent,
418     WithinUserOwnContentAndLinkedNotebooks
419 };
420
421 friend QUINTIER_EXPORT QTextStream & operator<<
422     (QTextStream & strm, HighestUsnOption option);
423
424 friend QUINTIER_EXPORT QDebug & operator<<
425     (QDebug & dbg, HighestUsnOption option);
426
427
428 public:
429     // Versions/upgrade API
430     [[nodiscard]] virtual QFuture<bool> isVersionTooHigh() const = 0;

```

```

434 [[nodiscard]] virtual QFuture<bool> requiresUpgrade() const = 0;
435 [[nodiscard]] virtual QFuture<QList<IPatchPtr>> requiredPatches() const = 0;
436 [[nodiscard]] virtual QFuture<qint32> version() const = 0;
437 [[nodiscard]] virtual QFuture<qint32> highestSupportedVersion() const = 0;
438
439 // Users API
440 [[nodiscard]] virtual QFuture<quint32> userCount() const = 0;
441 [[nodiscard]] virtual QFuture<void> putUser(qevercloud::User user) = 0;
442
443 [[nodiscard]] virtual QFuture<std::optional<qevercloud::User>> findUserId(
444     qevercloud::UserID userId) const = 0;
445
446 [[nodiscard]] virtual QFuture<void> expungeUserById(
447     qevercloud::UserID userId) = 0;
448
449 // Notebooks API
450 [[nodiscard]] virtual QFuture<quint32> notebookCount() const = 0;
451
452 [[nodiscard]] virtual QFuture<void> putNotebook(
453     qevercloud::Notebook notebook) = 0;
454
455 [[nodiscard]] virtual QFuture<std::optional<qevercloud::Notebook>>
456     findNotebookByLocalId(QString notebookLocalId) const = 0;
457
458 [[nodiscard]] virtual QFuture<std::optional<qevercloud::Notebook>>
459     findNotebookByGuid(qevercloud::Guid guid) const = 0;
460
461 [[nodiscard]] virtual QFuture<std::optional<qevercloud::Notebook>>
462     findNotebookByName(
463         QString notebookName,
464         std::optional<qevercloud::Guid> linkedNotebookGuid =
465             std::nullopt) const = 0;
466
467 [[nodiscard]] virtual QFuture<std::optional<qevercloud::Notebook>>
468     findDefaultNotebook() const = 0;
469
470 [[nodiscard]] virtual QFuture<void> expungeNotebookByLocalId(
471     QString notebookLocalId) = 0;
472
473 [[nodiscard]] virtual QFuture<void> expungeNotebookByGuid(
474     qevercloud::Guid notebookGuid) = 0;
475
476 [[nodiscard]] virtual QFuture<void> expungeNotebookByName(
477     QString name,
478     std::optional<qevercloud::Guid> linkedNotebookGuid = std::nullopt) = 0;
479
480 [[nodiscard]] virtual QFuture<QList<qevercloud::Notebook>> listNotebooks(
481     ListNotebooksOptions options = {}) const = 0;
482
483 [[nodiscard]] virtual QFuture<QList<qevercloud::SharedNotebook>>
484     listSharedNotebooks(qevercloud::Guid notebookGuid = {}) const = 0;
485
486 [[nodiscard]] virtual QFuture<QSet<qevercloud::Guid>> listNotebookGuids(
487     ListGuidsFilters filters,
488     std::optional<qevercloud::Guid> linkedNotebookGuid = {}) const = 0;
489
490 // Linked notebooks API
491 [[nodiscard]] virtual QFuture<quint32> linkedNotebookCount() const = 0;
492
493 [[nodiscard]] virtual QFuture<void> putLinkedNotebook(
494     qevercloud::LinkedNotebook linkedNotebook) = 0;
495
496 [[nodiscard]] virtual QFuture<std::optional<qevercloud::LinkedNotebook>>
497     findLinkedNotebookByGuid(qevercloud::Guid guid) const = 0;
498
499 [[nodiscard]] virtual QFuture<void> expungeLinkedNotebookByGuid(
500     qevercloud::Guid guid) = 0;
501
502 [[nodiscard]] virtual QFuture<QList<qevercloud::LinkedNotebook>>
503     listLinkedNotebooks(ListLinkedNotebooksOptions options = {}) const = 0;
504
505 // Notes API
506 [[nodiscard]] virtual QFuture<quint32> noteCount(
507     NoteCountOptions options = NoteCountOptions(
508         NoteCountOption::IncludeNonDeletedNotes)) const = 0;
509
510 [[nodiscard]] virtual QFuture<quint32> noteCountPerNotebookLocalId(
511     QString notebookLocalId,
512     NoteCountOptions options = NoteCountOptions(
513         NoteCountOption::IncludeNonDeletedNotes)) const = 0;
514
515 [[nodiscard]] virtual QFuture<quint32> noteCountPerTagLocalId(
516     QString tagLocalId,
517     NoteCountOptions options = NoteCountOptions(
518         NoteCountOption::IncludeNonDeletedNotes)) const = 0;
519
520 [[nodiscard]] virtual QFuture<QHash<QString, quint32>> noteCountsPerTags(

```

```

521     ListTagsOptions listTagsOptions = {},
522     NoteCountOptions options = NoteCountOptions(
523         NoteCountOption::IncludeNonDeletedNotes)) const = 0;
524
525 [[nodiscard]] virtual QFuture<quint32> noteCountPerNotebookAndTagLocalIds(
526     QStringList notebookLocalIds, QStringList tagLocalIds,
527     NoteCountOptions options = NoteCountOptions(
528         NoteCountOption::IncludeNonDeletedNotes)) const = 0;
529
530 [[nodiscard]] virtual QFuture<void> putNote(qevercloud::Note note) = 0;
531
532 [[nodiscard]] virtual QFuture<void> updateNote(
533     qevercloud::Note note, UpdateNoteOptions options) = 0;
534
535 [[nodiscard]] virtual QFuture<std::optional<qevercloud::Note>
536     findNoteByLocalId(
537         QString noteLocalId, FetchNoteOptions options) const = 0;
538
539 [[nodiscard]] virtual QFuture<std::optional<qevercloud::Note>
540     findNoteByGuid(
541         qevercloud::Guid noteGuid, FetchNoteOptions options) const = 0;
542
543 [[nodiscard]] virtual QFuture<QList<qevercloud::Note> listNotes(
544     FetchNoteOptions fetchOptions,
545     ListNotesOptions listOptions = {}) const = 0;
546
547 [[nodiscard]] virtual QFuture<QList<qevercloud::Note>
548     listNotesPerNotebookLocalId(
549         QString notebookLocalId, FetchNoteOptions fetchOptions,
550         ListNotesOptions listOptions = {}) const = 0;
551
552 [[nodiscard]] virtual QFuture<QList<qevercloud::Note>
553     listNotesPerTagLocalId(
554         QString tagLocalId, FetchNoteOptions fetchOptions,
555         ListNotesOptions listOptions = {}) const = 0;
556
557 [[nodiscard]] virtual QFuture<QList<qevercloud::Note>
558     listNotesPerNotebookAndTagLocalIds(
559         QStringList notebookLocalIds, QStringList tagLocalIds,
560         FetchNoteOptions fetchOptions,
561         ListNotesOptions listOptions = {}) const = 0;
562
563 [[nodiscard]] virtual QFuture<QList<qevercloud::Note> listNotesByLocalIds(
564     QStringList noteLocalIds, FetchNoteOptions fetchOptions,
565     ListNotesOptions listOptions = {}) const = 0;
566
567 [[nodiscard]] virtual QFuture<QSet<qevercloud::Guid> listNoteGuids(
568     ListGuidsFilters filters,
569     std::optional<qevercloud::Guid> linkedNotebookGuid = {}) const = 0;
570
571 [[nodiscard]] virtual QFuture<QList<qevercloud::Note> queryNotes(
572     NoteSearchQuery query, FetchNoteOptions fetchOptions) const = 0;
573
574 [[nodiscard]] virtual QFuture<QStringList> queryNoteLocalIds(
575     NoteSearchQuery query) const = 0;
576
577 [[nodiscard]] virtual QFuture<void> expungeNoteByLocalId(
578     QString noteLocalId) = 0;
579
580 [[nodiscard]] virtual QFuture<void> expungeNoteByGuid(
581     qevercloud::Guid noteGuid) = 0;
582
583 // Tags API
584 [[nodiscard]] virtual QFuture<quint32> tagCount() const = 0;
585 [[nodiscard]] virtual QFuture<void> putTag(qevercloud::Tag tag) = 0;
586
587 [[nodiscard]] virtual QFuture<std::optional<qevercloud::Tag>
588     findTagByLocalId(QString tagLocalId) const = 0;
589
590 [[nodiscard]] virtual QFuture<std::optional<qevercloud::Tag> findTagByGuid(
591     qevercloud::Guid tagGuid) const = 0;
592
593 [[nodiscard]] virtual QFuture<std::optional<qevercloud::Tag> findTagByName(
594     QString tagName,
595     std::optional<qevercloud::Guid> linkedNotebookGuid =
596     std::nullopt) const = 0;
597
598 [[nodiscard]] virtual QFuture<QList<qevercloud::Tag> listTags(
599     ListTagsOptions options = {}) const = 0;
600
601 [[nodiscard]] virtual QFuture<QList<qevercloud::Tag>
602     listTagsPerNoteLocalId(
603         QString noteLocalId, ListTagsOptions options = {}) const = 0;
604
605 [[nodiscard]] virtual QFuture<QSet<qevercloud::Guid> listTagGuids(
606     ListGuidsFilters filters,
607     std::optional<qevercloud::Guid> linkedNotebookGuid = {}) const = 0;

```

```

608
609 [[nodiscard]] virtual QFuture<void> expungeTagByLocalId(
610     QString tagLocalId) = 0;
611
612 [[nodiscard]] virtual QFuture<void> expungeTagByGuid(
613     qevercloud::Guid tagGuid) = 0;
614
615 [[nodiscard]] virtual QFuture<void> expungeTagByName(
616     QString name,
617     std::optional<qevercloud::Guid> linkedNotebookGuid = std::nullopt) = 0;
618
619 // Resources API
620 [[nodiscard]] virtual QFuture<quint32> resourceCount(
621     NoteCountOptions options = NoteCountOptions(
622         NoteCountOption::IncludeNonDeletedNotes)) const = 0;
623
624 [[nodiscard]] virtual QFuture<quint32> resourceCountPerNoteLocalId(
625     QString noteLocalId) const = 0;
626
627 [[nodiscard]] virtual QFuture<void> putResource(
628     qevercloud::Resource resource) = 0;
629
630 [[nodiscard]] virtual QFuture<std::optional<qevercloud::Resource>
631     findResourceByLocalId(
632         QString resourceLocalId,
633         FetchResourceOptions options = {}) const = 0;
634
635 [[nodiscard]] virtual QFuture<std::optional<qevercloud::Resource>
636     findResourceByGuid(
637         qevercloud::Guid resourceGuid,
638         FetchResourceOptions options = {}) const = 0;
639
640 [[nodiscard]] virtual QFuture<void> expungeResourceByLocalId(
641     QString resourceLocalId) = 0;
642
643 [[nodiscard]] virtual QFuture<void> expungeResourceByGuid(
644     qevercloud::Guid resourceGuid) = 0;
645
646 // Saved searches API
647 [[nodiscard]] virtual QFuture<quint32> savedSearchCount() const = 0;
648
649 [[nodiscard]] virtual QFuture<void> putSavedSearch(
650     qevercloud::SavedSearch search) = 0;
651
652 [[nodiscard]] virtual QFuture<std::optional<qevercloud::SavedSearch>
653     findSavedSearchByLocalId(QString savedSearchLocalId) const = 0;
654
655 [[nodiscard]] virtual QFuture<std::optional<qevercloud::SavedSearch>
656     findSavedSearchByGuid(qevercloud::Guid guid) const = 0;
657
658 [[nodiscard]] virtual QFuture<std::optional<qevercloud::SavedSearch>
659     findSavedSearchByName(QString name) const = 0;
660
661 [[nodiscard]] virtual QFuture<QList<qevercloud::SavedSearch>
662     listSavedSearches(ListSavedSearchesOptions options = {}) const = 0;
663
664 [[nodiscard]] virtual QFuture<QSet<qevercloud::Guid> listSavedSearchGuids(
665     ListGuidsFilters filters) const = 0;
666
667 [[nodiscard]] virtual QFuture<void> expungeSavedSearchByLocalId(
668     QString savedSearchLocalId) = 0;
669
670 [[nodiscard]] virtual QFuture<void> expungeSavedSearchByGuid(
671     qevercloud::Guid guid) = 0;
672
673 // Synchronization API
674 [[nodiscard]] virtual QFuture<qint32> highestUpdateSequenceNumber(
675     HighestUsnOption option) const = 0;
676
677 [[nodiscard]] virtual QFuture<qint32> highestUpdateSequenceNumber(
678     qevercloud::Guid linkedNotebookGuid) const = 0;
679
680 [[nodiscard]] virtual ILocalStorageNotifier * notifier() const = 0;
681 };
682
683 [[nodiscard]] QUINTIER_EXPORT bool operator==(
684     const ILocalStorage::ListObjectsFilters & lhs,
685     const ILocalStorage::ListObjectsFilters & rhs) noexcept;
686
687 [[nodiscard]] QUINTIER_EXPORT bool operator==(
688     const ILocalStorage::ListOptionsBase & lhs,
689     const ILocalStorage::ListOptionsBase & rhs) noexcept;
690
691 [[nodiscard]] QUINTIER_EXPORT bool operator!=(
692     const ILocalStorage::ListOptionsBase & lhs,
693     const ILocalStorage::ListOptionsBase & rhs) noexcept;
694
695
696
697
698
699
700

```



```

701 [[nodiscard]] QUENTIER_EXPORT bool operator==(
702     const ILocalStorage::ListNotebooksOptions & lhs,
703     const ILocalStorage::ListNotebooksOptions & rhs) noexcept;
704
705 [[nodiscard]] QUENTIER_EXPORT bool operator!=(
706     const ILocalStorage::ListNotebooksOptions & lhs,
707     const ILocalStorage::ListNotebooksOptions & rhs) noexcept;
708
709 [[nodiscard]] QUENTIER_EXPORT bool operator==(
710     const ILocalStorage::ListLinkedNotebooksOptions & lhs,
711     const ILocalStorage::ListLinkedNotebooksOptions & rhs) noexcept;
712
713 [[nodiscard]] QUENTIER_EXPORT bool operator!=(
714     const ILocalStorage::ListLinkedNotebooksOptions & lhs,
715     const ILocalStorage::ListLinkedNotebooksOptions & rhs) noexcept;
716
717 [[nodiscard]] QUENTIER_EXPORT bool operator==(
718     const ILocalStorage::ListSavedSearchesOptions & lhs,
719     const ILocalStorage::ListSavedSearchesOptions & rhs) noexcept;
720
721 [[nodiscard]] QUENTIER_EXPORT bool operator!=(
722     const ILocalStorage::ListSavedSearchesOptions & lhs,
723     const ILocalStorage::ListSavedSearchesOptions & rhs) noexcept;
724
725 [[nodiscard]] QUENTIER_EXPORT bool operator==(
726     const ILocalStorage::ListNotesOptions & lhs,
727     const ILocalStorage::ListNotesOptions & rhs) noexcept;
728
729 [[nodiscard]] QUENTIER_EXPORT bool operator!=(
730     const ILocalStorage::ListNotesOptions & lhs,
731     const ILocalStorage::ListNotesOptions & rhs) noexcept;
732
733 [[nodiscard]] QUENTIER_EXPORT bool operator==(
734     const ILocalStorage::ListTagsOptions & lhs,
735     const ILocalStorage::ListTagsOptions & rhs) noexcept;
736
737 [[nodiscard]] QUENTIER_EXPORT bool operator!=(
738     const ILocalStorage::ListTagsOptions & lhs,
739     const ILocalStorage::ListTagsOptions & rhs) noexcept;
740
741 [[nodiscard]] QUENTIER_EXPORT bool operator==(
742     const ILocalStorage::ListGuidsFilters & lhs,
743     const ILocalStorage::ListGuidsFilters & rhs) noexcept;
744
745 [[nodiscard]] QUENTIER_EXPORT bool operator!=(
746     const ILocalStorage::ListGuidsFilters & lhs,
747     const ILocalStorage::ListGuidsFilters & rhs) noexcept;
748
749 } // namespace quentier::local_storage

```

## 6.14 ILocalStorageNotifier.h

```

1 /*
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3  *
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11 * but WITHOUT ANY WARRANTY; without even the implied warranty of
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13 * GNU Lesser General Public License for more details.
14 *
15 * You should have received a copy of the GNU Lesser General Public License
16 * along with libquentier. If not, see <http://www.gnu.org/licenses/>.
17 */
18
19 #pragma once
20
21 #include <quentier/local_storage/ILocalStorage.h>
22
23 #include <QObject>
24
25 namespace quentier::local_storage {
26
27 class QUENTIER_EXPORT ILocalStorageNotifier : public QObject
28 {
29     Q_OBJECT
30 protected:
31     explicit ILocalStorageNotifier(QObject * parent = nullptr);

```

```

32
33 public:
34     ~ILocalStorageNotifier() override;
35
36 Q_SIGNALS:
37     // Notifications about user related events
38     void userPut(qevercloud::User user);
39     void userExpunged(qevercloud::UserID userId);
40
41     // Notifications about notebook related events
42     void notebookPut(qevercloud::Notebook notebook);
43     void notebookExpunged(QString notebookLocalId);
44
45     // Notifications about linked notebooks
46     void linkedNotebookPut(qevercloud::LinkedNotebook linkedNotebook);
47     void linkedNotebookExpunged(qevercloud::Guid linkedNotebookGuid);
48
49     // Notifications about note related events
50     void notePut(qevercloud::Note note);
51
52     void noteUpdated(
53         qevercloud::Note note, ILocalStorage::UpdateNoteOptions options);
54
55     void noteExpunged(QString noteLocalId);
56
57     // Notifications about tag related events
58     void tagPut(qevercloud::Tag tag);
59
60     void tagExpunged(QString tagLocalId, QStringList expungedChildTagLocalIds);
61
62     // Notifications about resource related events
63     void resourcePut(qevercloud::Resource resource);
64     void resourceMetadataPut(qevercloud::Resource resource);
65     void resourceExpunged(QString resourceLocalId);
66
67     // Notifications about saved search related events
68     void savedSearchPut(qevercloud::SavedSearch savedSearch);
69     void savedSearchExpunged(QString savedSearchLocalId);
70 };
71
72 } // namespace quantier::local_storage

```

## 6.15 IPatch.h

```

1 /*
2  * Copyright 2021-2022 Dmitry Ivanov
3  *
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9  *
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11 * but WITHOUT ANY WARRANTY; without even the implied warranty of
12 * MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the
13 * GNU Lesser General Public License for more details.
14 *
15 * You should have received a copy of the GNU Lesser General Public License
16 * along with libquantier. If not, see <http://www.gnu.org/licenses/>.
17 */
18
19 #pragma once
20
21 #include <quantier/utility/Linkage.h>
22
23 #include <QFuture>
24
25 namespace quantier::local_storage {
26
27     class QUENTIER_EXPORT IPatch
28     {
29     public:
30         virtual ~IPatch() noexcept;
31
32         [[nodiscard]] virtual int fromVersion() const noexcept = 0;
33
34         [[nodiscard]] virtual int toVersion() const noexcept = 0;
35
36         [[nodiscard]] virtual QString patchShortDescription() const = 0;
37
38         [[nodiscard]] virtual QString patchLongDescription() const = 0;
39     };
40
41 }

```

```

69     [[nodiscard]] virtual QFuture<void> backupLocalStorage() = 0;
70
71     [[nodiscard]] virtual QFuture<void> restoreLocalStorageFromBackup() = 0;
72
73     [[nodiscard]] virtual QFuture<void> removeLocalStorageBackup() = 0;
74
75     [[nodiscard]] virtual QFuture<void> apply() = 0;
76 };
77
78 } // namespace quantier::local_storage

```

## 6.16 LocalStorageOpenException.h

```

1  /*
2  * Copyright 2016-2024 Dmitry Ivanov
3  *
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9  *
10 * libquantier is distributed in the hope that it will be useful,
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12 * MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the
13 * GNU Lesser General Public License for more details.
14 *
15 * You should have received a copy of the GNU Lesser General Public License
16 * along with libquantier. If not, see <http://www.gnu.org/licenses/>.
17 */
18
19 #pragma once
20
21 #include <quantier/exception/IQuantierException.h>
22
23 namespace quantier::local_storage {
24
25 class QUANTIER_EXPORT LocalStorageOpenException : public IQuantierException
26 {
27 public:
28     explicit LocalStorageOpenException(const ErrorString & message);
29
30     [[nodiscard]] LocalStorageOpenException * clone() const override;
31     void raise() const override;
32
33 protected:
34     [[nodiscard]] QString exceptionDisplayName() const override;
35 };
36
37 } // namespace quantier::local_storage

```

## 6.17 LocalStorageOperationException.h

```

1  /*
2  * Copyright 2016-2024 Dmitry Ivanov
3  *
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10 * libquantier is distributed in the hope that it will be useful,
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12 * MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the
13 * GNU Lesser General Public License for more details.
14 *
15 * You should have received a copy of the GNU Lesser General Public License
16 * along with libquantier. If not, see <http://www.gnu.org/licenses/>.
17 */
18
19 #pragma once
20
21 #include <quantier/exception/IQuantierException.h>
22
23 namespace quantier::local_storage {
24
25 class QUANTIER_EXPORT LocalStorageOperationException : public IQuantierException
26 {

```

```

31 public:
32     explicit LocalStorageOperationException(ErrorString message);
33
34     [[nodiscard]] LocalStorageOperationException * clone() const override;
35     void raise() const override;
36
37 protected:
38     [[nodiscard]] QString exceptionDisplayName() const override;
39 };
40
41 } // namespace quantier::local_storage

```

## 6.18 NoteSearchQuery.h

```

1  /*
2  * Copyright 2016-2025 Dmitry Ivanov
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9  *
10 * libquantier is distributed in the hope that it will be useful,
11 * but WITHOUT ANY WARRANTY; without even the implied warranty of
12 * MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the
13 * GNU Lesser General Public License for more details.
14 *
15 * You should have received a copy of the GNU Lesser General Public License
16 * along with libquantier. If not, see <http://www.gnu.org/licenses/>.
17 */
18
19 #pragma once
20
21 #include <quantier/types/ErrorString.h>
22
23 #include <QList>
24 #include <QSharedDataPointer>
25
26 namespace quantier::local_storage {
27
28 class QUANTIER_EXPORT NoteSearchQuery : public utility::Printable
29 {
30 public:
31     explicit NoteSearchQuery();
32
33     NoteSearchQuery(const NoteSearchQuery & other);
34     NoteSearchQuery(NoteSearchQuery && other) noexcept;
35
36     NoteSearchQuery & operator=(const NoteSearchQuery & other);
37     NoteSearchQuery & operator=(NoteSearchQuery && other) noexcept;
38
39     ~NoteSearchQuery() override;
40
41     [[nodiscard]] bool isEmpty() const;
42
43     void clear();
44
45     [[nodiscard]] QString queryString() const;
46
47     [[nodiscard]] bool setQueryString(
48         const QString & queryString, ErrorString & error);
49
50     [[nodiscard]] QString notebookModifier() const;
51
52     [[nodiscard]] bool hasAnyModifier() const;
53
54     [[nodiscard]] const QStringList & tagNames() const;
55     [[nodiscard]] const QStringList & negatedTagNames() const;
56     [[nodiscard]] bool hasAnyTag() const;
57     [[nodiscard]] bool hasNegatedAnyTag() const;
58
59     [[nodiscard]] const QStringList & titleNames() const;
60     [[nodiscard]] const QStringList & negatedTitleNames() const;
61     [[nodiscard]] bool hasAnyTitleName() const;
62     [[nodiscard]] bool hasNegatedAnyTitleName() const;
63
64     [[nodiscard]] const QList<qint64> & creationTimestamps() const;
65     [[nodiscard]] const QList<qint64> & negatedCreationTimestamps() const;
66     [[nodiscard]] bool hasAnyCreationTimestamp() const;
67     [[nodiscard]] bool hasNegatedAnyCreationTimestamp() const;
68
69     [[nodiscard]] const QList<qint64> & modificationTimestamps() const;

```

```
78 [[nodiscard]] const QList<qint64> & negatedModificationTimestamps() const;
79 [[nodiscard]] bool hasAnyModificationTimestamp() const;
80 [[nodiscard]] bool hasNegatedAnyModificationTimestamp() const;
81
82 [[nodiscard]] const QStringList & resourceMimeTypes() const;
83 [[nodiscard]] const QStringList & negatedResourceMimeTypes() const;
84 [[nodiscard]] bool hasAnyResourceMimeType() const;
85 [[nodiscard]] bool hasNegatedAnyResourceMimeType() const;
86
87 [[nodiscard]] const QList<qint64> & subjectDateTimestamps() const;
88 [[nodiscard]] const QList<qint64> & negatedSubjectDateTimestamps() const;
89 [[nodiscard]] bool hasAnySubjectDateTimestamp() const;
90 [[nodiscard]] bool hasNegatedAnySubjectDateTimestamp() const;
91
92 [[nodiscard]] const QList<double> & latitudes() const;
93 [[nodiscard]] const QList<double> & negatedLatitudes() const;
94 [[nodiscard]] bool hasAnyLatitude() const;
95 [[nodiscard]] bool hasNegatedAnyLatitude() const;
96
97 [[nodiscard]] const QList<double> & longitudes() const;
98 [[nodiscard]] const QList<double> & negatedLongitudes() const;
99 [[nodiscard]] bool hasAnyLongitude() const;
100 [[nodiscard]] bool hasNegatedAnyLongitude() const;
101
102 [[nodiscard]] const QList<double> & altitudes() const;
103 [[nodiscard]] const QList<double> & negatedAltitudes() const;
104 [[nodiscard]] bool hasAnyAltitude() const;
105 [[nodiscard]] bool hasNegatedAnyAltitude() const;
106
107 [[nodiscard]] const QStringList & authors() const;
108 [[nodiscard]] const QStringList & negatedAuthors() const;
109 [[nodiscard]] bool hasAnyAuthor() const;
110 [[nodiscard]] bool hasNegatedAnyAuthor() const;
111
112 [[nodiscard]] const QStringList & sources() const;
113 [[nodiscard]] const QStringList & negatedSources() const;
114 [[nodiscard]] bool hasAnySource() const;
115 [[nodiscard]] bool hasNegatedAnySource() const;
116
117 [[nodiscard]] const QStringList & sourceApplications() const;
118 [[nodiscard]] const QStringList & negatedSourceApplications() const;
119 [[nodiscard]] bool hasAnySourceApplication() const;
120 [[nodiscard]] bool hasNegatedAnySourceApplication() const;
121
122 [[nodiscard]] const QStringList & contentClasses() const;
123 [[nodiscard]] const QStringList & negatedContentClasses() const;
124 [[nodiscard]] bool hasAnyContentClass() const;
125 [[nodiscard]] bool hasNegatedAnyContentClass() const;
126
127 [[nodiscard]] const QStringList & placeNames() const;
128 [[nodiscard]] const QStringList & negatedPlaceNames() const;
129 [[nodiscard]] bool hasAnyPlaceName() const;
130 [[nodiscard]] bool hasNegatedAnyPlaceName() const;
131
132 [[nodiscard]] const QStringList & applicationData() const;
133 [[nodiscard]] const QStringList & negatedApplicationData() const;
134 [[nodiscard]] bool hasAnyApplicationData() const;
135 [[nodiscard]] bool hasNegatedAnyApplicationData() const;
136
137 [[nodiscard]] const QList<qint64> & reminderOrders() const;
138 [[nodiscard]] const QList<qint64> & negatedReminderOrders() const;
139 [[nodiscard]] bool hasAnyReminderOrder() const;
140 [[nodiscard]] bool hasNegatedAnyReminderOrder() const;
141
142 [[nodiscard]] const QList<qint64> & reminderTimes() const;
143 [[nodiscard]] const QList<qint64> & negatedReminderTimes() const;
144 [[nodiscard]] bool hasAnyReminderTime() const;
145 [[nodiscard]] bool hasNegatedAnyReminderTime() const;
146
147 [[nodiscard]] const QList<qint64> & reminderDoneTimes() const;
148 [[nodiscard]] const QList<qint64> & negatedReminderDoneTimes() const;
149 [[nodiscard]] bool hasAnyReminderDoneTime() const;
150 [[nodiscard]] bool hasNegatedAnyReminderDoneTime() const;
151
152 [[nodiscard]] bool hasUnfinishedToDo() const;
153 [[nodiscard]] bool hasNegatedUnfinishedToDo() const;
154
155 [[nodiscard]] bool hasFinishedToDo() const;
156 [[nodiscard]] bool hasNegatedFinishedToDo() const;
157
158 [[nodiscard]] bool hasAnyToDo() const;
159 [[nodiscard]] bool hasNegatedAnyToDo() const;
160
161 [[nodiscard]] bool hasEncryption() const;
162 [[nodiscard]] bool hasNegatedEncryption() const;
163
164 [[nodiscard]] const QStringList & contentSearchTerms() const;
```

```

165     [[nodiscard]] const QStringList & negatedContentSearchTerms() const;
166     [[nodiscard]] bool hasAnyContentSearchTerms() const;
167
168     [[nodiscard]] bool isMatcheable() const;
169
170     // utility::Printable
171     QTextStream & print(QTextStream & strm) const override;
172
173 private:
174     class Data;
175     QSharedDataPointer<Data> d;
176 };
177
178 [[nodiscard]] QUENTIER_EXPORT bool operator==(
179     const NoteSearchQuery & lhs, const NoteSearchQuery & rhs) noexcept;
180
181 [[nodiscard]] QUENTIER_EXPORT bool operator!=(
182     const NoteSearchQuery & lhs, const NoteSearchQuery & rhs) noexcept;
183
184 } // namespace quentier::local_storage

```

## 6.19 MockILocalStorage.h

```

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13 * GNU Lesser General Public License for more details.
14 *
15 * You should have received a copy of the GNU Lesser General Public License
16 * along with libquentier. If not, see <http://www.gnu.org/licenses/>.
17 */
18
19 #pragma once
20
21 #include <quentier/local_storage/ILocalStorage.h>
22
23 #include <gmock/gmock.h>
24
25 namespace quentier::local_storage::tests::mocks {
26
27 class MockILocalStorage : public ILocalStorage
28 {
29 public:
30     MOCK_METHOD(QFuture<bool>, isVersionTooHigh, (), (const, override));
31     MOCK_METHOD(QFuture<bool>, requiresUpgrade, (), (const, override));
32
33     MOCK_METHOD(
34         QFuture<QList<IPatchPtr>>, requiredPatches, (), (const, override));
35
36     MOCK_METHOD(QFuture<qint32>, version, (), (const, override));
37
38     MOCK_METHOD(
39         QFuture<qint32>, highestSupportedVersion, (), (const, override));
40
41     MOCK_METHOD(QFuture<quint32>, userCount, (), (const, override));
42     MOCK_METHOD(QFuture<void>, putUser, (qevercloud::User user), (override));
43
44     MOCK_METHOD(
45         QFuture<std::optional<qevercloud::User>>, findUserById,
46         (qevercloud::UserID userId), (const, override));
47
48     MOCK_METHOD(
49         QFuture<void>, expungeUserById, (qevercloud::UserID userId),
50         (override));
51
52     MOCK_METHOD(QFuture<quint32>, notebookCount, (), (const, override));
53
54     MOCK_METHOD(
55         QFuture<void>, putNotebook, (qevercloud::Notebook notebook),
56         (override));
57
58     MOCK_METHOD(
59         QFuture<std::optional<qevercloud::Notebook>>, findNotebookByLocalId,
60         (QString localId), (const, override));

```

```

61
62     MOCK_METHOD(
63         QFuture<std::optional<qevercloud::Notebook>, findNotebookByGuid,
64         (qevercloud::Guid guid), (const, override));
65
66     MOCK_METHOD(
67         QFuture<std::optional<qevercloud::Notebook>, findNotebookByName,
68         (QString name, std::optional<qevercloud::Guid> linkedNotebookGuid),
69         (const, override));
70
71     MOCK_METHOD(
72         QFuture<std::optional<qevercloud::Notebook>, findDefaultNotebook, (),
73         (const, override));
74
75     MOCK_METHOD(
76         QFuture<void>, expungeNotebookByLocalId, (QString localId), (override));
77
78     MOCK_METHOD(
79         QFuture<void>, expungeNotebookByGuid, (qevercloud::Guid guid),
80         (override));
81
82     MOCK_METHOD(
83         QFuture<void>, expungeNotebookByName,
84         (QString name, std::optional<qevercloud::Guid> linkedNotebookGuid),
85         (override));
86
87     MOCK_METHOD(
88         QFuture<QList<qevercloud::Notebook>, listNotebooks,
89         (ListNotebooksOptions options), (const, override));
90
91     MOCK_METHOD(
92         QFuture<QList<qevercloud::SharedNotebook>, listSharedNotebooks,
93         (qevercloud::Guid notebookGuid), (const, override));
94
95     MOCK_METHOD(
96         QFuture<QSet<qevercloud::Guid>, listNotebookGuids,
97         (ListGuidsFilters filters,
98         std::optional<qevercloud::Guid> linkedNotebookGuid),
99         (const, override));
100
101     MOCK_METHOD(QFuture<quint32>, linkedNotebookCount, (), (const, override));
102
103     MOCK_METHOD(
104         QFuture<void>, putLinkedNotebook,
105         (qevercloud::LinkedNotebook linkedNotebook), (override));
106
107     MOCK_METHOD(
108         QFuture<std::optional<qevercloud::LinkedNotebook>,
109         findLinkedNotebookByGuid, (qevercloud::Guid guid), (const, override));
110
111     MOCK_METHOD(
112         QFuture<void>, expungeLinkedNotebookByGuid, (qevercloud::Guid guid),
113         (override));
114
115     MOCK_METHOD(
116         QFuture<QList<qevercloud::LinkedNotebook>, listLinkedNotebooks,
117         (ListLinkedNotebooksOptions options), (const, override));
118
119     MOCK_METHOD(
120         QFuture<quint32>, noteCount, (NoteCountOptions options),
121         (const, override));
122
123     MOCK_METHOD(
124         QFuture<quint32>, noteCountPerNotebookLocalId,
125         (QString notebookLocalId, NoteCountOptions options), (const, override));
126
127     MOCK_METHOD(
128         QFuture<quint32>, noteCountPerTagLocalId,
129         (QString tagLocalId, NoteCountOptions options), (const, override));
130
131     MOCK_METHOD(
132         (QFuture<QHash<QString, quint32>), noteCountsPerTags,
133         (ListTagsOptions listTagsOptions, NoteCountOptions options),
134         (const, override));
135
136     MOCK_METHOD(
137         QFuture<quint32>, noteCountPerNotebookAndTagLocalIds,
138         (QStringList notebookLocalIds, QStringList tagLocalIds,
139         NoteCountOptions options),
140         (const, override));
141
142     MOCK_METHOD(QFuture<void>, putNote, (qevercloud::Note note), (override));
143
144     MOCK_METHOD(
145         QFuture<void>, updateNote,
146         (qevercloud::Note note, UpdateNoteOptions options), (override));
147

```

```

148     MOCK_METHOD(
149         QFuture<std::optional<qevercloud::Note>, findNoteByLocalId,
150         (QString localId, FetchNoteOptions options), (const, override));
151
152     MOCK_METHOD(
153         QFuture<std::optional<qevercloud::Note>, findNoteByGuid,
154         (qevercloud::Guid guid, FetchNoteOptions options), (const, override));
155
156     MOCK_METHOD(
157         QFuture<void>, expungeNoteByLocalId, (QString localId), (override));
158
159     MOCK_METHOD(
160         QFuture<void>, expungeNoteByGuid, (qevercloud::Guid guid), (override));
161
162     MOCK_METHOD(
163         QFuture<QList<qevercloud::Note>, listNotes,
164         (FetchNoteOptions fetchOptions, ListNotesOptions options),
165         (const, override));
166
167     MOCK_METHOD(
168         QFuture<QList<qevercloud::Note>, listNotesPerNotebookLocalId,
169         (QString notebookLocalId, FetchNoteOptions fetchOptions,
170         ListNotesOptions options),
171         (const, override));
172
173     MOCK_METHOD(
174         QFuture<QList<qevercloud::Note>, listNotesPerTagLocalId,
175         (QString tagLocalId, FetchNoteOptions fetchOptions,
176         ListNotesOptions options),
177         (const, override));
178
179     MOCK_METHOD(
180         QFuture<QList<qevercloud::Note>, listNotesPerNotebookAndTagLocalIds,
181         (QStringList notebookLocalIds, QStringList tagLocalIds,
182         FetchNoteOptions fetchOptions, ListNotesOptions options),
183         (const, override));
184
185     MOCK_METHOD(
186         QFuture<QList<qevercloud::Note>, listNotesByLocalIds,
187         (QStringList noteLocalIds, FetchNoteOptions fetchOptions,
188         ListNotesOptions options),
189         (const, override));
190
191     MOCK_METHOD(
192         QFuture<QSet<qevercloud::Guid>, listNoteGuids,
193         (ListGuidsFilters filters,
194         std::optional<qevercloud::Guid> linkedNotebookGuid),
195         (const, override));
196
197     MOCK_METHOD(
198         QFuture<QList<qevercloud::Note>, queryNotes,
199         (NoteSearchQuery query, FetchNoteOptions fetchOptions),
200         (const, override));
201
202     MOCK_METHOD(
203         QFuture<QStringList>, queryNoteLocalIds, (NoteSearchQuery query),
204         (const, override));
205
206     MOCK_METHOD(QFuture<quint32>, tagCount, (), (const, override));
207     MOCK_METHOD(QFuture<void>, putTag, (qevercloud::Tag tag), (override));
208
209     MOCK_METHOD(
210         QFuture<std::optional<qevercloud::Tag>, findTagByLocalId,
211         (QString tagLocalId), (const, override));
212
213     MOCK_METHOD(
214         QFuture<std::optional<qevercloud::Tag>, findTagByGuid,
215         (qevercloud::Guid tagGuid), (const, override));
216
217     MOCK_METHOD(
218         QFuture<std::optional<qevercloud::Tag>, findTagByName,
219         (QString tagName, std::optional<QString> linkedNotebookGuid),
220         (const, override));
221
222     MOCK_METHOD(
223         QFuture<QList<qevercloud::Tag>, listTags, (ListTagsOptions options),
224         (const, override));
225
226     MOCK_METHOD(
227         QFuture<QList<qevercloud::Tag>, listTagsPerNoteLocalId,
228         (QString noteLocalId, ListTagsOptions options), (const, override));
229
230     MOCK_METHOD(
231         QFuture<QSet<qevercloud::Guid>, listTagGuids,
232         (ListGuidsFilters filters,
233         std::optional<qevercloud::Guid> linkedNotebookGuid),
234         (const, override));

```



```

235
236     MOCK_METHOD(
237         QFuture<void>, expungeTagByLocalId, (QString tagLocalId), (override));
238
239     MOCK_METHOD(
240         QFuture<void>, expungeTagByGuid, (qevercloud::Guid tagGuid),
241         (override));
242
243     MOCK_METHOD(
244         QFuture<void>, expungeTagByName,
245         (QString name, std::optional<qevercloud::Guid> linkedNotebookGuid),
246         (override));
247
248     MOCK_METHOD(
249         QFuture<quint32>, resourceCount, (NoteCountOptions options),
250         (const, override));
251
252     MOCK_METHOD(
253         QFuture<quint32>, resourceCountPerNoteLocalId, (QString noteLocalId),
254         (const, override));
255
256     MOCK_METHOD(
257         QFuture<void>, putResource, (qevercloud::Resource resource),
258         (override));
259
260     MOCK_METHOD(
261         QFuture<std::optional<qevercloud::Resource>, findResourceByLocalId,
262         (QString resourceLocalId, FetchResourceOptions options),
263         (const, override));
264
265     MOCK_METHOD(
266         QFuture<std::optional<qevercloud::Resource>, findResourceByGuid,
267         (qevercloud::Guid resourceGuid, FetchResourceOptions options),
268         (const, override));
269
270     MOCK_METHOD(
271         QFuture<void>, expungeResourceByLocalId, (QString resourceLocalId),
272         (override));
273
274     MOCK_METHOD(
275         QFuture<void>, expungeResourceByGuid, (qevercloud::Guid resourceGuid),
276         (override));
277
278     MOCK_METHOD(QFuture<quint32>, savedSearchCount, (), (const, override));
279
280     MOCK_METHOD(
281         QFuture<void>, putSavedSearch, (qevercloud::SavedSearch search),
282         (override));
283
284     MOCK_METHOD(
285         QFuture<std::optional<qevercloud::SavedSearch>,
286         findSavedSearchByLocalId, (QString localId), (const, override));
287
288     MOCK_METHOD(
289         QFuture<std::optional<qevercloud::SavedSearch>, findSavedSearchByGuid,
290         (qevercloud::Guid guid), (const, override));
291
292     MOCK_METHOD(
293         QFuture<std::optional<qevercloud::SavedSearch>, findSavedSearchByName,
294         (QString name), (const, override));
295
296     MOCK_METHOD(
297         QFuture<QList<qevercloud::SavedSearch>, listSavedSearches,
298         (ListSavedSearchesOptions options), (const, override));
299
300     MOCK_METHOD(
301         QFuture<QSet<qevercloud::Guid>, listSavedSearchGuids,
302         (ListGuidsFilters filters), (const, override));
303
304     MOCK_METHOD(
305         QFuture<void>, expungeSavedSearchByLocalId, (QString localId),
306         (override));
307
308     MOCK_METHOD(
309         QFuture<void>, expungeSavedSearchByGuid, (qevercloud::Guid guid),
310         (override));
311
312     MOCK_METHOD(
313         QFuture<qint32>, highestUpdateSequenceNumber, (HighestUsnOption option),
314         (const, override));
315
316     MOCK_METHOD(
317         QFuture<qint32>, highestUpdateSequenceNumber,
318         (qevercloud::Guid linkedNotebookGuid), (const, override));
319
320     MOCK_METHOD(ILocalStorageNotifier *, notifier, (), (const, override));
321 };

```

```

322
323 } // namespace quantier::local_storage::tests::mocks

```

## 6.20 QuantierLogger.h

```

1 /*
2  * Copyright 2016-2024 Dmitry Ivanov
3  *
4  * This file is part of libquantier
5  *
6  * libquantier is free software; you can redistribute it and/or modify
7  * it under the terms of the GNU Lesser General Public License as published by
8  * the Free Software Foundation, version 3 of the License.
9  *
10 * libquantier is distributed in the hope that it will be useful,
11 * but WITHOUT ANY WARRANTY; without even the implied warranty of
12 * MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the
13 * GNU Lesser General Public License for more details.
14 *
15 * You should have received a copy of the GNU Lesser General Public License
16 * along with libquantier. If not, see <http://www.gnu.org/licenses/>.
17 */
18
19 #pragma once
20
21 #include <quantier/utility/Linkage.h>
22
23 #include <QDebug>
24 #include <QRegularExpression>
25 #include <QString>
26 #include <QTextStream>
27
28 namespace quantier {
29
30     enum class LogLevel
31     {
32         Trace,
33         Debug,
34         Info,
35         Warning,
36         Error
37     };
38
39     QENTIER_EXPORT QDebug & operator<<(QDebug & dbg, LogLevel logLevel);
40
41     QENTIER_EXPORT QTextStream & operator<<(QTextStream & strm, LogLevel logLevel);
42
43     void QENTIER_EXPORT QuantierInitializeLogging();
44
45     void QENTIER_EXPORT QuantierAddLogEntry(
46         const QString & sourceFileName, int sourceFileLineNumber,
47         const QString & component, const QString & message, LogLevel logLevel);
48
49     LogLevel QENTIER_EXPORT QuantierMinLogLevel();
50
51     void QENTIER_EXPORT QuantierSetMinLogLevel(LogLevel logLevel);
52
53     void QENTIER_EXPORT QuantierAddStdOutLogDestination();
54
55     [[nodiscard]] bool QENTIER_EXPORT QuantierIsLogLevelActive(LogLevel logLevel);
56
57     [[nodiscard]] QString QENTIER_EXPORT QuantierLogFilesDirPath();
58
59     void QENTIER_EXPORT QuantierRestartLogging();
60
61     [[nodiscard]] QRegularExpression QENTIER_EXPORT QuantierLogComponentFilter();
62
63     void QENTIER_EXPORT
64         QuantierSetLogComponentFilter(const QRegularExpression & filter);
65 } // namespace quantier
66
67 #define QNLOG_PRIVATE_BASE(component, message, level)
68 if (quantier::QuantierIsLogLevelActive(quantier::LogLevel::level)) {
69     QString msg;
70     QDebug dbg(&msg);
71     dbg.nospace();
72     dbg.noquote();
73     dbg << message;
74     quantier::QuantierAddLogEntry(
75         QStringLiteral(__FILE__), __LINE__, QString::fromUtf8(component),
76         msg, quantier::LogLevel::level);
77 }

```

```

121 // QNLOG_PRIVATE_BASE
122
123 #define QNTRACE(component, message)           \
124 QNLOG_PRIVATE_BASE(component, message, Trace) \
125 // QNTRACE
126
127 #define QNDEBUG(component, message)           \
128 QNLOG_PRIVATE_BASE(component, message, Debug) \
129 // QNDEBUG
130
131 #define QNINFO(component, message)           \
132 QNLOG_PRIVATE_BASE(component, message, Info) \
133 // QNINFO
134
135 #define QNWARNING(component, message)           \
136 QNLOG_PRIVATE_BASE(component, message, Warning) \
137 // QNWARNING
138
139 #define QNERROR(component, message)           \
140 QNLOG_PRIVATE_BASE(component, message, Error) \
141 // QNERROR
142
143 #define QUENTIER_SET_MIN_LOG_LEVEL(level)           \
144 quentier::QuentierSetMinLogLevel(quentier::LogLevel::level) \
145 // QUENTIER_SET_MIN_LOG_LEVEL
146
147 #define QUENTIER_INITIALIZE_LOGGING() quentier::QuentierInitializeLogging()
148 // QUENTIER_INITIALIZE_LOGGING
149
150 // clang-format off
151 #define QUENTIER_ADD_STDOUT_LOG_DESTINATION()           \
152 quentier::QuentierAddStdOutLogDestination()           \
153 // QUENTIER_ADD_STDOUT_LOG_DESTINATION
154 // clang-format on
155
156 #define QNLOG_FILE_LINE_NUMBER_DELIMITER ":"

```

## 6.21 INoteEditorBackend.h

```

1 /*
2  * Copyright 2016-2025 Dmitry Ivanov
3  *
4  * This file is part of libquentier
5  *
6  * libquentier is free software; you can redistribute it and/or modify
7  * it under the terms of the GNU Lesser General Public License as published by
8  * the Free Software Foundation, version 3 of the License.
9  *
10 * libquentier is distributed in the hope that it will be useful,
11 * but WITHOUT ANY WARRANTY; without even the implied warranty of
12 * MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the
13 * GNU Lesser General Public License for more details.
14 *
15 * You should have received a copy of the GNU Lesser General Public License
16 * along with libquentier. If not, see <http://www.gnu.org/licenses/>.
17 */
18
19 #pragma once
20
21 #include <quentier/enml/Fwd.h>
22 #include <quentier/local_storage/Fwd.h>
23 #include <quentier/utility/Linkage.h>
24
25 #include <QPalette>
26 #include <QPrinter>
27 #include <QStringList>
28 #include <QThread>
29 #include <QWidget>
30
31 class QTextStream;
32 class QUndoStack;
33
34 namespace quentier {
35
36 class Account;
37 class ErrorString;
38 class NoteEditor;
39 class SpellChecker;
40
41 class QUENTIER_EXPORT INoteEditorBackend
42 {
43 public:
44     virtual ~INoteEditorBackend() noexcept;

```

```

45
46     virtual void initialize(
47         local_storage::ILocalStoragePtr localStorage,
48         SpellChecker & spellChecker, const Account & account,
49         QThread * backgroundJobsThread,
50         enml::IDecryptedTextCachePtr decryptedTextCache) = 0;
51
52     [[nodiscard]] virtual QObject * object() = 0; // provide QObject interface
53     [[nodiscard]] virtual QWidget * widget() = 0; // provide QWidget interface
54
55     virtual void setAccount(const Account & account) = 0;
56     virtual void setUndoStack(QUndoStack * pUndoStack) = 0;
57
58     virtual void setInitialPageHtml(const QString & html) = 0;
59     virtual void setNoteNotFoundPageHtml(const QString & html) = 0;
60     virtual void setNoteDeletedPageHtml(const QString & html) = 0;
61     virtual void setNoteLoadingPageHtml(const QString & html) = 0;
62
63     [[nodiscard]] virtual bool isNoteLoaded() const = 0;
64     [[nodiscard]] virtual qint64 idleTime() const = 0;
65
66     virtual void convertToNote() = 0;
67     virtual void saveNoteToLocalStorage() = 0;
68     virtual void setNoteTitle(const QString & noteTitle) = 0;
69
70     virtual void setTagIds(
71         const QStringList & tagLocalUids, const QStringList & tagGuids) = 0;
72
73     virtual void undo() = 0;
74     virtual void redo() = 0;
75     virtual void cut() = 0;
76     virtual void copy() = 0;
77     virtual void paste() = 0;
78     virtual void pasteUnformatted() = 0;
79     virtual void selectAll() = 0;
80
81     virtual void formatSelectionAsSourceCode() = 0;
82
83     virtual void fontMenu() = 0;
84     virtual void textBold() = 0;
85     virtual void textItalic() = 0;
86     virtual void textUnderline() = 0;
87     virtual void textStrikethrough() = 0;
88     virtual void textHighlight() = 0;
89
90     virtual void alignLeft() = 0;
91     virtual void alignCenter() = 0;
92     virtual void alignRight() = 0;
93     virtual void alignFull() = 0;
94
95     [[nodiscard]] virtual QString selectedText() const = 0;
96     [[nodiscard]] virtual bool hasSelection() const = 0;
97
98     virtual void findNext(const QString & text, bool matchCase) const = 0;
99
100     virtual void findPrevious(const QString & text, bool matchCase) const = 0;
101
102     virtual void replace(
103         const QString & textToReplace, const QString & replacementText,
104         bool matchCase) = 0;
105
106     virtual void replaceAll(
107         const QString & textToReplace, const QString & replacementText,
108         bool matchCase) = 0;
109
110     virtual void insertToDoCheckbox() = 0;
111
112     virtual void insertInAppNoteLink(
113         const QString & userId, const QString & shardId,
114         const QString & noteGuid, const QString & linkText) = 0;
115
116     virtual void setSpellcheck(bool enabled) = 0;
117     [[nodiscard]] virtual bool spellCheckEnabled() const = 0;
118
119     virtual void setFont(const QFont & font) = 0;
120     virtual void setFontHeight(int height) = 0;
121     virtual void setFontColor(const QColor & color) = 0;
122     virtual void setBackgroundColor(const QColor & color) = 0;
123
124     [[nodiscard]] virtual QPalette defaultPalette() const = 0;
125     virtual void setDefaultPalette(const QPalette & pal) = 0;
126
127     [[nodiscard]] virtual const QFont * defaultFont() const = 0;
128     virtual void setDefaultFont(const QFont & font) = 0;
129
130     virtual void insertHorizontalLine() = 0;
131

```

```

132     virtual void increaseFontSize() = 0;
133     virtual void decreaseFontSize() = 0;
134
135     virtual void increaseIndentation() = 0;
136     virtual void decreaseIndentation() = 0;
137
138     virtual void insertBulletedList() = 0;
139     virtual void insertNumberedList() = 0;
140
141     virtual void insertTableDialog() = 0;
142
143     virtual void insertFixedWidthTable(
144         int rows, int columns, int widthInPixels) = 0;
145
146     virtual void insertRelativeWidthTable(
147         int rows, int columns, double relativeWidth) = 0;
148
149     virtual void insertTableRow() = 0;
150     virtual void insertTableColumn() = 0;
151     virtual void removeTableRow() = 0;
152     virtual void removeTableColumn() = 0;
153
154     virtual void addAttachmentDialog() = 0;
155     virtual void saveAttachmentDialog(const QByteArray & resourceHash) = 0;
156     virtual void saveAttachmentUnderCursor() = 0;
157     virtual void openAttachment(const QByteArray & resourceHash) = 0;
158     virtual void openAttachmentUnderCursor() = 0;
159     virtual void copyAttachment(const QByteArray & resourceHash) = 0;
160     virtual void copyAttachmentUnderCursor() = 0;
161     virtual void removeAttachment(const QByteArray & resourceHash) = 0;
162     virtual void removeAttachmentUnderCursor() = 0;
163     virtual void renameAttachment(const QByteArray & resourceHash) = 0;
164     virtual void renameAttachmentUnderCursor() = 0;
165
166     enum class Rotation
167     {
168         Clockwise,
169         Counterclockwise
170     };
171
172     friend QUENTIER_EXPORT QTextStream & operator<<(
173         QTextStream & strm, Rotation rotation);
174
175     friend QUENTIER_EXPORT QDebug & operator<<(QDebug & dbg, Rotation rotation);
176
177     virtual void rotateImageAttachment(
178         const QByteArray & resourceHash, Rotation rotationDirection) = 0;
179
180     virtual void rotateImageAttachmentUnderCursor(
181         Rotation rotationDirection) = 0;
182
183     virtual void encryptSelectedText() = 0;
184
185     virtual void decryptEncryptedTextUnderCursor() = 0;
186
187     virtual void decryptEncryptedText(
188         QString encryptedText, QString cipher, QString hint,
189         QString enCryptIndex) = 0;
190
191     virtual void hideDecryptedTextUnderCursor() = 0;
192
193     virtual void hideDecryptedText(
194         QString encryptedText, QString decryptedText, QString cipher,
195         QString hint, QString enDecryptedIndex) = 0;
196
197     virtual void editHyperlinkDialog() = 0;
198     virtual void copyHyperlink() = 0;
199     virtual void removeHyperlink() = 0;
200
201     virtual void onNoteLoadCancelled() = 0;
202
203     [[nodiscard]] virtual bool print(
204         QPrinter & printer, ErrorString & errorDescription) = 0;
205
206     [[nodiscard]] virtual bool exportToPdf(
207         const QString & absoluteFilePath, ErrorString & errorDescription) = 0;
208
209     [[nodiscard]] virtual bool exportToEnex(
210         const QStringList & tagNames, QString & enex,
211         ErrorString & errorDescription) = 0;
212
213     [[nodiscard]] virtual QString currentNoteLocalId() const = 0;
214     virtual void setCurrentNoteLocalId(const QString & noteLocalUid) = 0;
215
216     virtual void clear() = 0;
217
218     [[nodiscard]] virtual bool isModified() const = 0;

```

```

219     [[nodiscard]] virtual bool isEditorPageModified() const = 0;
220
221     virtual void setFocusToEditor() = 0;
222
223 protected:
224     INoteEditorBackend(NoteEditor * parent);
225     NoteEditor * m_pNoteEditor;
226 };
227
228 } // namespace quentier

```

## 6.22 NoteEditor.h

```

1  /*
2  * Copyright 2016-2025 Dmitry Ivanov
3  *
4  * This file is part of libquentier
5  *
6  * libquentier is free software; you can redistribute it and/or modify
7  * it under the terms of the GNU Lesser General Public License as published by
8  * the Free Software Foundation, version 3 of the License.
9  *
10 * libquentier is distributed in the hope that it will be useful,
11 * but WITHOUT ANY WARRANTY; without even the implied warranty of
12 * MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the
13 * GNU Lesser General Public License for more details.
14 *
15 * You should have received a copy of the GNU Lesser General Public License
16 * along with libquentier. If not, see <http://www.gnu.org/licenses/>.
17 */
18
19 #pragma once
20
21 #include <quentier/enml/Fwd.h>
22 #include <quentier/local_storage/Fwd.h>
23 #include <quentier/types/ErrorString.h>
24 #include <quentier/utility/Linkage.h>
25
26 #include <qevercloud/types/Note.h>
27 #include <qevercloud/types/Notebook.h>
28
29 #include <QPrinter>
30 #include <QStringList>
31 #include <QThread>
32 #include <QWidget>
33
34 class QUndoStack;
35
36 namespace quentier {
37
38 class Account;
39 class INoteEditorBackend;
40 class SpellChecker;
41
42 class QUENTIER_EXPORT NoteEditor : public QWidget
43 {
44     Q_OBJECT
45 public:
46     explicit NoteEditor(
47         QWidget * parent = nullptr,
48         #if QT_VERSION >= QT_VERSION_CHECK(5, 15, 0)
49         Qt::WindowFlags flags = {});
50     #else
51         Qt::WindowFlags flags = 0); // NOLINT
52     #endif
53
54     ~NoteEditor() noexcept override;
55
56     void initialize(
57         local_storage::ILocalStoragePtr localStorage,
58         SpellChecker & spellChecker, const Account & account,
59         QThread * backgroundJobsThread = nullptr,
60         enml::IDecryptedTextCachePtr decryptedTextCache = nullptr);
61
62     [[nodiscard]] INoteEditorBackend * backend() noexcept;
63
64     void setBackend(INoteEditorBackend * backend);
65
66     void setAccount(const Account & account);
67
68     [[nodiscard]] const QUndoStack * undoStack() const noexcept;
69
70     void setUndoStack(QUndoStack * pUndoStack);

```

```

112
116     void setInitialPageHtml(const QString & html);
117
122     void setNoteNotFoundPageHtml(const QString & html);
123
129     void setNoteDeletedPageHtml(const QString & html);
130
135     void setNoteLoadingPageHtml(const QString & html);
136
140     [[nodiscard]] QString currentNoteLocalId() const;
141
149     void setCurrentNoteLocalId(const QString & noteLocalId);
150
154     void clear();
155
160     [[nodiscard]] bool isModified() const noexcept;
161
166     [[nodiscard]] bool isEditorPageModified() const noexcept;
167
172     [[nodiscard]] bool isNoteLoaded() const noexcept;
173
179     [[nodiscard]] quint64 idleTime() const noexcept;
180
184     void setFocus();
185
186     [[nodiscard]] QString selectedText() const noexcept;
187     [[nodiscard]] bool hasSelection() const noexcept;
188
189     [[nodiscard]] bool spellCheckEnabled() const noexcept;
190
191     [[nodiscard]] bool print(
192         QPrinter & printer, ErrorString & errorDescription);
193
194     [[nodiscard]] bool exportToPdf(
195         const QString & absoluteFilePath, ErrorString & errorDescription);
196
197     [[nodiscard]] bool exportToEnex(
198         const QStringList & tagNames, QString & enex,
199         ErrorString & errorDescription);
200
208     [[nodiscard]] QPalette defaultPalette() const;
209
214     [[nodiscard]] const QFont * defaultFont() const;
215
216 Q_SIGNALS:
221     void contentChanged();
222
228     void noteAndNotebookFoundInLocalStorage(
229         qevercloud::Note note, qevercloud::Notebook notebook);
230
235     void noteNotFound(QString noteLocalId);
236
242     void noteDeleted(QString noteLocalId);
243
249     void noteModified();
250
255     void notifyError(ErrorString error);
256
261     void inAppNoteLinkClicked(
262         QString userId, QString shardId, QString noteGuid);
263
275     void inAppNoteLinkPasteRequested(
276         QString url, QString userId, QString shardId, QString noteGuid);
277
278     void convertedToNote(qevercloud::Note note);
279     void cantConvertToNote(ErrorString error);
280
281     void noteEditorHtmlUpdated(QString html);
282
283     void currentNoteChanged(qevercloud::Note note);
284
285     void spellCheckerNotReady();
286     void spellCheckerReady();
287
288     void noteLoaded();
289
296     void noteSavedToLocalStorage(QString noteLocalId);
297
302     void failedToSaveNoteToLocalStorage(
303         ErrorString errorDescription, QString noteLocalId);
304
305     // Signals to notify anyone interested of the formatting at the current
306     // cursor position
307     void textBoldState(bool state);
308     void textItalicState(bool state);
309     void textUnderlineState(bool state);
310     void textStrikethroughState(bool state);

```

```
311 void textAlignLeftState(bool state);
312 void textAlignCenterState(bool state);
313 void textAlignRightState(bool state);
314 void textAlignFullState(bool state);
315 void textInsideOrderedListState(bool state);
316 void textInsideUnorderedListState(bool state);
317 void textInsideTableState(bool state);
318
319 void textFontFamilyChanged(QString fontFamily);
320 void textFontSizeChanged(int fontSize);
321
322 void insertTableDialogRequested();
323
324 public Q_SLOTS:
325     void convertToNote();
326
327 void saveNoteToLocalStorage();
328
329 void setNoteTitle(const QString & noteTitle);
330
331 void setTagIds(
332     const QStringList & tagLocalIds, const QStringList & tagGuids);
333
334 void undo();
335 void redo();
336 void cut();
337 void copy();
338 void paste();
339 void pasteUnformatted();
340 void selectAll();
341
342 void formatSelectionAsSourceCode();
343
344 void fontMenu();
345 void textBold();
346 void textItalic();
347 void textUnderline();
348 void textStrikethrough();
349 void textHighlight();
350
351 void alignLeft();
352 void alignCenter();
353 void alignRight();
354 void alignFull();
355
356 void findNext(const QString & text, bool matchCase) const;
357 void findPrevious(const QString & text, bool matchCase) const;
358
359 void replace(
360     const QString & textToReplace, const QString & replacementText,
361     bool matchCase);
362
363 void replaceAll(
364     const QString & textToReplace, const QString & replacementText,
365     bool matchCase);
366
367 void insertToDoCheckbox();
368
369 void insertInAppNoteLink(
370     const QString & userId, const QString & shardId,
371     const QString & noteGuid, const QString & linkText);
372
373 void setSpellcheck(bool enabled);
374
375 void setFont(const QFont & font);
376 void setFontHeight(int height);
377 void setFontColor(const QColor & color);
378 void setBackgroundColor(const QColor & color);
379
380 void setDefaultPalette(const QPalette & pal);
381
382 void setDefaultFont(const QFont & font);
383
384 void insertHorizontalLine();
385
386 void increaseFontSize();
387 void decreaseFontSize();
388
389 void increaseIndentation();
390 void decreaseIndentation();
391
392 void insertBulletedList();
393 void insertNumberedList();
394
395 void insertTableDialog();
396
397 void insertFixedWidthTable(int rows, int columns, int widthInPixels);
```



```

451
452     void insertRelativeWidthTable(int rows, int columns, double relativeWidth);
453
454     void insertTableRow();
455     void insertTableColumn();
456     void removeTableRow();
457     void removeTableColumn();
458
459     void addAttachmentDialog();
460     void saveAttachmentDialog(const QByteArray & resourceHash);
461     void saveAttachmentUnderCursor();
462     void openAttachment(const QByteArray & resourceHash);
463     void openAttachmentUnderCursor();
464     void copyAttachment(const QByteArray & resourceHash);
465     void copyAttachmentUnderCursor();
466
467     void encryptSelectedText();
468     void decryptEncryptedTextUnderCursor();
469
470     void editHyperlinkDialog();
471     void copyHyperlink();
472     void removeHyperlink();
473
474     void onNoteLoadCancelled();
475
476 protected:
477     void dragMoveEvent(QDragMoveEvent * pEvent) override;
478     void dropEvent(QDropEvent * pEvent) override;
479
480 private:
481     INoteEditorBackend * m_backend;
482 };
483
484 } // namespace quentier

```

## 6.23 SpellChecker.h

```

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17 */
18
19 #pragma once
20
21 #include <quentier/utility/Fwd.h>
22 #include <quentier/utility/Linkage.h>
23
24 #include <QList>
25 #include <QObject>
26
27 #include <utility>
28
29 namespace quentier {
30
31     class Account;
32     class FileIOProcessorAsync;
33     class SpellCheckerPrivate;
34
35     class QUENTIER_EXPORT SpellChecker : public QObject
36     {
37     Q_OBJECT
38     public:
39         SpellChecker(
40             utility::FileIOProcessorAsync * fileIOProcessorAsync, Account account,
41             QObject * parent = nullptr, const QString & userDictionaryPath = {});
42
43         // The second bool in the pair indicates whether the dictionary
44         // is enabled or disabled
45         [[nodiscard]] QList<std::pair<QString, bool>> listAvailableDictionaries()
46             const;

```

```

47
48     void setAccount(const Account & account);
49
50     void enableDictionary(const QString & language);
51     void disableDictionary(const QString & language);
52
53     [[nodiscard]] bool checkSpell(const QString & word) const;
54
55     [[nodiscard]] QStringList spellCorrectionSuggestions(
56         const QString & misspelledWord) const;
57
58     void addToUserWordlist(const QString & word);
59     void removeFromUserWordList(const QString & word);
60     void ignoreWord(const QString & word);
61     void removeWord(const QString & word);
62
63     [[nodiscard]] bool isReady() const noexcept;
64
65 Q_SIGNALS:
66     void ready();
67
68 private:
69     SpellCheckerPrivate * const d_ptr;
70     Q_DECLARE_PRIVATE(SpellChecker)
71 };
72
73 } // namespace quentier

```

## 6.24 IAuthenticator.h

```

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16 * along with libquentier. If not, see <http://www.gnu.org/licenses/>.
17 */
18
19 #pragma once
20
21 #include <quentier/synchronization/types/Fwd.h>
22 #include <quentier/types/Account.h>
23 #include <quentier/utility/Linkage.h>
24
25 #include <QFuture>
26
27 namespace quentier::synchronization {
28
29     class QUINTIER_EXPORT IAuthenticator
30     {
31     public:
32         virtual ~IAuthenticator() noexcept;
33
34         [[nodiscard]] virtual QFuture<IAuthenticationInfoPtr>
35             authenticateNewAccount() = 0;
36
37         [[nodiscard]] virtual QFuture<IAuthenticationInfoPtr> authenticateAccount(
38             Account account) = 0;
39     };
40
41 } // namespace quentier::synchronization

```

## 6.25 INoteStoreFactory.h

```

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```

```

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14 *
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16 * along with libquentier. If not, see <http://www.gnu.org/licenses/>.
17 */
18
19 #pragma once
20
21 #include <quentier/utility/Linkage.h>
22
23 #include <qevercloud/Fwd.h>
24 #include <qevercloud/services/Fwd.h>
25 #include <qevercloud/types/TypeAliases.h>
26
27 #include <optional>
28
29 namespace quentier::synchronization {
30
31 class QUENTIER_EXPORT INoteStoreFactory
32 {
33 public:
34     virtual ~INoteStoreFactory();
35
36     [[nodiscard]] virtual qevercloud::INoteStorePtr createNoteStore(
37         QString noteStoreUrl = {},
38         std::optional<qevercloud::Guid> linkedNotebookGuid = {},
39         qevercloud::IRequestContextPtr ctx = {},
40         qevercloud::IRetryPolicyPtr retryPolicy = {}) = 0;
41 };
42
43 } // namespace quentier::synchronization

```

## 6.26 ISyncConflictResolver.h

```

1 /*
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16 * along with libquentier. If not, see <http://www.gnu.org/licenses/>.
17 */
18
19 #pragma once
20
21 #include <quentier/utility/Linkage.h>
22
23 #include <qevercloud/types/Note.h>
24 #include <qevercloud/types/Notebook.h>
25 #include <qevercloud/types/SavedSearch.h>
26 #include <qevercloud/types/Tag.h>
27
28 #include <QFuture>
29
30 #include <variant>
31
32 class QDebug;
33 class QTextStream;
34
35 namespace quentier::synchronization {
36
37 class QUENTIER_EXPORT ISyncConflictResolver
38 {
39 public:
40     struct QUENTIER_EXPORT ConflictResolution
41     {
42         struct QUENTIER_EXPORT UseTheirs

```

```

55     {};
```

```

56
61     struct QUINTIER_EXPORT UseMine
62     {};
```

```

63
69     struct QUINTIER_EXPORT IgnoreMine
70     {};
```

```

71
80     template <class T>
81     struct MoveMine
82     {
83         using value_type = T;
84
88         T mine;
89     };
90 };
91
92     using NotebookConflictResolution = std::variant<
93         ConflictResolution::UseTheirs, ConflictResolution::UseMine,
94         ConflictResolution::IgnoreMine,
95         ConflictResolution::MoveMine<qevercloud::Notebook>>;
96
97     using NoteConflictResolution = std::variant<
98         ConflictResolution::UseTheirs, ConflictResolution::UseMine,
99         ConflictResolution::IgnoreMine,
100         ConflictResolution::MoveMine<qevercloud::Note>>;
101
102     using SavedSearchConflictResolution = std::variant<
103         ConflictResolution::UseTheirs, ConflictResolution::UseMine,
104         ConflictResolution::IgnoreMine,
105         ConflictResolution::MoveMine<qevercloud::SavedSearch>>;
106
107     using TagConflictResolution = std::variant<
108         ConflictResolution::IgnoreMine, ConflictResolution::UseTheirs,
109         ConflictResolution::UseMine,
110         ConflictResolution::MoveMine<qevercloud::Tag>>;
111
112 public:
113     virtual ~ISyncConflictResolver() noexcept;
```

```

114
115     [[nodiscard]] virtual QFuture<NotebookConflictResolution>
116         resolveNotebookConflict(
117             qevercloud::Notebook theirs, qevercloud::Notebook mine) = 0;
118
119     [[nodiscard]] virtual QFuture<NoteConflictResolution> resolveNoteConflict(
120         qevercloud::Note theirs, qevercloud::Note mine) = 0;
121
122     [[nodiscard]] virtual QFuture<SavedSearchConflictResolution>
123         resolveSavedSearchConflict(
124             qevercloud::SavedSearch theirs, qevercloud::SavedSearch mine) = 0;
125
126     [[nodiscard]] virtual QFuture<TagConflictResolution> resolveTagConflict(
127         qevercloud::Tag theirs, qevercloud::Tag mine) = 0;
128 };
129
130 QUINTIER_EXPORT QTextStream & operator<<(
131     QTextStream & strm,
132     const ISyncConflictResolver::NotebookConflictResolution & resolution);
133
134 QUINTIER_EXPORT QDebug & operator<<(
135     QDebug & dbg,
136     const ISyncConflictResolver::NotebookConflictResolution & resolution);
137
138 QUINTIER_EXPORT QTextStream & operator<<(
139     QTextStream & strm,
140     const ISyncConflictResolver::NoteConflictResolution & resolution);
141
142 QUINTIER_EXPORT QDebug & operator<<(
143     QDebug & dbg,
144     const ISyncConflictResolver::NoteConflictResolution & resolution);
145
146 QUINTIER_EXPORT QTextStream & operator<<(
147     QTextStream & strm,
148     const ISyncConflictResolver::SavedSearchConflictResolution & resolution);
149
150 QUINTIER_EXPORT QDebug & operator<<(
151     QDebug & dbg,
152     const ISyncConflictResolver::SavedSearchConflictResolution & resolution);
153
154 QUINTIER_EXPORT QTextStream & operator<<(
155     QTextStream & strm,
156     const ISyncConflictResolver::TagConflictResolution & resolution);
157
158 QUINTIER_EXPORT QDebug & operator<<(
159     QDebug & dbg,
160     const ISyncConflictResolver::TagConflictResolution & resolution);
161

```

```
162 } // namespace quantier::synchronization
```

## 6.27 ISyncEventsNotifier.h

```
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16 * along with libquantier. If not, see <http://www.gnu.org/licenses/>.
17 */
18
19 #pragma once
20
21 #include <quantier/synchronization/Fwd.h>
22 #include <quantier/synchronization/types/Fwd.h>
23 #include <quantier/utility/Linkage.h>
24
25 #include <qevercloud/types/LinkedNotebook.h>
26
27 #include <QList>
28 #include <QObject>
29
30 namespace quantier::synchronization {
31
32 class QUANTIER_EXPORT ISyncEventsNotifier : public QObject
33 {
34     Q_OBJECT
35 protected:
36     explicit ISyncEventsNotifier(QObject * parent = nullptr);
37
38 public:
39     ~ISyncEventsNotifier() override;
40
41     Q_SIGNALS:
42     void syncChunksDownloadProgress(
43         qint32 highestDownloadedUsn, qint32 highestServerUsn,
44         qint32 lastPreviousUsn);
45
46     void syncChunksDownloaded();
47
48     void syncChunksDataProcessingProgress(ISyncChunksDataCountersPtr counters);
49
50     void startLinkedNotebooksDataDownloading(
51         const QList<qevercloud::LinkedNotebook> & linkedNotebooks);
52
53     void linkedNotebookSyncChunksDownloadProgress(
54         qint32 highestDownloadedUsn, qint32 highestServerUsn,
55         qint32 lastPreviousUsn,
56         const qevercloud::LinkedNotebook & linkedNotebook);
57
58     void linkedNotebookSyncChunksDownloaded(
59         const qevercloud::LinkedNotebook & linkedNotebook);
60
61     void linkedNotebookSyncChunksDataProcessingProgress(
62         ISyncChunksDataCountersPtr counters,
63         const qevercloud::LinkedNotebook & linkedNotebook);
64
65     void notesDownloadProgress(
66         quint32 notesDownloaded, quint32 totalNotesToDownload);
67
68     void linkedNotebookNotesDownloadProgress(
69         quint32 notesDownloaded, quint32 totalNotesToDownload,
70         const qevercloud::LinkedNotebook & linkedNotebook);
71
72     void resourcesDownloadProgress(
73         quint32 resourcesDownloaded, quint32 totalResourcesToDownload);
74
75     void linkedNotebookResourcesDownloadProgress(
76         quint32 resourcesDownloaded, quint32 totalResourcesToDownload,
77         const qevercloud::LinkedNotebook & linkedNotebook);
78
79     void downloadFinished(bool dataDownloaded);
80
81 };
82 }
```

```

192
199     void userOwnSendStatusUpdate(ISendStatusPtr sendStatus);
200
209     void linkedNotebookSendStatusUpdate(
210         const qevercloud::Guid & linkedNotebookGuid, ISendStatusPtr sendStatus);
211 };
212
213 } // namespace quantier::synchronization

```

## 6.28 ISynchronizer.h

```

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17 */
18
19 #pragma once
20
21 #include <quantier/local_storage/Fwd.h>
22 #include <quantier/synchronization/Fwd.h>
23 #include <quantier/synchronization/types/Fwd.h>
24 #include <quantier/types/Account.h>
25 #include <quantier/utility/Linkage.h>
26 #include <quantier/utility/cancelers/Fwd.h>
27
28 #include <qevercloud/types/TypeAliases.h>
29
30 #include <QFuture>
31
32 #include <memory>
33 #include <utility>
34
35 namespace quantier {
36
37     class Account;
38
39 } // namespace quantier
40
41 namespace quantier::synchronization {
42
43     class QUINTIER_EXPORT ISynchronizer
44     {
45     public:
46         virtual ~ISynchronizer() noexcept;
47
48         [[nodiscard]] virtual QFuture<std::pair<Account, IAuthenticationInfoPtr>>
49             authenticateNewAccount() = 0;
50
51         [[nodiscard]] virtual QFuture<IAuthenticationInfoPtr> authenticateAccount(
52             Account account) = 0;
53
54         using SyncResult =
55             std::pair<QFuture<ISyncResultPtr>, ISyncEventsNotifier *>;
56
57         [[nodiscard]] virtual SyncResult synchronizeAccount(
58             Account account, local_storage::ILocalStoragePtr localStorage,
59             utility::cancelers::ICancelerPtr canceler,
60             ISyncOptionsPtr options = nullptr,
61             ISyncConflictResolverPtr syncConflictResolver = nullptr) = 0;
62
63         virtual void revokeAuthentication(qevercloud::UserID userId) = 0;
64     };
65
66 } // namespace quantier::synchronization

```

## 6.29 ISyncStateStorage.h

```

1 /*

```

```

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16 * along with libquentier. If not, see <http://www.gnu.org/licenses/>.
17 */
18
19 #pragma once
20
21 #include <quentier/synchronization/types/Fwd.h>
22 #include <quentier/types/Account.h>
23 #include <quentier/utility/Linkage.h>
24
25 #include <QObject>
26
27 namespace quentier::synchronization {
28
29     class QUENTIER_EXPORT ISyncStateStorage : public QObject
30     {
31     public:
32         Q_OBJECT
33     protected:
34         explicit ISyncStateStorage(QObject * parent = nullptr);
35     public:
36         ~ISyncStateStorage() override;
37
38         [[nodiscard]] virtual ISyncStatePtr getSyncState(
39             const Account & account) = 0;
40
41         virtual void setSyncState(
42             const Account & account, ISyncStatePtr syncState) = 0;
43
44     Q_SIGNALS:
45         void notifySyncStateUpdated(Account account, ISyncStatePtr syncState);
46     };
47
48 } // namespace quentier::synchronization

```

## 6.30 IUserStoreFactory.h

```

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17 */
18
19 #pragma once
20
21 #include <quentier/utility/Linkage.h>
22
23 #include <qevercloud/Fwd.h>
24 #include <qevercloud/services/Fwd.h>
25
26 #include <QString>
27
28 namespace quentier::synchronization {
29
30     class QUENTIER_EXPORT IUserStoreFactory
31     {
32     public:
33         virtual ~IUserStoreFactory();

```

```

34
35     [[nodiscard]] virtual qevercloud::IUserStorePtr createUserStore(
36         QString userStoreUrl = {}, qevercloud::IRequestContextPtr ctx = {},
37         qevercloud::IRetryPolicyPtr retryPolicy = {}) = 0;
38 };
39
40 } // namespace quantier::synchronization

```

## 6.31 MockIAuthenticator.h

```

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17 */
18
19 #pragma once
20
21 #include <quantier/synchronization/IAuthenticator.h>
22
23 #include <gmock/gmock.h>
24
25 namespace quantier::synchronization::tests::mocks {
26
27 class MockIAuthenticator : public IAuthenticator
28 {
29 public:
30     MOCK_METHOD(
31         QFuture<IAuthenticationInfoPtr>, authenticateNewAccount, (),
32         (override));
33
34     MOCK_METHOD(
35         QFuture<IAuthenticationInfoPtr>, authenticateAccount, (Account account),
36         (override));
37 };
38
39 } // namespace quantier::synchronization::tests::mocks

```

## 6.32 MockINoteStoreFactory.h

```

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17 */
18
19 #pragma once
20
21 #include <quantier/synchronization/INoteStoreFactory.h>
22
23 #include <gmock/gmock.h>
24
25 namespace quantier::synchronization::tests::mocks {
26
27 class MockINoteStoreFactory : public INoteStoreFactory

```



```

28 {
29 public:
30     MOCK_METHOD(
31         ::qevercloud::INoteStorePtr, createNoteStore,
32         (QString noteStoreUrl,
33          std::optional<::qevercloud::Guid> linkedNotebookGuid,
34          ::qevercloud::IRequestContextPtr ctx,
35          ::qevercloud::IRetryPolicyPtr retryPolicy),
36         (override));
37 };
38
39 } // namespace quentier::synchronization::tests::mocks

```

## 6.33 MockISyncConflictResolver.h

```

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17 */
18
19 #pragma once
20
21 #include <quentier/synchronization/ISyncConflictResolver.h>
22
23 #include <gmock/gmock.h>
24
25 namespace quentier::synchronization::tests::mocks {
26
27 class MockISyncConflictResolver : public ISyncConflictResolver
28 {
29 public:
30     MOCK_METHOD(
31         QFuture<NotebookConflictResolution>, resolveNotebookConflict,
32         (::qevercloud::Notebook theirs, ::qevercloud::Notebook mine),
33         (override));
34
35     MOCK_METHOD(
36         QFuture<NoteConflictResolution>, resolveNoteConflict,
37         (::qevercloud::Note theirs, ::qevercloud::Note mine), (override));
38
39     MOCK_METHOD(
40         QFuture<SavedSearchConflictResolution>, resolveSavedSearchConflict,
41         (::qevercloud::SavedSearch theirs, ::qevercloud::SavedSearch mine),
42         (override));
43
44     MOCK_METHOD(
45         QFuture<TagConflictResolution>, resolveTagConflict,
46         (::qevercloud::Tag theirs, ::qevercloud::Tag mine), (override));
47 };
48
49 } // namespace quentier::synchronization::tests::mocks

```

## 6.34 MockISyncStateStorage.h

```

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```

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14 *
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17 */
18
19 #pragma once
20
21 #include <quentier/synchronization/ISyncStateStorage.h>
22
23 #include <gmock/gmock.h>
24
25 namespace quentier::synchronization::tests::mocks {
26
27 class MockISyncStateStorage : public ISyncStateStorage
28 {
29     Q_OBJECT
30 public:
31     MOCK_METHOD(
32         ISyncStatePtr, getSyncState, (const Account & account), (override));
33
34     MOCK_METHOD(
35         void, setSyncState, (const Account & account, ISyncStatePtr syncState),
36         (override));
37 };
38
39 } // namespace quentier::synchronization::tests::mocks

```

## 6.35 Errors.h

```

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17 */
18
19 #pragma once
20
21 #include <quentier/utility/Linkage.h>
22
23 #include <QtGlobal>
24
25 #include <optional>
26 #include <variant>
27
28 namespace quentier::synchronization {
29
30 struct QUENTIER_EXPORT RateLimitReachedError
31 {
32     std::optional<qint32> rateLimitDurationSec;
33 };
34
35 [[nodiscard]] QUENTIER_EXPORT bool operator==(
36     const RateLimitReachedError & lhs,
37     const RateLimitReachedError & rhs) noexcept;
38
39 [[nodiscard]] QUENTIER_EXPORT bool operator!=(
40     const RateLimitReachedError & lhs,
41     const RateLimitReachedError & rhs) noexcept;
42
43 struct QUENTIER_EXPORT AuthenticationExpiredError
44 {};
45
46 [[nodiscard]] QUENTIER_EXPORT bool operator==(
47     const AuthenticationExpiredError & lhs,
48     const AuthenticationExpiredError & rhs) noexcept;
49
50 [[nodiscard]] QUENTIER_EXPORT bool operator!=(
51     const AuthenticationExpiredError & lhs,
52     const AuthenticationExpiredError & rhs) noexcept;
53
54 }

```

```

76 using StopSynchronizationError = std::variant<
77     RateLimitReachedError, AuthenticationExpiredError, std::monostate>;
78
79 } // namespace quantier::synchronization

```

## 6.36 IAuthenticationInfo.h

```

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13 * GNU Lesser General Public License for more details.
14 *
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16 * along with libquantier. If not, see <http://www.gnu.org/licenses/>.
17 */
18
19 #pragma once
20
21 #include <quantier/synchronization/types/Fwd.h>
22 #include <quantier/utility/Linkage.h>
23 #include <quantier/utility/Printable.h>
24
25 #include <qevercloud/types/TypeAliases.h>
26
27 #include <QList>
28 #include <QNetworkCookie>
29 #include <QString>
30
31 namespace quantier::synchronization {
32
33 class QUENTIER_EXPORT IAuthenticationInfo : public utility::Printable
34 {
35 public:
36     [[nodiscard]] virtual qevercloud::UserID userId() const = 0;
37
38     [[nodiscard]] virtual QString authToken() const = 0;
39
40     [[nodiscard]] virtual qevercloud::Timestamp authTokenExpirationTime()
41         const = 0;
42
43     [[nodiscard]] virtual qevercloud::Timestamp authenticationTime() const = 0;
44
45     [[nodiscard]] virtual QString shardId() const = 0;
46
47     [[nodiscard]] virtual QString noteStoreUrl() const = 0;
48
49     [[nodiscard]] virtual QString webApiUrlPrefix() const = 0;
50
51     [[nodiscard]] virtual QList<QNetworkCookie> userStoreCookies() const = 0;
52 };
53
54 } // namespace quantier::synchronization

```

## 6.37 IAuthenticationInfoBuilder.h

```

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```

```

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17 */
18
19 #pragma once
20
21 #include <quentier/synchronization/types/Fwd.h>
22 #include <quentier/utility/Linkage.h>
23
24 #include <qevercloud/types/TypeAliases.h>
25
26 #include <QList>
27 #include <QNetworkCookie>
28 #include <QString>
29
30 namespace quentier::synchronization {
31
32 class QUENTIER_EXPORT IAuthenticationInfoBuilder
33 {
34 public:
35     virtual ~IAuthenticationInfoBuilder() noexcept;
36
37     virtual IAuthenticationInfoBuilder & setUserId(
38         qevercloud::UserID userId) = 0;
39
40     virtual IAuthenticationInfoBuilder & setAuthToken(QString token) = 0;
41
42     virtual IAuthenticationInfoBuilder & setAuthTokenExpirationTime(
43         qevercloud::Timestamp expirationTime) = 0;
44
45     virtual IAuthenticationInfoBuilder & setAuthenticationTime(
46         qevercloud::Timestamp authenticationTime) = 0;
47
48     virtual IAuthenticationInfoBuilder & setShardId(QString shardId) = 0;
49
50     virtual IAuthenticationInfoBuilder & setNoteStoreUrl(
51         QString noteStoreUrl) = 0;
52
53     virtual IAuthenticationInfoBuilder & setWebApiUrlPrefix(
54         QString webApiUrlPrefix) = 0;
55
56     virtual IAuthenticationInfoBuilder & setUserStoreCookies(
57         QList<QNetworkCookie> cookies) = 0;
58
59     [[nodiscard]] virtual IAuthenticationInfoPtr build() = 0;
60 };
61
62 [[nodiscard]] QUENTIER_EXPORT IAuthenticationInfoBuilderPtr
63 createAuthenticationInfoBuilder();
64
65 } // namespace quentier::synchronization

```

## 6.38 IDownloadNotesStatus.h

```

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17 */
18
19 #pragma once
20
21 #include <quentier/synchronization/types/Errors.h>
22 #include <quentier/synchronization/types/Fwd.h>
23 #include <quentier/utility/Linkage.h>
24 #include <quentier/utility/Printable.h>
25
26 #include <qevercloud/types/Note.h>
27 #include <qevercloud/types/TypeAliases.h>
28
29 #include <QException>
30 #include <QList>

```

```

31
32 #include <memory>
33 #include <utility>
34
35 namespace quantier::synchronization {
36
41 class QUENTIER_EXPORT IDownloadNotesStatus : public utility::Printable
42 {
43 public:
44     using QExceptionPtr = std::shared_ptr<QException>;
45     using NoteWithException = std::pair<qevercloud::Note, QExceptionPtr>;
46     using GuidWithException = std::pair<qevercloud::Guid, QExceptionPtr>;
47     using UpdateSequenceNumbersByGuid = QHash<qevercloud::Guid, qint32>;
48
49     [[nodiscard]] virtual quint64 totalNewNotes() const = 0;
50     [[nodiscard]] virtual quint64 totalUpdatedNotes() const = 0;
51     [[nodiscard]] virtual quint64 totalExpungedNotes() const = 0;
52
53     [[nodiscard]] virtual QList<NoteWithException> notesWhichFailedToDownload()
54         const = 0;
55
56     [[nodiscard]] virtual QList<NoteWithException> notesWhichFailedToProcess()
57         const = 0;
58
59     [[nodiscard]] virtual QList<GuidWithException>
60         noteGuidsWhichFailedToExpunge() const = 0;
61
62     [[nodiscard]] virtual UpdateSequenceNumbersByGuid
63         processedNoteGuidsAndUsns() const = 0;
64
65     [[nodiscard]] virtual UpdateSequenceNumbersByGuid
66         cancelledNoteGuidsAndUsns() const = 0;
67
68     [[nodiscard]] virtual QList<qevercloud::Guid> expungedNoteGuids() const = 0;
69
70     [[nodiscard]] virtual StopSynchronizationError stopSynchronizationError()
71         const = 0;
72 };
73
74 } // namespace quantier::synchronization

```

## 6.39 IDownloadResourcesStatus.h

```

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17 */
18
19 #pragma once
20
21 #include <quantier/synchronization/types/Errors.h>
22 #include <quantier/utility/Linkage.h>
23 #include <quantier/utility/Printable.h>
24
25 #include <qevercloud/types/Resource.h>
26 #include <qevercloud/types/TypeAliases.h>
27
28 #include <QException>
29
30 #include <memory>
31 #include <utility>
32
33 namespace quantier::synchronization {
34
35 class QUENTIER_EXPORT IDownloadResourcesStatus : public utility::Printable
36 {
37 public:
38     ~IDownloadResourcesStatus() noexcept override;
39
40     using QExceptionPtr = std::shared_ptr<QException>;

```

```

41
42     using ResourceWithException =
43         std::pair<qevercloud::Resource, QExceptionPtr>;
44
45     using UpdateSequenceNumbersByGuid = QHash<qevercloud::Guid, qint32>;
46
47     [[nodiscard]] virtual quint64 totalNewResources() const = 0;
48     [[nodiscard]] virtual quint64 totalUpdatedResources() const = 0;
49
50     [[nodiscard]] virtual QList<ResourceWithException>
51         resourcesWhichFailedToDownload() const = 0;
52
53     [[nodiscard]] virtual QList<ResourceWithException>
54         resourcesWhichFailedToProcess() const = 0;
55
56     [[nodiscard]] virtual UpdateSequenceNumbersByGuid
57         processedResourceGuidsAndUsns() const = 0;
58
59     [[nodiscard]] virtual UpdateSequenceNumbersByGuid
60         cancelledResourceGuidsAndUsns() const = 0;
61
62     [[nodiscard]] virtual StopSynchronizationError stopSynchronizationError()
63         const = 0;
64 };
65
66 } // namespace quantier::synchronization

```

## 6.40 ISendStatus.h

```

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17 */
18
19 #pragma once
20
21 #include <quantier/synchronization/types/Errors.h>
22 #include <quantier/utility/Linkage.h>
23 #include <quantier/utility/Printable.h>
24
25 #include <qevercloud/types/Note.h>
26 #include <qevercloud/types/Notebook.h>
27 #include <qevercloud/types/SavedSearch.h>
28 #include <qevercloud/types/Tag.h>
29 #include <qevercloud/types/TypeAliases.h>
30
31 #include <QException>
32 #include <QList>
33
34 #include <memory>
35 #include <utility>
36
37 namespace quantier::synchronization {
38
39     class QUENTIER_EXPORT ISendStatus : public utility::Printable
40     {
41     public:
42         using QExceptionPtr = std::shared_ptr<QException>;
43
44         using NoteWithException = std::pair<qevercloud::Note, QExceptionPtr>;
45
46         using NotebookWithException =
47             std::pair<qevercloud::Notebook, QExceptionPtr>;
48
49         using SavedSearchWithException =
50             std::pair<qevercloud::SavedSearch, QExceptionPtr>;
51
52         using TagWithException = std::pair<qevercloud::Tag, QExceptionPtr>;
53
54     public:

```

```

60     // Total
61
62     [[nodiscard]] virtual quint64 totalAttemptedToSendNotes() const = 0;
63
64     [[nodiscard]] virtual quint64 totalAttemptedToSendNotebooks() const = 0;
65
66     [[nodiscard]] virtual quint64 totalAttemptedToSendSavedSearches() const = 0;
67
68     [[nodiscard]] virtual quint64 totalAttemptedToSendTags() const = 0;
69
70     // Notes
71
72     [[nodiscard]] virtual quint64 totalSuccessfullySentNotes() const = 0;
73
74     [[nodiscard]] virtual QList<NoteWithException> failedToSendNotes()
75         const = 0;
76
77     // Notebooks
78
79     [[nodiscard]] virtual quint64 totalSuccessfullySentNotebooks() const = 0;
80
81     [[nodiscard]] virtual QList<NotebookWithException> failedToSendNotebooks()
82         const = 0;
83
84     // Saved searches
85
86     [[nodiscard]] virtual quint64 totalSuccessfullySentSavedSearches()
87         const = 0;
88
89     [[nodiscard]] virtual QList<SavedSearchWithException>
90         failedToSendSavedSearches() const = 0;
91
92     // Tags
93
94     [[nodiscard]] virtual quint64 totalSuccessfullySentTags() const = 0;
95
96     [[nodiscard]] virtual QList<TagWithException> failedToSendTags() const = 0;
97
98     // General
99
100    [[nodiscard]] virtual StopSynchronizationError stopSynchronizationError()
101        const = 0;
102
103    [[nodiscard]] virtual bool needToRepeatIncrementalSync() const = 0;
104 };
105
106 } // namespace quentier::synchronization

```

## 6.41 ISyncChunksDataCounters.h

```

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17 */
18
19 #pragma once
20
21 #include <quentier/utility/Linkage.h>
22 #include <quentier/utility/Printable.h>
23
24 #include <QtGlobal>
25
26 namespace quentier::synchronization {
27
28     struct QUENTIER_EXPORT ISyncChunksDataCounters : public utility::Printable
29     {
30         // ===== Saved searches =====
31
32         [[nodiscard]] virtual quint64 totalSavedSearches() const noexcept = 0;
33     };
34 }

```

```

45     [[nodiscard]] virtual quint64 totalExpungedSavedSearches()
46         const noexcept = 0;
47
52     [[nodiscard]] virtual quint64 addedSavedSearches() const noexcept = 0;
53
58     [[nodiscard]] virtual quint64 updatedSavedSearches() const noexcept = 0;
59
64     [[nodiscard]] virtual quint64 expungedSavedSearches() const noexcept = 0;
65
66     // ===== Tags =====
67
71     [[nodiscard]] virtual quint64 totalTags() const noexcept = 0;
72
76     [[nodiscard]] virtual quint64 totalExpungedTags() const noexcept = 0;
77
81     [[nodiscard]] virtual quint64 addedTags() const noexcept = 0;
82
86     [[nodiscard]] virtual quint64 updatedTags() const noexcept = 0;
87
91     [[nodiscard]] virtual quint64 expungedTags() const noexcept = 0;
92
93     // ===== Linked notebooks =====
94
98     [[nodiscard]] virtual quint64 totalLinkedNotebooks() const noexcept = 0;
99
103    [[nodiscard]] virtual quint64 totalExpungedLinkedNotebooks()
104        const noexcept = 0;
105
110    [[nodiscard]] virtual quint64 addedLinkedNotebooks() const noexcept = 0;
111
116    [[nodiscard]] virtual quint64 updatedLinkedNotebooks() const noexcept = 0;
117
122    [[nodiscard]] virtual quint64 expungedLinkedNotebooks() const noexcept = 0;
123
124    // ===== Notebooks =====
125
129    [[nodiscard]] virtual quint64 totalNotebooks() const noexcept = 0;
130
134    [[nodiscard]] virtual quint64 totalExpungedNotebooks() const noexcept = 0;
135
139    [[nodiscard]] virtual quint64 addedNotebooks() const noexcept = 0;
140
144    [[nodiscard]] virtual quint64 updatedNotebooks() const noexcept = 0;
145
150    [[nodiscard]] virtual quint64 expungedNotebooks() const noexcept = 0;
151 };
152
153 } // namespace quantier::synchronization

```

## 6.42 ISyncOptions.h

```

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13 * GNU Lesser General Public License for more details.
14 *
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16 * along with libquantier. If not, see <http://www.gnu.org/licenses/>.
17 */
18
19 #pragma once
20
21 #include <quantier/utility/Linkage.h>
22 #include <quantier/utility/Printable.h>
23
24 #include <qevercloud/Fwd.h>
25
26 #include <QDir>
27 #include <QtGlobal>
28
29 #include <optional>
30
31 namespace quantier::synchronization {
32

```



```

36 class QUENTIER_EXPORT ISyncOptions : public utility::Printable
37 {
38 public:
39     ~ISyncOptions() noexcept override;
40
41     [[nodiscard]] virtual bool downloadNoteThumbnails() const = 0;
42
43     [[nodiscard]] virtual std::optional<QDir> inkNoteImagesStorageDir()
44         const = 0;
45
46     [[nodiscard]] virtual qevercloud::IRequestContextPtr requestContext()
47         const = 0;
48
49     [[nodiscard]] virtual qevercloud::IRetryPolicyPtr retryPolicy() const = 0;
50
51     [[nodiscard]] virtual std::optional<quint32> maxConcurrentNoteDownloads()
52         const = 0;
53
54     [[nodiscard]] virtual std::optional<quint32>
55         maxConcurrentResourceDownloads() const = 0;
56 };
57 // namespace quantier::synchronization

```

## 6.43 ISyncOptionsBuilder.h

```

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16 * along with libquentier. If not, see <http://www.gnu.org/licenses/>.
17 */
18
19 #pragma once
20
21 #include <quentier/synchronization/types/Fwd.h>
22 #include <quentier/utility/Linkage.h>
23
24 #include <qevercloud/Fwd.h>
25
26 #include <QDir>
27
28 #include <optional>
29
30 namespace quantier::synchronization {
31
32 class QUENTIER_EXPORT ISyncOptionsBuilder
33 {
34 public:
35     virtual ~ISyncOptionsBuilder() noexcept;
36
37     virtual ISyncOptionsBuilder & setDownloadNoteThumbnails(bool value) = 0;
38
39     virtual ISyncOptionsBuilder & setInkNoteImagesStorageDir(
40         std::optional<QDir> dir) = 0;
41
42     virtual ISyncOptionsBuilder & setRequestContext(
43         qevercloud::IRequestContextPtr ctx) = 0;
44
45     virtual ISyncOptionsBuilder & setRetryPolicy(
46         qevercloud::IRetryPolicyPtr retryPolicy) = 0;
47
48     virtual ISyncOptionsBuilder & setMaxConcurrentNoteDownloads(
49         std::optional<quint32> maxConcurrentNoteDownloads) = 0;
50
51     virtual ISyncOptionsBuilder & setMaxConcurrentResourceDownloads(
52         std::optional<quint32> maxConcurrentResourceDownloads) = 0;
53
54     [[nodiscard]] virtual ISyncOptionsPtr build() = 0;
55 };
56
57 [[nodiscard]] QUENTIER_EXPORT ISyncOptionsBuilderPtr createSyncOptionsBuilder();

```

```

58
59 } // namespace quantier::synchronization

```

## 6.44 ISyncResult.h

```

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17 */
18
19 #pragma once
20
21 #include <quantier/synchronization/Fwd.h>
22 #include <quantier/synchronization/types/Errors.h>
23 #include <quantier/synchronization/types/Fwd.h>
24 #include <quantier/utility/Linkage.h>
25 #include <quantier/utility/Printable.h>
26
27 #include <qevercloud/types/TypeAliases.h>
28
29 #include <QHash>
30 #include <QSet>
31
32 namespace quantier::synchronization {
33
34 class QUANTIER_EXPORT ISyncResult : public utility::Printable
35 {
36 public:
37     [[nodiscard]] virtual ISyncStatePtr syncState() const = 0;
38
39     [[nodiscard]] virtual ISyncChunksDataCountersPtr
40         userAccountSyncChunksDataCounters() const = 0;
41
42     [[nodiscard]] virtual QHash<qevercloud::Guid, ISyncChunksDataCountersPtr>
43         linkedNotebookSyncChunksDataCounters() const = 0;
44
45     [[nodiscard]] virtual bool userAccountSyncChunksDownloaded() const = 0;
46
47     [[nodiscard]] virtual QSet<qevercloud::Guid>
48         linkedNotebookGuidsWithSyncChunksDownloaded() const = 0;
49
50     [[nodiscard]] virtual IDownloadNotesStatusPtr
51         userAccountDownloadNotesStatus() const = 0;
52
53     [[nodiscard]] virtual QHash<qevercloud::Guid, IDownloadNotesStatusPtr>
54         linkedNotebookDownloadNotesStatuses() const = 0;
55
56     [[nodiscard]] virtual IDownloadResourcesStatusPtr
57         userAccountDownloadResourcesStatus() const = 0;
58
59     [[nodiscard]] virtual QHash<qevercloud::Guid, IDownloadResourcesStatusPtr>
60         linkedNotebookDownloadResourcesStatuses() const = 0;
61
62     [[nodiscard]] virtual ISendStatusPtr userAccountSendStatus() const = 0;
63
64     [[nodiscard]] virtual QHash<qevercloud::Guid, ISendStatusPtr>
65         linkedNotebookSendStatuses() const = 0;
66
67     [[nodiscard]] virtual StopSynchronizationError stopSynchronizationError()
68         const = 0;
69 };
70
71 } // namespace quantier::synchronization

```

## 6.45 ISyncState.h

```

1 /*

```

```

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17 */
18
19 #pragma once
20
21 #include <quentier/utility/Linkage.h>
22 #include <quentier/utility/Printable.h>
23
24 #include <qevercloud/types/TypeAliases.h>
25
26 #include <QHash>
27 #include <QString>
28
29 namespace quentier::synchronization {
30
31     class QUENTIER_EXPORT ISyncState : public utility::Printable
32     {
33     public:
34         [[nodiscard]] virtual qint32 userDataUpdateCount() const = 0;
35
36         [[nodiscard]] virtual qevercloud::Timestamp userDataLastSyncTime()
37             const = 0;
38
39         [[nodiscard]] virtual QHash<qevercloud::Guid, qint32>
40             linkedNotebookUpdateCounts() const = 0;
41
42         [[nodiscard]] virtual QHash<qevercloud::Guid, qevercloud::Timestamp>
43             linkedNotebookLastSyncTimes() const = 0;
44     };
45
46 } // namespace quentier::synchronization

```

## 6.46 ISyncStateBuilder.h

```

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17 */
18
19 #pragma once
20
21 #include <quentier/synchronization/types/Fwd.h>
22 #include <quentier/utility/Linkage.h>
23
24 #include <qevercloud/types/TypeAliases.h>
25
26 #include <QHash>
27
28 namespace quentier::synchronization {
29
30     class QUENTIER_EXPORT ISyncStateBuilder
31     {
32     public:
33         virtual ~ISyncStateBuilder() noexcept;
34
35         virtual ISyncStateBuilder & setUserDataUpdateCount(qint32 updateCount) = 0;

```

```

36
37     virtual ISyncStateBuilder & setDataLastSyncTime(
38         qevercloud::Timestamp lastSyncTime) = 0;
39
40     virtual ISyncStateBuilder & setLinkedNotebookUpdateCounts(
41         QHash<qevercloud::Guid, qint32> updateCounts) = 0;
42
43     virtual ISyncStateBuilder & setLinkedNotebookLastSyncTimes(
44         QHash<qevercloud::Guid, qevercloud::Timestamp> lastSyncTimes) = 0;
45
46     [[nodiscard]] virtual ISyncStatePtr build() = 0;
47 };
48
49 [[nodiscard]] QUENTIER_EXPORT ISyncStateBuilderPtr createSyncStateBuilder();
50
51 } // namespace quantier::synchronization

```

## 6.47 AuthenticationInfo.h

```

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17 */
18
19 #pragma once
20
21 #include <quantier/synchronization/types/Fwd.h>
22 #include <quantier/utility/Linkage.h>
23
24 #include <QJsonObject>
25
26 namespace quantier::synchronization {
27
28     [[nodiscard]] QJsonObject QUENTIER_EXPORT
29         serializeAuthenticationInfoToJson(const IAuthenticationInfo & info);
30
31     [[nodiscard]] IAuthenticationInfoPtr QUENTIER_EXPORT
32         deserializeAuthenticationInfoFromJson(const QJsonObject & json);
33
34 } // namespace quantier::synchronization

```

## 6.48 DownloadNotesStatus.h

```

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17 */
18
19 #pragma once
20
21 #include <quantier/synchronization/types/Fwd.h>
22 #include <quantier/utility/Linkage.h>
23

```

```

24 #include <QJsonObject>
25
26 namespace quantier::synchronization {
27
31 [[nodiscard]] QJsonObject QUENTIER_EXPORT
32     serializeDownloadNotesStatusToJson(const IDownloadNotesStatus & status);
33
39 [[nodiscard]] IDownloadNotesStatusPtr QUENTIER_EXPORT
40     deserializeDownloadNotesStatusFromJson(const QJsonObject & json);
41
42 } // namespace quantier::synchronization

```

## 6.49 DownloadResourcesStatus.h

```

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17 */
18
19 #pragma once
20
21 #include <quantier/synchronization/types/Fwd.h>
22 #include <quantier/utility/Linkage.h>
23
24 #include <QJsonObject>
25
26 namespace quantier::synchronization {
27
31 [[nodiscard]] QJsonObject QUENTIER_EXPORT
32     serializeDownloadResourcesStatusToJson(
33         const IDownloadResourcesStatus & status);
34
40 [[nodiscard]] IDownloadResourcesStatusPtr QUENTIER_EXPORT
41     deserializeDownloadResourcesStatusFromJson(const QJsonObject & json);
42
43 } // namespace quantier::synchronization

```

## 6.50 SendStatus.h

```

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17 */
18
19 #pragma once
20
21 #include <quantier/synchronization/types/Fwd.h>
22 #include <quantier/utility/Linkage.h>
23
24 #include <QJsonObject>
25
26 namespace quantier::synchronization {
27

```

```

31 [[nodiscard]] QJsonObject QUENTIER_EXPORT
32     serializeSendStatusToJson(const ISendStatus & sendStatus);
33
39 [[nodiscard]] ISendStatusPtr QUENTIER_EXPORT
40     deserializeSendStatusFromJson(const QJsonObject & json);
41
42 } // namespace quantier::synchronization

```

## 6.51 SyncChunksDataCounters.h

```

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17 */
18
19 #pragma once
20
21 #include <quantier/synchronization/types/Fwd.h>
22 #include <quantier/utility/Linkage.h>
23
24 #include <QJsonObject>
25
26 namespace quantier::synchronization {
27
31 [[nodiscard]] QJsonObject QUENTIER_EXPORT serializeSyncChunksDataCountersToJson(
32     const ISyncChunksDataCounters & counters);
33
39 [[nodiscard]] ISyncChunksDataCountersPtr QUENTIER_EXPORT
40     deserializeSyncChunksDataCountersFromJson(const QJsonObject & json);
41
42 } // namespace quantier::synchronization

```

## 6.52 SyncResult.h

```

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17 */
18
19 #pragma once
20
21 #include <quantier/synchronization/types/Fwd.h>
22 #include <quantier/utility/Linkage.h>
23
24 #include <QJsonObject>
25
26 namespace quantier::synchronization {
27
31 [[nodiscard]] QJsonObject QUENTIER_EXPORT
32     serializeSyncResultToJson(const ISyncResult & syncResult);
33
39 [[nodiscard]] ISyncResultPtr QUENTIER_EXPORT
40     deserializeSyncResultFromJson(const QJsonObject & json);
41
42 } // namespace quantier::synchronization

```

## 6.53 SyncState.h

```

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17 */
18
19 #pragma once
20
21 #include <quentier/synchronization/types/Fwd.h>
22 #include <quentier/utility/Linkage.h>
23
24 #include <QJsonObject>
25
26 namespace quentier::synchronization {
27
28 [[nodiscard]] QJsonObject QUENTIER_EXPORT
29     serializeSyncStateToJson(const ISyncState & syncState);
30
31 [[nodiscard]] ISyncStatePtr QUENTIER_EXPORT
32     deserializeSyncStateFromJson(const QJsonObject & json);
33
34 } // namespace quentier::synchronization

```

## 6.54 enml/conversion\_rules/Factory.h

```

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17 */
18
19 #pragma once
20
21 #include <quentier/enml/conversion_rules/Fwd.h>
22 #include <quentier/utility/Linkage.h>
23
24 namespace quentier::enml::conversion_rules {
25
26 [[nodiscard]] QUENTIER_EXPORT ISkipRuleBuilderPtr createSkipRuleBuilder();
27
28 } // namespace quentier::enml::conversion_rules

```

## 6.55 enml/Factory.h

```

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17 */
18
19 #pragma once
20
21 #include <quentier/enml/Fwd.h>
22 #include <quentier/utility/Fwd.h>
23 #include <quentier/utility/Linkage.h>
24
25 namespace quentier::enml {
26
27 [[nodiscard]] QUENTIER_EXPORT IDecryptedTextCachePtr
28     createDecryptedTextCache(utility::IEncryptorPtr encryptor = nullptr);
29
30 [[nodiscard]] QUENTIER_EXPORT IENMLTagsConverterPtr createEnmlTagsConverter();
31
32 [[nodiscard]] QUENTIER_EXPORT IConverterPtr
33     createConverter(IENMLTagsConverterPtr enmlTagsConverter = nullptr);
34
35 } // namespace quentier::enml

```

## 6.56 local\_storage/Factory.h

```

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17 */
18
19 #pragma once
20
21 #include <quentier/local_storage/Fwd.h>
22 #include <quentier/threading/Fwd.h>
23 #include <quentier/types/Fwd.h>
24 #include <quentier/utility/Linkage.h>
25
26 #include <QtGlobal>
27
28 class QDir;
29
30 namespace quentier::local_storage {
31
32 [[nodiscard]] QUENTIER_EXPORT ILocalStoragePtr createSqliteLocalStorage(
33     const Account & account, const QDir & localStorageDir,
34     threading::QThreadPtr thread = {});
35
36 } // namespace quentier::local_storage

```

## 6.57 synchronization/Factory.h

```

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17 */
18
19 #pragma once
20
21 #include <quentier/local_storage/Fwd.h>
22 #include <quentier/synchronization/Fwd.h>
23 #include <quentier/threading/Fwd.h>
24 #include <quentier/utility/Fwd.h>
25 #include <quentier/utility/Linkage.h>
26
27 #include <qevercloud/Fwd.h>
28
29 #include <QString>
30 #include <QUrl>
31 #include <QtGlobal>
32
33 class QWidget;
34
35 namespace quentier::synchronization {
36
37 [[nodiscard]] QUENTIER_EXPORT IAuthenticatorPtr createQEverCloudAuthenticator(
38     QString consumerKey, QString consumerSecret, QUrl serverUrl,
39     threading::QThreadPtr uiThread, QWidget * parentWidget = nullptr);
40
41 [[nodiscard]] QUENTIER_EXPORT ISynchronizerPtr createSynchronizer(
42     const QUrl & userStoreUrl, IAuthenticatorPtr authenticator,
43     ISyncStateStoragePtr syncStateStorage = nullptr,
44     utility::IKeychainServicePtr keychainService = nullptr,
45     INoteStoreFactoryPtr noteStoreFactory = nullptr,
46     IUserStoreFactoryPtr userStoreFactory = nullptr,
47     qevercloud::IRequestContextPtr ctx = nullptr,
48     qevercloud::IRetryPolicyPtr retryPolicy = nullptr);
49
50 [[nodiscard]] QUENTIER_EXPORT ISyncConflictResolverPtr
51     createSimpleSyncConflictResolver(
52         local_storage::ILocalStoragePtr localStorage);
53
54 [[nodiscard]] QUENTIER_EXPORT ISyncStateStoragePtr
55     createSyncStateStorage(QObject * parent = nullptr);
56
57 } // namespace quentier::synchronization

```

## 6.58 threading/Factory.h

```

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17 */
18
19 #pragma once
20
21 #include <quentier/threading/Fwd.h>
22 #include <quentier/utility/Linkage.h>
23
24 namespace quentier::threading {
25
26 [[nodiscard]] QUENTIER_EXPORT QThreadPoolPtr globalThreadPool();
27
28 } // namespace quentier::threading

```

## 6.59 utility/Factory.h

```

1 /*

```

```

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17 */
18
19 #pragma once
20
21 #include <quentier/utility/Fwd.h>
22 #include <quentier/utility/Linkage.h>
23
24 #include <QString>
25
26 namespace quentier::utility {
27
28 [[nodiscard]] QUENTIER_EXPORT IEncryptorPtr createOpenSslEncryptor();
29
30 [[nodiscard]] QUENTIER_EXPORT IKeychainServicePtr newQtKeychainService();
31
32 [[nodiscard]] QUENTIER_EXPORT IKeychainServicePtr
33     newObfuscatingKeychainService();
34
35 [[nodiscard]] QUENTIER_EXPORT IKeychainServicePtr newCompositeKeychainService(
36     QString name, IKeychainServicePtr primaryKeychain,
37     IKeychainServicePtr secondaryKeychain);
38
39 [[nodiscard]] QUENTIER_EXPORT IKeychainServicePtr newMigratingKeychainService(
40     IKeychainServicePtr sourceKeychain, IKeychainServicePtr sinkKeychain);
41
42 } // namespace quentier::utility

```

## 6.60 Future.h

```

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17 */
18
19 #pragma once
20
21 #include <quentier/utility/Linkage.h>
22
23 #include <QAbstractEventDispatcher>
24 #include <QFuture>
25 #include <QFutureWatcher>
26 #include <QMutex>
27 #include <QMutexLocker>
28 #include <QObject>
29 #include <QPointer>
30
31 #include <quentier/threading/QtFutureContinuations.h>
32
33 #if QT_VERSION >= QT_VERSION_CHECK(6, 0, 0)
34 #include <QPromise>
35 #include <exception>
36 #else
37 #include <quentier/threading/Qt5Promise.h>
38 #endif
39

```

```

40 #include <algorithm>
41 #include <cmath>
42 #include <memory>
43 #include <type_traits>
44 #include <utility>
45
46 namespace quantier::threading {
47
48 template <class T>
49 [[nodiscard]] std::enable_if_t<
50     std::negation_v<std::is_same<std::decay_t<T>, void>>,
51     QFuture<std::decay_t<T>>
52     makeReadyFuture(T t)
53 {
54     QPromise<std::decay_t<T>> promise;
55     QFuture<std::decay_t<T>> future = promise.future();
56
57     promise.start();
58     promise.setResult(std::move(t));
59     promise.finish();
60
61     return future;
62 }
63
64 [[nodiscard]] QFuture<void> QUENTIER_EXPORT makeReadyFuture();
65
66 template <class T, class E>
67 [[nodiscard]] std::enable_if_t<std::is_base_of_v<QException, E>, QFuture<T>
68     makeExceptionalFuture(const E & e)
69 {
70     QPromise<std::decay_t<T>> promise;
71     QFuture<std::decay_t<T>> future = promise.future();
72
73     promise.start();
74     promise.setException(e);
75     promise.finish();
76
77     return future;
78 }
79
80 #if QT_VERSION >= QT_VERSION_CHECK(6, 0, 0)
81 template <class T>
82 [[nodiscard]] QFuture<T> makeExceptionalFuture(std::exception_ptr e)
83 {
84     QPromise<std::decay_t<T>> promise;
85     QFuture<std::decay_t<T>> future = promise.future();
86
87     promise.start();
88     promise.setException(std::move(e));
89     promise.finish();
90
91     return future;
92 }
93 #endif // QT_VERSION
94
95 template <class T, class U>
96 void bindCancellation(const QFuture<T> & from, QFuture<U> to)
97 {
98     auto watcher = std::make_unique<QFutureWatcher<T>>();
99     auto * rawWatcher = watcher.get();
100
101     QObject::connect(
102         rawWatcher, &QFutureWatcher<T>::canceled, rawWatcher,
103         [rawWatcher, to]() mutable {
104             to.cancel();
105             rawWatcher->deleteLater();
106         });
107
108     QObject::connect(
109         rawWatcher, &QFutureWatcher<T>::finished, rawWatcher,
110         [rawWatcher] { rawWatcher->deleteLater(); });
111
112     watcher->setFuture(from);
113     Q_UNUSED(watcher.release());
114 }
115
116 [[nodiscard]] QFuture<void> QUENTIER_EXPORT
117     whenAll(QList<QFuture<void>> futures);
118
119 template <class T>
120 [[nodiscard]] std::enable_if_t<
121     !std::is_void_v<std::decay_t<T>, QFuture<QList<std::decay_t<T>>>
122     whenAll(QList<QFuture<std::decay_t<T>>> futures)
123 {
124     if (Q_UNLIKELY(futures.isEmpty())) {
125         return makeReadyFuture<QList<std::decay_t<T>>>({});
126     }
127 }

```

```

158
159     auto promise = std::make_shared<QPromise<QList<std::decay_t<T>...>>());
160     auto future = promise->future();
161
162     for (auto & f: futures) {
163         threading::bindCancellation(future, f);
164     }
165
166     const auto totalItemCount = futures.size();
167     promise->setProgressRange(0, static_cast<int>(totalItemCount));
168     promise->setProgressValue(0);
169
170     promise->start();
171
172     auto resultIndexedList =
173         std::make_shared<QList<std::pair<int, std::decay_t<T>...>>());
174
175     auto processedItemsCount = std::make_shared<int>(0);
176     auto exceptionFlag = std::make_shared<bool>(false);
177     auto mutex = std::make_shared<QMutex>();
178
179     for (int i = 0; i < futures.size(); ++i) {
180         auto & f = futures[i];
181         auto thenFuture = then(
182             std::move(f),
183             [promise, processedItemsCount, totalItemCount, exceptionFlag, mutex,
184              resultIndexedList, i](std::decay_t<T> result) {
185                 if (promise->isCanceled()) {
186                     return;
187                 }
188
189                 int count = 0;
190                 {
191                     const QMutexLocker locker{mutex.get()};
192
193                     if (*exceptionFlag) {
194                         return;
195                     }
196
197                     ++(*processedItemsCount);
198                     count = *processedItemsCount;
199                     promise->setProgressValue(count);
200
201                     resultIndexedList->append(
202                         std::make_pair(i, std::move(result)));
203                 }
204
205                 if (count == totalItemCount) {
206                     std::sort(
207                         resultIndexedList->begin(), resultIndexedList->end(),
208                         [](const auto & lhs, const auto & rhs) {
209                             return lhs.first < rhs.first;
210                         });
211
212                     auto resultList =
213                         std::make_shared<QList<std::decay_t<T>...>>();
214                     resultList->reserve(resultIndexedList->size());
215                     for (auto & [i, v]: *resultIndexedList) {
216                         resultList->append(std::move(v));
217                     }
218
219                     promise->addResult(*resultList);
220                     promise->finish();
221                 }
222             });
223
224     onFailed(
225         std::move(thenFuture),
226         [promise, mutex, exceptionFlag](const QException & e) {
227             if (promise->isCanceled()) {
228                 return;
229             }
230
231             {
232                 const QMutexLocker locker{mutex.get()};
233
234                 if (*exceptionFlag) {
235                     return;
236                 }
237
238                 *exceptionFlag = true;
239             }
240
241             promise->setException(e);
242             promise->finish();
243         });
244 }

```

```

245
246     return future;
247 }
248
249 template <class T, class U>
250 void mapFutureProgress(
251     const QFuture<T> & future, const std::shared_ptr<QPromise<U>> & promise)
252 {
253     const auto futureProgressMinimum = future.progressMinimum();
254     const auto futureProgressRange =
255         future.progressMaximum() - futureProgressMinimum;
256
257     Q_ASSERT(futureProgressRange >= 0);
258
259     const auto promiseFuture = promise->future();
260     const auto promiseProgressMinimum = promiseFuture.progressMinimum();
261     const auto promiseProgressMaximum = promiseFuture.progressMaximum();
262
263     const auto promiseProgressRange =
264         promiseProgressMaximum - promiseProgressMinimum;
265
266     Q_ASSERT(promiseProgressRange >= 0);
267
268     auto futureWatcher = std::make_unique<QFutureWatcher<T>>();
269
270     QObject::connect(
271         futureWatcher.get(), &QFutureWatcher<T>::progressValueChanged,
272         futureWatcher.get(),
273         [promise, futureProgressMinimum, futureProgressRange,
274         promiseProgressRange, promiseProgressMinimum,
275         promiseProgressMaximum](int progressValue) {
276             if (Q_UNLIKELY(futureProgressRange == 0)) {
277                 promise->setProgressValue(0);
278                 return;
279             }
280
281             const auto progressPart =
282                 static_cast<double>(progressValue - futureProgressMinimum) /
283                 static_cast<double>(futureProgressRange);
284
285             const auto mappedProgressValue = static_cast<int>(
286                 std::round(progressPart * promiseProgressRange));
287
288             promise->setProgressValue(std::clamp(
289                 promiseProgressMinimum + mappedProgressValue,
290                 promiseProgressMinimum, promiseProgressMaximum));
291         });
292
293     QObject::connect(
294         futureWatcher.get(), &QFutureWatcher<T>::finished, futureWatcher.get(),
295         [futureWatcherWeak = QPointer<QFutureWatcher<T>>(futureWatcher.get())] {
296             if (!futureWatcherWeak.isNull()) {
297                 futureWatcherWeak->deleteLater();
298             }
299         });
300
301     QObject::connect(
302         futureWatcher.get(), &QFutureWatcher<T>::canceled, futureWatcher.get(),
303         [futureWatcherWeak = QPointer<QFutureWatcher<T>>(futureWatcher.get())] {
304             if (!futureWatcherWeak.isNull()) {
305                 futureWatcherWeak->deleteLater();
306             }
307         });
308
309     futureWatcher->setFuture(future);
310     Q_UNUSED(futureWatcher.release());
311 }
312
313 // namespace quentier::threading

```

## 6.61 enml/conversion\_rules/Fwd.h

```

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```

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16 * along with libquentier. If not, see <http://www.gnu.org/licenses/>.
17 */
18
19 #pragma once
20
21 #include <memory>
22
23 namespace quentier::enml::conversion_rules {
24
25 class ISkipRule;
26 using ISkipRulePtr = std::shared_ptr<ISkipRule>;
27
28 class ISkipRuleBuilder;
29 using ISkipRuleBuilderPtr = std::shared_ptr<ISkipRuleBuilder>;
30
31 } // namespace quentier::enml::conversion_rules

```

## 6.62 enml/Fwd.h

```

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16 * along with libquentier. If not, see <http://www.gnu.org/licenses/>.
17 */
18
19 #pragma once
20
21 #include <memory>
22
23 namespace quentier::enml {
24
25 class IConverter;
26 using IConverterPtr = std::shared_ptr<IConverter>;
27
28 class IDecryptedTextCache;
29 using IDecryptedTextCachePtr = std::shared_ptr<IDecryptedTextCache>;
30
31 class IENMLTagsConverter;
32 using IENMLTagsConverterPtr = std::shared_ptr<IENMLTagsConverter>;
33
34 struct IHtmlData;
35 using IHtmlDataPtr = std::shared_ptr<IHtmlData>;
36
37 } // namespace quentier::enml

```

## 6.63 local\_storage/Fwd.h

```

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16 * along with libquentier. If not, see <http://www.gnu.org/licenses/>.

```

```

17 */
18
19 #pragma once
20
21 #include <memory>
22
23 namespace quantier::local_storage {
24
25 class ILocalStorage;
26 using ILocalStoragePtr = std::shared_ptr<ILocalStorage>;
27
28 class ILocalStorageNotifier;
29
30 class IPatch;
31 using IPatchPtr = std::shared_ptr<IPatch>;
32
33 class NoteSearchQuery;
34
35 } // namespace quantier::local_storage

```

## 6.64 synchronization/Fwd.h

```

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16 * along with libquantier. If not, see <http://www.gnu.org/licenses/>.
17 */
18
19 #pragma once
20
21 #include <memory>
22
23 namespace quantier::synchronization {
24
25 class IAuthenticator;
26 using IAuthenticatorPtr = std::shared_ptr<IAuthenticator>;
27
28 class INoteStoreFactory;
29 using INoteStoreFactoryPtr = std::shared_ptr<INoteStoreFactory>;
30
31 class ISyncConflictResolver;
32 using ISyncConflictResolverPtr = std::shared_ptr<ISyncConflictResolver>;
33
34 class ISynchronizer;
35 using ISynchronizerPtr = std::shared_ptr<ISynchronizer>;
36
37 class ISyncEventsNotifier;
38
39 class ISyncOptions;
40 using ISyncOptionsPtr = std::shared_ptr<ISyncOptions>;
41
42 class ISyncStateStorage;
43 using ISyncStateStoragePtr = std::shared_ptr<ISyncStateStorage>;
44
45 class IUserStoreFactory;
46 using IUserStoreFactoryPtr = std::shared_ptr<IUserStoreFactory>;
47
48 } // namespace quantier::synchronization

```

## 6.65 synchronization/types/Fwd.h

```

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```

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16 * along with libquentier. If not, see <http://www.gnu.org/licenses/>.
17 */
18
19 #pragma once
20
21 #include <memory>
22
23 namespace quentier::synchronization {
24
25 class IAuthenticationInfo;
26 using IAuthenticationInfoPtr = std::shared_ptr<IAuthenticationInfo>;
27
28 class IAuthenticationInfoBuilder;
29 using IAuthenticationInfoBuilderPtr =
30     std::shared_ptr<IAuthenticationInfoBuilder>;
31
32 class IDownloadNotesStatus;
33 using IDownloadNotesStatusPtr = std::shared_ptr<IDownloadNotesStatus>;
34
35 class IDownloadResourcesStatus;
36 using IDownloadResourcesStatusPtr = std::shared_ptr<IDownloadResourcesStatus>;
37
38 class ISendStatus;
39 using ISendStatusPtr = std::shared_ptr<ISendStatus>;
40
41 struct ISyncChunksDataCounters;
42 using ISyncChunksDataCountersPtr = std::shared_ptr<ISyncChunksDataCounters>;
43
44 class ISyncOptions;
45 using ISyncOptionsPtr = std::shared_ptr<ISyncOptions>;
46
47 class ISyncOptionsBuilder;
48 using ISyncOptionsBuilderPtr = std::shared_ptr<ISyncOptionsBuilder>;
49
50 class ISyncResult;
51 using ISyncResultPtr = std::shared_ptr<ISyncResult>;
52
53 class ISyncState;
54 using ISyncStatePtr = std::shared_ptr<ISyncState>;
55
56 class ISyncStateBuilder;
57 using ISyncStateBuilderPtr = std::shared_ptr<ISyncStateBuilder>;
58
59 } // namespace quentier::synchronization

```

## 6.66 threading/Fwd.h

```

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16 * along with libquentier. If not, see <http://www.gnu.org/licenses/>.
17 */
18
19 #pragma once
20
21 #include <memory>
22
23 class QMutex;
24 class QThread;
25 class QThreadPool;
26
27 namespace quentier::threading {

```



```

28
29 using QMutexPtr = std::shared_ptr<QMutex>;
30 using QThreadPtr = std::shared_ptr<QThread>;
31 using QThreadPoolPtr = std::shared_ptr<QThreadPool>;
32
33 } // namespace quantier::threading

```

## 6.67 types/Fwd.h

```

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16 * along with libquantier. If not, see <http://www.gnu.org/licenses/>.
17 */
18
19 #pragma once
20
21 namespace quantier {
22
23 class Account;
24 class ErrorString;
25 class ResourceRecognitionIndexItem;
26 class ResourceRecognitionIndices;
27
28 } // namespace quantier

```

## 6.68 utility/cancelers/Fwd.h

```

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17 */
18
19 #pragma once
20
21 #include <memory>
22
23 namespace quantier::utility::cancelers {
24
25 class AnyOfCanceler;
26 using AnyOfCancelerPtr = std::shared_ptr<AnyOfCanceler>;
27
28 class ICanceler;
29 using ICancelerPtr = std::shared_ptr<ICanceler>;
30
31 class ManualCanceler;
32 using ManualCancelerPtr = std::shared_ptr<ManualCanceler>;
33
34 } // namespace quantier::utility::cancelers

```

## 6.69 utility/Fwd.h

```

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16 * along with libquentier. If not, see <http://www.gnu.org/licenses/>.
17 */
18
19 #pragma once
20
21 #include <memory>
22
23 namespace quentier::utility {
24
25     class ApplicationSettings;
26     class FileIOProcessorAsync;
27     class QuentierApplication;
28
29     struct IEncryptor;
30     using IEncryptorPtr = std::shared_ptr<IEncryptor>;
31
32     class IKeychainService;
33     using IKeychainServicePtr = std::shared_ptr<IKeychainService>;
34
35 } // namespace quentier::utility

```

## 6.70 Post.h

```

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17 */
18
19 #pragma once
20
21 #include <QAbstractEventDispatcher>
22 #include <QMetaObject>
23 #include <QObject>
24
25 #include <QThread>
26
27 #include <memory>
28 #include <utility>
29
30 namespace quentier::threading {
31
32     template <typename Function>
33     void postToObject(QObject * object, Function && function)
34     {
35         Q_ASSERT(object);
36
37         QMetaObject::invokeMethod(
38             object, std::forward<Function>(function), Qt::QueuedConnection);
39     }
40
41     template <typename Function>
42     void postToThread(QThread * pThread, Function && function)
43     {

```

```

44     Q_ASSERT(pThread);
45     Q_ASSERT(!pThread->isFinished());
46
47     QObject * pObject = QAbstractEventDispatcher::instance(pThread);
48     if (!pObject) {
49         // Thread's event loop has not been started yet. Create a dummy QObject,
50         // move it to the target thread, set things up so that it would be
51         // destroyed after the job is done and use postToObject.
52         auto pDummyObj = std::make_unique<QObject>();
53         pDummyObj->moveToThread(pThread);
54         postToObject(
55             pDummyObj.get(),
56             [pObj = pDummyObj.get(),
57              function = std::forward<Function>(function)]() mutable {
58                 pObj->deleteLater();
59                 function();
60             });
61         Q_UNUSED(pDummyObj.release()) // NOLINT
62         return;
63     }
64
65     if (pThread == QThread::currentThread()) {
66         // Already on the target thread, executing the function right away
67         function();
68         return;
69     }
70
71     QMetaObject::invokeMethod(pObject, std::forward<Function>(function));
72 }
73
74 } // namespace quantier::threading

```

## 6.71 Qt5Promise.h

```

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16 * along with libquantier. If not, see <http://www.gnu.org/licenses/>.
17 */
18
19 #pragma once
20
21 #include <QFutureInterface>
22
23 #include <type_traits>
24
25 // Partial backport of QPromise from Qt6 to Qt5
26 template <typename T>
27 class QPromise
28 {
29     static_assert(
30         std::is_copy_constructible_v<T> || std::is_move_constructible_v<T> ||
31         std::is_same_v<T, void>,
32         "Type with copy or move constructors or type void is required");
33
34 public:
35     QPromise() = default;
36
37     Q_DISABLE_COPY(QPromise)
38
39     QPromise(QPromise<T> && other) noexcept : d(other.d)
40     {
41         other.d = QFutureInterface<T>();
42     }
43
44     QPromise(QFutureInterface<T> & other) : d(other) {}
45
46     QPromise & operator=(QPromise<T> && other) noexcept
47     {
48         QPromise<T> tmp(std::move(other));
49         tmp.swap(*this);

```

```

50     return *this;
51 }
52
53 ~QPromise()
54 {
55     // If QFutureInterface has no state, there is nothing to be done
56     if (d.queryState(QFutureInterfaceBase::State::NoState)) {
57         return;
58     }
59
60     // Otherwise, if computation is not finished at this point, cancel
61     // potential waits
62     if (!d.queryState(QFutureInterfaceBase::State::Finished)) {
63         d.cancel();
64         finish(); // required to finalize the state
65     }
66 }
67
68 // Core QPromise APIs
69 QFuture<T> future() const
70 {
71     return d.future();
72 }
73 template <
74     typename U,
75     typename = std::enable_if_t<
76         std::is_same_v<U, T> || std::is_convertible_v<U, T>>
77 void addResult(U && result, int index = -1)
78 {
79     d.reportResult(std::forward<U>(result), index);
80 }
81
82 void setException(const QException & e)
83 {
84     d.reportException(e);
85 }
86
87 void start()
88 {
89     d.reportStarted();
90 }
91 void finish()
92 {
93     d.reportFinished();
94 }
95
96 void suspendIfRequested()
97 {
98     d.suspendIfRequested();
99 }
100
101 bool isCanceled() const
102 {
103     return d.isCanceled();
104 }
105
106 // Progress methods
107 void setProgressRange(int minimum, int maximum)
108 {
109     d.setProgressRange(minimum, maximum);
110 }
111 void setProgressValue(int progressValue)
112 {
113     d.setProgressValue(progressValue);
114 }
115 void setProgressValueAndText (
116     int progressValue, const QString & progressText)
117 {
118     d.setProgressValueAndText (progressValue, progressText);
119 }
120
121 void swap(QPromise<T> & other) noexcept
122 {
123     qSwap(this->d, other.d);
124 }
125
126 private:
127     mutable QFutureInterface<T> d = QFutureInterface<T>();
128 };
129
130 template <typename T>
131 inline void swap(QPromise<T> & a, QPromise<T> & b) noexcept
132 {
133     a.swap(b);
134 }

```

## 6.72 QtFutureContinuations.h

```

1  /*
2  * Copyright 2021-2024 Dmitry Ivanov
3  *
4  * This file is part of libquentier
5  *
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7  * it under the terms of the GNU Lesser General Public License as published by
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9  *
10 * libquentier is distributed in the hope that it will be useful,
11 * but WITHOUT ANY WARRANTY; without even the implied warranty of
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13 * GNU Lesser General Public License for more details.
14 *
15 * You should have received a copy of the GNU Lesser General Public License
16 * along with libquentier. If not, see <http://www.gnu.org/licenses/>.
17 */
18
19 #pragma once
20
21 #include <QtGlobal>
22
23 #include <QFutureWatcher>
24 #include <QRunnable>
25 #include <QThreadPool>
26 #include <quentier/exception/RuntimeException.h>
27 #include <quentier/threading/Post.h>
28 #include <quentier/threading/QtFutureHelpers.h>
29
30 #if QT_VERSION < QT_VERSION_CHECK(6, 0, 0)
31 #include <quentier/threading/Qt5Promise.h>
32 #endif // QT_VERSION
33
34 #include <quentier/threading/Runnable.h>
35
36 #include <boost/core/demangle.hpp>
37
38 #include <memory>
39 #include <type_traits>
40 #include <typeinfo>
41
42 namespace quentier::threading {
43
44 // NOTE: "native" implementation of continuations for Qt6 is currently disabled
45 // due to bugs in their implementation, in particular (but not limited to)
46 // https://bugreports.qt.io/browse/QTBUG-119579 and
47 // https://bugreports.qt.io/browse/QTBUG-117918. It's a shame but it is what it
48 // is.
49 /*
50 #if QT_VERSION >= QT_VERSION_CHECK(6, 0, 0)
51
52 template <class T, class Function>
53 QFuture<typename QtPrivate::ResultTypeHelper<Function, T>::ResultType> then(
54 QFuture<T> && future, Function && function)
55 {
56 return future.then(std::forward<decltype(function)>(function));
57 }
58
59 template <class T, class Function>
60 QFuture<typename QtPrivate::ResultTypeHelper<Function, T>::ResultType> then(
61 QFuture<T> && future, QtFuture::Launch policy, Function && function)
62 {
63 return future.then(policy, std::forward<decltype(function)>(function));
64 }
65
66 template <class T, class Function>
67 QFuture<typename QtPrivate::ResultTypeHelper<Function, T>::ResultType> then(
68 QFuture<T> && future, QThreadPool * pool, Function && function)
69 {
70 return future.then(pool, std::forward<decltype(function)>(function));
71 }
72
73 template <class T, class Function>
74 QFuture<typename QtPrivate::ResultTypeHelper<Function, T>::ResultType> then(
75 QFuture<T> && future, QObject * context, Function && function)
76 {
77 return future.then(context, std::forward<decltype(function)>(function));
78 }
79
80 template <class T, class Function>
81 std::enable_if_t<!QtPrivate::ArgResolver<Function>::HasExtraArgs, QFuture<T>
82 onFailed(QFuture<T> && future, Function && handler)
83 {
84 return future.onFailed(std::forward<decltype(handler)>(handler));
85 }

```

```

86
87 template <class T, class Function>
88 std::enable_if_t

```

```

173
174     promise->finish();
175 }
176
177 } // namespace detail
178
179 template <class T, class Function>
180 QFuture<typename detail::ResultTypeHelper<Function, T>::ResultType> then(
181     QFuture<T> && future, Function && function)
182 {
183     using ResultType =
184         typename detail::ResultTypeHelper<Function, T>::ResultType;
185
186     auto promise = std::make_shared<QPromise<ResultType>>();
187     auto result = promise->future();
188
189     if (future.isFinished()) {
190         detail::processParentFuture(
191             std::move(promise), std::move(future),
192             std::forward<decltype(function)>(function));
193         return result;
194     }
195
196     auto watcher = std::make_unique<QFutureWatcher<T>>();
197     auto * rawWatcher = watcher.get();
198     QObject::connect(
199         rawWatcher, &QFutureWatcher<T>::finished, rawWatcher,
200         [rawWatcher, function = std::forward<decltype(function)>(function),
201         promise = std::move(promise)]() mutable {
202             detail::processParentFuture(
203                 std::move(promise), rawWatcher->future(),
204                 std::forward<decltype(function)>(function));
205             rawWatcher->deleteLater();
206         });
207
208     QObject::connect(
209         rawWatcher, &QFutureWatcher<T>::canceled, rawWatcher,
210         [rawWatcher] { rawWatcher->deleteLater(); });
211
212     watcher->setFuture(std::move(future));
213     Q_UNUSED(watcher.release())
214
215     return result;
216 }
217
218 template <class T, class Function>
219 QFuture<typename detail::ResultTypeHelper<Function, T>::ResultType> then(
220     QFuture<T> && future, QtFuture::Launch policy, Function && function)
221 {
222     if (policy == QtFuture::Launch::Sync) {
223         return then(
224             std::move(future), std::forward<decltype(function)>(function));
225     }
226
227     return then(
228         std::move(future), QThreadPool::globalInstance(),
229         std::forward<decltype(function)>(function));
230 }
231
232 template <class T, class Function>
233 QFuture<typename detail::ResultTypeHelper<Function, T>::ResultType> then(
234     QFuture<T> && future, QThreadPool * pool, Function && function)
235 {
236     using ResultType =
237         typename detail::ResultTypeHelper<Function, T>::ResultType;
238
239     auto promise = std::make_shared<QPromise<ResultType>>();
240     auto result = promise->future();
241
242     if (future.isFinished()) {
243         auto * runnable = createFunctionRunnable(
244             [future = std::move(future), promise = std::move(promise),
245             function = std::forward<decltype(function)>(function)]() mutable {
246                 detail::processParentFuture(
247                     std::move(promise), std::move(future),
248                     std::forward<decltype(function)>(function));
249             });
250         runnable->setAutoDelete(true);
251         pool->start(runnable);
252         return result;
253     }
254
255     auto watcher = std::make_unique<QFutureWatcher<T>>();
256     auto * rawWatcher = watcher.get();
257     QObject::connect(
258         rawWatcher, &QFutureWatcher<T>::finished, rawWatcher,
259         [rawWatcher, function = std::forward<decltype(function)>(function),

```

```

260         promise = std::move(promise), pool]() mutable {
261             auto * runnable = createFunctionRunnable(
262                 [function = std::forward<decltype(function)>(function),
263                     promise = std::move(promise),
264                     future = rawWatcher->future()]() mutable {
265                     detail::processParentFuture(
266                         std::move(promise), std::move(future),
267                         std::forward<decltype(function)>(function));
268                     });
269             runnable->setAutoDelete(true);
270             pool->start(runnable);
271             rawWatcher->deleteLater();
272         });
273
274     QObject::connect(
275         rawWatcher, &QFutureWatcher<T>::canceled, rawWatcher,
276         [rawWatcher] { rawWatcher->deleteLater(); });
277
278     watcher->setFuture(std::move(future));
279     Q_UNUSED(watcher.release())
280
281     return result;
282 }
283
284 template <class T, class Function>
285 QFuture<typename detail::ResultTypeHelper<Function, T>::ResultType> then(
286     QFuture<T> && future, QObject * context, Function && function)
287 {
288     using ResultType =
289         typename detail::ResultTypeHelper<Function, T>::ResultType;
290
291     auto promise = std::make_shared<QPromise<ResultType>>();
292     auto result = promise->future();
293
294     if (future.isFinished()) {
295         postToObject(
296             context,
297             [future = std::move(future), promise = std::move(promise),
298                 function = std::forward<decltype(function)>(function)]() mutable {
299                 detail::processParentFuture(
300                     std::move(promise), std::move(future),
301                     std::forward<decltype(function)>(function));
302             });
303         return result;
304     }
305
306     auto watcher = std::make_unique<QFutureWatcher<T>>();
307     auto * rawWatcher = watcher.get();
308
309     QObject::connect(
310         rawWatcher, &QFutureWatcher<T>::finished, context,
311         [context, rawWatcher,
312             function = std::forward<decltype(function)>(function),
313             promise = std::move(promise)]() mutable {
314             postToObject(
315                 context,
316                 [function = std::forward<decltype(function)>(function),
317                     promise = std::move(promise),
318                     future = rawWatcher->future()]() mutable {
319                     detail::processParentFuture(
320                         std::move(promise), std::move(future),
321                         std::forward<decltype(function)>(function));
322                     });
323             rawWatcher->deleteLater();
324         });
325
326     QObject::connect(
327         rawWatcher, &QFutureWatcher<T>::canceled, rawWatcher,
328         [rawWatcher] { rawWatcher->deleteLater(); });
329
330     watcher->setFuture(std::move(future));
331     Q_UNUSED(watcher.release())
332
333     return result;
334 }
335
336 namespace detail {
337
338 template <class T, class Function>
339 std::enable_if_t<!QtPrivate::ArgResolver<Function>::HasExtraArgs, void>
340     processPossibleFutureException(
341         std::shared_ptr<QPromise<T>> promise, QFuture<T> && future,
342         Function && handler)
343 {
344     Q_ASSERT(promise);
345
346     using ArgType = typename QtPrivate::ArgResolver<Function>::First;

```



```

347     using ResultType =
348         typename ResultTypeHelper<Function, std::decay_t<ArgType>::ResultType;
349     static_assert(std::is_convertible_v<ResultType, T>);
350
351     promise->start();
352
353     try {
354         try {
355             future.waitForFinished();
356         }
357         catch (const ArgType & e) {
358             try {
359                 if constexpr (std::is_void_v<ResultType>) {
360                     handler(e);
361                 }
362                 else {
363                     promise->addResult(handler(e));
364                 }
365             }
366             catch (const QException & e) {
367                 promise->setException(e);
368             }
369             catch (const std::exception & e) {
370                 ErrorString error{QT_TRANSLATE_NOOP(
371                     "utility",
372                     "Unknown std::exception in onFailed future handler")};
373                 error.details() = QString::fromStdString(std::string{e.what()});
374                 promise->setException(RuntimeError{std::move(error)});
375             }
376             catch (...) {
377                 ErrorString error{QT_TRANSLATE_NOOP(
378                     "utility", "Unknown exception in onFailed future handler")};
379                 promise->setException(RuntimeError{std::move(error)});
380             }
381         }
382     }
383     // Exception doesn't match with handler's argument type, propagate
384     // the exception to be handled later.
385     catch (const QException & e) {
386         promise->setException(e);
387     }
388     catch (const std::exception & e) {
389         ErrorString error{QT_TRANSLATE_NOOP(
390             "utility",
391             "Unknown std::exception which did not match with onFailed "
392             "future handler")};
393         error.details() = QString::fromStdString(std::string{e.what()});
394         promise->setException(RuntimeError{std::move(error)});
395     }
396     catch (...) {
397         ErrorString error{QT_TRANSLATE_NOOP(
398             "utility",
399             "Unknown which did not match with onFailed "
400             "future handler")};
401         promise->setException(RuntimeError{std::move(error)});
402     }
403
404     promise->finish();
405 }
406
407 } // namespace detail
408
409 // WARNING! "Chaining" of onFailed calls would only work properly with Qt5 if
410 // all involved exceptions subclass QException. It is due to the way exception
411 // storage is implemented in Qt5. In Qt6 it was made to store std::exception_ptr
412 // so there's no requirement to use QExceptions in Qt6.
413
414 template <class T, class Function>
415 std::enable_if_t<!QtPrivate::ArgResolver<Function>::HasExtraArgs, QFuture<T>
416     onFailed(QFuture<T> && future, Function && handler)
417 {
418     auto promise = std::make_shared<QPromise<T>>();
419     auto result = promise->future();
420
421     if (future.isFinished()) {
422         detail::processPossibleFutureException(
423             std::move(promise), std::move(future),
424             std::forward<decltype(handler)>(handler));
425         return result;
426     }
427
428     auto watcher = std::make_unique<QFutureWatcher<T>>();
429     auto * rawWatcher = watcher.get();
430     QObject::connect(
431         rawWatcher, &QFutureWatcher<T>::finished, rawWatcher,
432         [rawWatcher, promise = std::move(promise),
433         handler = std::forward<decltype(handler)>(handler)] () mutable {

```

```

434         auto future = rawWatcher->future();
435         rawWatcher->deleteLater();
436         detail::processPossibleFutureException(
437             std::move(promise), std::move(future),
438             std::forward<decltype(handler)>(handler));
439     });
440
441     QObject::connect(
442         rawWatcher, &QFutureWatcher<T>::canceled, rawWatcher,
443         [rawWatcher] { rawWatcher->deleteLater(); });
444
445     watcher->setFuture(std::move(future));
446     Q_UNUSED(watcher.release())
447
448     return result;
449 }
450
451 template <class T, class Function>
452 std::enable_if_t<!QtPrivate::ArgResolver<Function>::HasExtraArgs, QFuture<T>
453     onFailed(QFuture<T> && future, QObject * context, Function && handler)
454 {
455     auto promise = std::make_shared<QPromise<T>>();
456     auto result = promise->future();
457
458     if (future.isFinished()) {
459         postToObject(
460             context,
461             [promise = std::move(promise), future = std::move(future),
462              handler = std::forward<decltype(handler)>(handler)] () mutable {
463                 detail::processPossibleFutureException(
464                     std::move(promise), std::move(future),
465                     std::forward<decltype(handler)>(handler));
466             });
467         return result;
468     }
469
470     auto watcher = std::make_unique<QFutureWatcher<T>>();
471     auto * rawWatcher = watcher.get();
472     QObject::connect(
473         rawWatcher, &QFutureWatcher<T>::finished, context,
474         [context, rawWatcher, promise = std::move(promise),
475          handler = std::forward<decltype(handler)>(handler)] () mutable {
476             postToObject(
477                 context,
478                 [promise = std::move(promise), future = rawWatcher->future(),
479                  handler = std::forward<decltype(handler)>(handler)] () mutable {
480                     detail::processPossibleFutureException(
481                         std::move(promise), std::move(future),
482                         std::forward<decltype(handler)>(handler));
483                 });
484             rawWatcher->deleteLater();
485         });
486
487     QObject::connect(
488         rawWatcher, &QFutureWatcher<T>::canceled, rawWatcher,
489         [rawWatcher] { rawWatcher->deleteLater(); });
490
491     watcher->setFuture(std::move(future));
492     Q_UNUSED(watcher.release())
493
494     return result;
495 }
496
497 // #endif // QT_VERSION
498
499 // Convenience functions for both Qt versions
500
501 template <class T, class U, class Function>
502 void thenOrFailed(
503     QFuture<T> && future, std::shared_ptr<QPromise<U>> promise,
504     Function && function)
505 {
506     auto thenFuture =
507         then(std::move(future), std::forward<decltype(function)>(function));
508
509     onFailed(std::move(thenFuture), [promise] (const QException & e) {
510         promise->setException(e);
511         promise->finish();
512     });
513 }
514
515 template <class T, class U, class Function>
516 void thenOrFailed(
517     QFuture<T> && future, QThread * thread,
518     std::shared_ptr<QPromise<U>> promise, Function && function)
519 {
520     auto thenFuture =

```

```

521         then(std::move(future), thread, std::forward<Function>(function));
522
523     onFailed(std::move(thenFuture), thread, [promise](const QException & e) {
524         promise->setException(e);
525         promise->finish();
526     });
527 }
528
529 template <class T, class U>
530 void thenOrFailed(QFuture<T> && future, std::shared_ptr<QPromise<U>> promise)
531 {
532     thenOrFailed(std::move(future), promise, [promise] { promise->finish(); });
533 }
534
535 template <class T, class U>
536 void thenOrFailed(
537     QFuture<T> && future, QThread * thread,
538     std::shared_ptr<QPromise<U>> promise)
539 {
540     thenOrFailed(
541         std::move(future), thread, promise, [promise] { promise->finish(); });
542 }
543
544 } // namespace quentier::threading

```

## 6.73 QtFutureHelpers.h

```

1  /*
2  * Copyright 2021-2024 Dmitry Ivanov
3  *
4  * This file is part of libquentier
5  *
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9  *
10 * libquentier is distributed in the hope that it will be useful,
11 * but WITHOUT ANY WARRANTY; without even the implied warranty of
12 * MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the
13 * GNU Lesser General Public License for more details.
14 *
15 * You should have received a copy of the GNU Lesser General Public License
16 * along with libquentier. If not, see <http://www.gnu.org/licenses/>.
17 */
18
19 #pragma once
20
21 #include <QFuture>
22
23 #if QT_VERSION < QT_VERSION_CHECK(6, 0, 0)
24 #include "Qt5Promise.h"
25 #endif
26
27 #include <type_traits>
28
29 #if QT_VERSION < QT_VERSION_CHECK(6, 0, 0)
30 // Backports of some helpers for QFuture continuations from Qt6 to Qt5
31 namespace QtFuture {
32
33 // Inherit option from Qt6 is not supported in Qt5
34 enum class Launch
35 {
36     Sync,
37     Async,
38 };
39
40 } // namespace QtFuture
41
42 namespace QtPrivate {
43
44 template <typename...>
45 struct ArgsType;
46
47 template <typename Arg, typename... Args>
48 struct ArgsType<Arg, Args...>
49 {
50     using First = Arg;
51     using PromiseType = void;
52     using IsPromise = std::false_type;
53     static const bool HasExtraArgs = (sizeof...(Args) > 0);
54
55     template <class Class, class Callable>
56     static const bool CanInvokeWithArgs =

```

```

57         std::is_invocable_v<Callable, Class, Arg, Args...>;
58     };
59
60     template <typename Arg, typename... Args>
61     struct ArgsType<QPromise<Arg> &, Args...>
62     {
63         using First = QPromise<Arg> &;
64         using PromiseType = Arg;
65         using IsPromise = std::true_type;
66         static const bool HasExtraArgs = (sizeof...(Args) > 0);
67
68         template <class Class, class Callable>
69         static const bool CanInvokeWithArgs =
70             std::is_invocable_v<Callable, Class, QPromise<Arg> &, Args...>;
71     };
72
73     template <>
74     struct ArgsType<>
75     {
76         using First = void;
77         using PromiseType = void;
78         using IsPromise = std::false_type;
79         static const bool HasExtraArgs = false;
80         using AllArgs = void;
81
82         template <class Class, class Callable>
83         static const bool CanInvokeWithArgs = std::is_invocable_v<Callable, Class>;
84     };
85
86     template <typename F>
87     struct ArgResolver : ArgResolver<decltype(&std::decay_t<F>::operator()))>
88     {};
89
90     template <typename F>
91     struct ArgResolver<std::reference_wrapper<F> :
92         ArgResolver<decltype(&std::decay_t<F>::operator()))>
93     {};
94
95     template <typename R, typename... Args>
96     struct ArgResolver<R(Args...)> : public ArgsType<Args...>
97     {};
98
99     template <typename R, typename... Args>
100    struct ArgResolver<R (*) (Args...)> : public ArgsType<Args...>
101    {};
102
103    template <typename R, typename... Args>
104    struct ArgResolver<R (&)(Args...)> : public ArgsType<Args...>
105    {};
106
107    template <typename R, typename... Args>
108    struct ArgResolver<R (*const) (Args...)> : public ArgsType<Args...>
109    {};
110
111    template <typename R, typename... Args>
112    struct ArgResolver<R (&) (Args...)> : public ArgsType<Args...>
113    {};
114
115    template <typename Class, typename R, typename... Args>
116    struct ArgResolver<R (Class::*)(Args...)> : public ArgsType<Args...>
117    {};
118
119    template <typename Class, typename R, typename... Args>
120    struct ArgResolver<R (Class::*)(Args...) noexcept> : public ArgsType<Args...>
121    {};
122
123    template <typename Class, typename R, typename... Args>
124    struct ArgResolver<R (Class::*)(Args...) const> : public ArgsType<Args...>
125    {};
126
127    template <typename Class, typename R, typename... Args>
128    struct ArgResolver<R (Class::*)(Args...) const noexcept> :
129        public ArgsType<Args...>
130    {};
131
132    template <typename Class, typename R, typename... Args>
133    struct ArgResolver<R (Class::*const) (Args...) const> : public ArgsType<Args...>
134    {};
135
136    template <typename Class, typename R, typename... Args>
137    struct ArgResolver<R (Class::*const) (Args...) const noexcept> :
138        public ArgsType<Args...>
139    {};
140
141 } // namespace QtPrivate
142 #endif // QT_VERSION
143

```

```

144 namespace quantier::threading::detail {
145
146 template <typename F, typename Arg, typename Enable = void>
147 struct ResultTypeHelper
148 {};
149
150 // The callable takes an argument of type Arg
151 template <typename F, typename Arg>
152 struct ResultTypeHelper<
153     F, Arg,
154     typename std::enable_if_t<
155         !std::is_invocable_v<std::decay_t<F>, QFuture<Arg>>
156     > {
157     using ResultType = std::invoke_result_t<std::decay_t<F>, std::decay_t<Arg>;
158 };
159
160 // The callable takes an argument of type QFuture<Arg>
161 template <class F, class Arg>
162 struct ResultTypeHelper<
163     F, Arg,
164     typename std::enable_if_t<
165         std::is_invocable_v<std::decay_t<F>, QFuture<Arg>>
166     > {
167     using ResultType = std::invoke_result_t<std::decay_t<F>, QFuture<Arg>;
168 };
169
170 // The callable takes an argument of type QFuture<void>
171 template <class F>
172 struct ResultTypeHelper<
173     F, void,
174     typename std::enable_if_t<
175         std::is_invocable_v<std::decay_t<F>, QFuture<void>>
176     > {
177     using ResultType = std::invoke_result_t<std::decay_t<F>, QFuture<void>;
178 };
179
180 // The callable doesn't take argument
181 template <class F>
182 struct ResultTypeHelper<
183     F, void,
184     typename std::enable_if_t<
185         !std::is_invocable_v<std::decay_t<F>, QFuture<void>>
186     > {
187     using ResultType = std::invoke_result_t<std::decay_t<F>;
188 };
189
190 } // namespace quantier::threading::detail

```

## 6.74 Runnable.h

```

1 /*
2  * Copyright 2021 Dmitry Ivanov
3  *
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5  *
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9  *
10 * libquantier is distributed in the hope that it will be useful,
11 * but WITHOUT ANY WARRANTY; without even the implied warranty of
12 * MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the
13 * GNU Lesser General Public License for more details.
14 *
15 * You should have received a copy of the GNU Lesser General Public License
16 * along with libquantier. If not, see <http://www.gnu.org/licenses/>.
17 */
18
19 #pragma once
20
21 #include <quantier/utility/Linkage.h>
22
23 #include <functional>
24
25 class QRunnable;
26
27 namespace quantier::threading {
28
29 [[nodiscard]] auto QUINTIER_EXPORT
30     createFunctionRunnable(std::function<void()> function) -> QRunnable *;
31
32 } // namespace quantier::threading

```

## 6.75 TrackedTask.h

```

1  /*
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17 */
18
19 #pragma once
20
21 #include <functional>
22 #include <type_traits>
23 #include <utility>
24
25 namespace quentier::threading {
26
27 namespace detail {
28
29 template <typename LockableObject, typename Function, typename... Arguments>
30 constexpr std::enable_if_t<std::is_invocable_v<Function, Arguments...> &&
31     LockableObject & lockableObject, Function & function,
32     Arguments &&... arguments>
33 {
34     const auto lockedObject = lockableObject.lock();
35     if (lockedObject) {
36         std::invoke(function, std::forward<Arguments>(arguments)...);
37     }
38 }
39
40 template <typename LockableObject, typename Function, typename... Arguments>
41 constexpr std::enable_if_t<
42     !std::is_invocable_v<Function, Arguments...> &&
43     std::is_member_function_pointer_v<Function>
44     &&
45     LockableObject & lockableObject, Function & function,
46     Arguments &&... arguments>
47 {
48     const auto lockedObject = lockableObject.lock();
49     if (lockedObject) {
50         std::invoke(
51             function, *lockedObject, std::forward<Arguments>(arguments)...);
52     }
53 }
54
55 } // namespace detail
56
57 template <typename LockableObject, typename Function>
58 class TrackedTask
59 {
60 public:
61     template <typename SomeLockableObject, typename SomeFunction>
62     constexpr TrackedTask(
63         SomeLockableObject && someLockableObject, SomeFunction && function) :
64         m_lockableObject{std::forward<SomeLockableObject>(someLockableObject)},
65         m_function{std::forward<SomeFunction>(function)}
66     {}
67
68     template <
69         typename... Arguments,
70         typename = std::enable_if_t<
71             std::is_invocable_v<Function, Arguments...> ||
72             std::is_member_function_pointer_v<Function>
73         >>
74     constexpr void operator()(Arguments &&... arguments)
75     {
76         detail::invoke(
77             m_lockableObject, m_function,
78             std::forward<Arguments>(arguments)...);
79     }
80
81     template <
82         typename... Arguments,
83         typename = std::enable_if_t<
84             std::is_invocable_v<Function, Arguments...> ||
85             std::is_member_function_pointer_v<Function>
86         >>
87     constexpr void operator()(Arguments &&... arguments) const

```

```

102 {
103     detail::invoke(
104         m_lockableObject, m_function,
105         std::forward<Arguments>(arguments)...);
106 }
107
108 private:
109     LockableObject m_lockableObject;
110     Function m_function;
111 };
112
113 template <typename LockableObject, typename Function>
114 TrackedTask(LockableObject, Function) -> TrackedTask<LockableObject, Function>;
115
116 } // namespace quentier::threading

```

## 6.76 Account.h

```

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17 */
18
19 #pragma once
20
21 #include <quentier/utility/Printable.h>
22
23 #include <qevercloud/QEverCloud.h>
24
25 #include <QSharedDataPointer>
26 #include <QString>
27
28 namespace quentier {
29
30 class AccountData;
31
32 class QUINTIER_EXPORT Account : public utility::Printable
33 {
34 public:
35     enum class Type
36     {
37         Local,
38         Evernote
39     };
40
41     friend QUINTIER_EXPORT QTextStream & operator<<(
42         QTextStream & strm, Type type);
43
44     friend QUINTIER_EXPORT QDebug & operator<<(QDebug & dbg, Type type);
45
46     enum class EvernoteAccountType
47     {
48         Free,
49         Plus,
50         Premium,
51         Business
52     };
53
54     friend QUINTIER_EXPORT QTextStream & operator<<(
55         QTextStream & strm, EvernoteAccountType type);
56
57     friend QUINTIER_EXPORT QDebug & operator<<(
58         QDebug & dbg, EvernoteAccountType type);
59
60 public:
61     explicit Account();
62
63     explicit Account(
64         QString name, Type type, qevercloud::UserID userId = -1,
65         EvernoteAccountType evernoteAccountType = EvernoteAccountType::Free,

```

```

71     QString evernoteHost = {}, QString shardId = {});
72
73     Account(const Account & other);
74     Account(Account && other) noexcept;
75
76     Account & operator=(const Account & other);
77     Account & operator=(Account && other) noexcept;
78
79     ~Account() noexcept override;
80
81     [[nodiscard]] bool operator==(const Account & other) const noexcept;
82     [[nodiscard]] bool operator!=(const Account & other) const noexcept;
83
84     [[nodiscard]] bool isEmpty() const;
85
86     [[nodiscard]] QString name() const;
87
88     void setName(QString name);
89
90     [[nodiscard]] QString displayName() const;
91
92     void setDisplayName(QString displayName);
93
94     [[nodiscard]] Type type() const;
95
96     [[nodiscard]] qevercloud::UserID id() const;
97
98     [[nodiscard]] EvernoteAccountType evernoteAccountType() const;
99
100    [[nodiscard]] QString evernoteHost() const;
101
102    [[nodiscard]] QString shardId() const;
103
104    void setEvernoteAccountType(EvernoteAccountType evernoteAccountType);
105    void setEvernoteHost(QString evernoteHost);
106    void setShardId(QString shardId);
107
108    [[nodiscard]] quint32 mailLimitDaily() const;
109    [[nodiscard]] quint64 noteSizeMax() const;
110    [[nodiscard]] quint64 resourceSizeMax() const;
111    [[nodiscard]] quint32 linkedNotebookMax() const;
112    [[nodiscard]] quint32 noteCountMax() const;
113    [[nodiscard]] quint32 notebookCountMax() const;
114    [[nodiscard]] quint32 tagCountMax() const;
115    [[nodiscard]] quint32 noteTagCountMax() const;
116    [[nodiscard]] quint32 savedSearchCountMax() const;
117    [[nodiscard]] quint32 noteResourceCountMax() const;
118
119    void setEvernoteAccountLimits(const qevercloud::AccountLimits & limits);
120
121    // utility::Printable
122    QTextStream & print(QTextStream & strm) const override;
123
124 private:
125     QSharedDataPointer<AccountData> d;
126 };
127
128 } // namespace quentier

```

## 6.77 ErrorString.h

```

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17 */
18
19 #pragma once
20
21 #include <quentier/utility/Printable.h>
22

```



```

23 #include <QSharedDataPointer>
24
25 namespace quantier {
26
27 class ErrorStringData;
28
42 class QUENTIER_EXPORT ErrorString : public utility::Printable
43 {
44 public:
45     explicit ErrorString(const char * error = nullptr);
46     explicit ErrorString(const QString & error);
47
48     ErrorString(const ErrorString & other);
49     ErrorString(ErrorString && other) noexcept;
50
51     ErrorString & operator=(const ErrorString & other);
52     ErrorString & operator=(ErrorString && other) noexcept;
53
54     ~ErrorString() override;
55
56     [[nodiscard]] const QString & base() const noexcept;
57     [[nodiscard]] QString & base();
58
59     [[nodiscard]] const QStringList & additionalBases() const noexcept;
60     [[nodiscard]] QStringList & additionalBases();
61
62     [[nodiscard]] const QString & details() const noexcept;
63     [[nodiscard]] QString & details();
64
65     void setBase(QString error);
66     void setBase(const char * error);
67
68     void appendBase(const QString & error);
69     void appendBase(const QStringList & errors);
70     void appendBase(const char * error);
71
72     void setDetails(const QString & error);
73     void setDetails(const char * error);
74
75     [[nodiscard]] bool isEmpty() const;
76     void clear();
77
78     [[nodiscard]] QString localizedString() const;
79     [[nodiscard]] QString nonLocalizedString() const;
80
81     QTextStream & print(QTextStream & strm) const override;
82
83 private:
84     QSharedDataPointer<ErrorStringData> d;
85 };
86
87 [[nodiscard]] QUENTIER_EXPORT bool operator==(
88     const ErrorString & lhs, const ErrorString & rhs) noexcept;
89
90 [[nodiscard]] QUENTIER_EXPORT bool operator!=(
91     const ErrorString & lhs, const ErrorString & rhs) noexcept;
92
93 } // namespace quantier

```

## 6.78 NoteUtils.h

```

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16 * along with libquantier. If not, see <http://www.gnu.org/licenses/>.
17 */
18
19 #pragma once
20
21 #include <quantier/types/Fwd.h>
22 #include <quantier/utility/Linkage.h>

```

```

23
24 #include <qevercloud/types/Fwd.h>
25
26 #include <QStringList>
27
28 #include <utility>
29
30 namespace quentier {
31
32 [[nodiscard]] QUENTIER_EXPORT bool isInkNote(const qevercloud::Note & note);
33
34 [[nodiscard]] QUENTIER_EXPORT bool noteContentContainsCheckedToDo(
35     const QString & noteContent);
36
37 [[nodiscard]] QUENTIER_EXPORT bool noteContentContainsUncheckedToDo(
38     const QString & noteContent);
39
40 [[nodiscard]] QUENTIER_EXPORT bool noteContentContainsToDo(
41     const QString & noteContent);
42
43 [[nodiscard]] QUENTIER_EXPORT bool noteContentContainsEncryptedFragments(
44     const QString & noteContent);
45
46 [[nodiscard]] QUENTIER_EXPORT QString noteContentToPlainText(
47     const QString & noteContent, ErrorString * errorDescription = nullptr);
48
49 [[nodiscard]] QUENTIER_EXPORT QStringList noteContentToListOfWords(
50     const QString & noteContent, ErrorString * errorDescription = nullptr);
51
52 [[nodiscard]] QUENTIER_EXPORT std::pair<QString, QStringList>
53     noteContentToPlainTextAndListOfWords(
54     const QString & noteContent, ErrorString * errorDescription = nullptr);
55
56 } // namespace quentier

```

## 6.79 RegisterMetatypes.h

```

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17 */
18
19 #pragma once
20
21 #include <quentier/utility/Linkage.h>
22
23 namespace quentier {
24
25 QUENTIER_EXPORT void registerMetatypes();
26
27 } // namespace quentier

```

## 6.80 ResourceRecognitionIndexItem.h

```

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17 */
18
19 #pragma once
20
21 #include <quentier/utility/Linkage.h>
22 #include <quentier/utility/Printable.h>
23
24 #include <QByteArray>
25 #include <QList>
26 #include <QSharedDataPointer>
27
28 #include <memory>
29
30 namespace quentier {
31
32 class ResourceRecognitionIndexItemData;
33
34 class QUENTIER_EXPORT ResourceRecognitionIndexItem : public utility::Printable
35 {
36 public:
37     explicit ResourceRecognitionIndexItem();
38
39     ResourceRecognitionIndexItem(const ResourceRecognitionIndexItem & other);
40
41     ResourceRecognitionIndexItem(
42         ResourceRecognitionIndexItem && other) noexcept;
43
44     ResourceRecognitionIndexItem & operator=(
45         const ResourceRecognitionIndexItem & other);
46
47     ResourceRecognitionIndexItem & operator=(
48         ResourceRecognitionIndexItem && other) noexcept;
49
50     ~ResourceRecognitionIndexItem() override;
51
52     [[nodiscard]] bool isValid() const;
53
54     [[nodiscard]] int x() const;
55     void setX(int x);
56
57     [[nodiscard]] int y() const;
58     void setY(int y);
59
60     [[nodiscard]] int h() const;
61     void setH(int h);
62
63     [[nodiscard]] int w() const;
64     void setW(int w);
65
66     [[nodiscard]] int offset() const;
67     void setOffset(int offset);
68
69     [[nodiscard]] int duration() const;
70     void setDuration(int duration);
71
72     [[nodiscard]] QList<int> strokes() const;
73     void setStrokes(QList<int> strokes);
74
75     struct QUENTIER_EXPORT ITextItem
76     {
77         virtual ~ITextItem();
78
79         [[nodiscard]] virtual QString text() const = 0;
80         [[nodiscard]] virtual int weight() const = 0;
81     };
82
83     using ITextItemPtr = std::shared_ptr<ITextItem>;
84
85     [[nodiscard]] QList<ITextItemPtr> textItems() const;
86     void setTextItems(QList<ITextItemPtr> textItems);
87
88     struct QUENTIER_EXPORT IObjectItem
89     {
90         virtual ~IObjectItem();
91
92         [[nodiscard]] virtual QString objectType() const = 0;
93         [[nodiscard]] virtual int weight() const = 0;
94     };
95
96     using IObjectItemPtr = std::shared_ptr<IObjectItem>;
97
98     [[nodiscard]] QList<IObjectItemPtr> objectItems() const;
99     void setObjectItems(QList<IObjectItemPtr> objectItems);

```

```

100
101     struct QUENTIER_EXPORT IShapeItem
102     {
103         virtual ~IShapeItem();
104
105         [[nodiscard]] virtual QString shape() const = 0;
106         [[nodiscard]] virtual int weight() const = 0;
107     };
108
109     using IShapeItemPtr = std::shared_ptr<IShapeItem>;
110
111     [[nodiscard]] QList<IShapeItemPtr> shapeItems() const;
112     void setShapeItems(QList<IShapeItemPtr> shapeItems);
113
114     struct QUENTIER_EXPORT IBarcodeItem
115     {
116         virtual ~IBarcodeItem();
117
118         [[nodiscard]] virtual QString barcode() const = 0;
119         [[nodiscard]] virtual int weight() const = 0;
120     };
121
122     using IBarcodeItemPtr = std::shared_ptr<IBarcodeItem>;
123
124     [[nodiscard]] QList<IBarcodeItemPtr> barcodeItems() const;
125     void setBarcodeItems(QList<IBarcodeItemPtr> barcodeItems);
126
127     // utility::Printable
128     QTextStream & print(QTextStream & strm) const override;
129
130 private:
131     QSharedDataPointer<ResourceRecognitionIndexItemData> d;
132 };
133
134 } // namespace quentier

```

## 6.81 ResourceRecognitionIndices.h

```

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17 */
18
19 #pragma once
20
21 #include <quentier/types/ResourceRecognitionIndexItem.h>
22
23 #include <QByteArray>
24 #include <QSharedDataPointer>
25 #include <QVector>
26
27 namespace quentier {
28
29 class ResourceRecognitionIndicesData;
30
31 class QUENTIER_EXPORT ResourceRecognitionIndices : public utility::Printable
32 {
33 public:
34     explicit ResourceRecognitionIndices();
35
36     explicit ResourceRecognitionIndices(
37         const QByteArray & rawRecognitionIndicesData);
38
39     ResourceRecognitionIndices(const ResourceRecognitionIndices & other);
40     ResourceRecognitionIndices(ResourceRecognitionIndices && other) noexcept;
41
42     ResourceRecognitionIndices & operator=(
43         const ResourceRecognitionIndices & other);
44
45     ResourceRecognitionIndices & operator=(

```

```

46         ResourceRecognitionIndices && other) noexcept;
47
48     ~ResourceRecognitionIndices() override;
49
50     [[nodiscard]] bool isNull() const;
51     [[nodiscard]] bool isValid() const;
52
53     [[nodiscard]] QString objectId() const;
54     [[nodiscard]] QString objectType() const;
55     [[nodiscard]] QString recoType() const;
56     [[nodiscard]] QString engineVersion() const;
57     [[nodiscard]] QString docType() const;
58     [[nodiscard]] QString lang() const;
59
60     [[nodiscard]] int objectHeight() const;
61     [[nodiscard]] int objectWidth() const;
62
63     [[nodiscard]] QVector<ResourceRecognitionIndexItem> items() const;
64
65     bool setData(const QByteArray & rawRecognitionIndicesData);
66
67     // utility::Printable
68     QTextStream & print(QTextStream & strm) const override;
69
70 private:
71     QSharedDataPointer<ResourceRecognitionIndicesData> d;
72 };
73
74 } // namespace quentier

```

## 6.82 ResourceUtils.h

```

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17 */
18
19 #pragma once
20
21 #include <quentier/utility/Linkage.h>
22
23 #include <qevercloud/types/Fwd.h>
24
25 #include <QString>
26
27 namespace quentier {
28
29     [[nodiscard]] QUENTIER_EXPORT QString
30         resourceDisplayName(const qevercloud::Resource & resource);
31
32     [[nodiscard]] QUENTIER_EXPORT QString
33         preferredFileSuffix(const qevercloud::Resource & resource);
34
35 } // namespace quentier

```

## 6.83 Result.h

```

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```

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17 */
18
19 #pragma once
20
21 #include <quentier/exception/RuntimeError.h>
22 #include <quentier/types/ErrorMessage.h>
23
24 #include <type_traits>
25 #include <variant>
26
27 namespace quentier {
28
29 template <
30     class ValueType, class ErrorType,
31     typename =
32         typename std::enable_if_t<!std::is_void_v<std::decay_t<ErrorType>>>
33 class Result
34 {
35 private:
36     template <typename T>
37     struct ValueWrapper
38     {
39         T value;
40     };
41
42     using ValueWrapperInnerType = std::conditional_t<
43         std::is_void_v<std::decay_t<ValueType>>, std::nullptr_t,
44         std::decay_t<ValueType>>;
45
46 public:
47     template <
48         typename T1 = ValueType,
49         typename std::enable_if_t<!std::is_void_v<std::decay_t<T1>>> * =
50             nullptr>
51     explicit Result(T1 t) :
52         m_valueOrError{ValueWrapper<std::decay_t<ValueType>>{std::move(t)}}
53     {}
54
55     template <
56         typename T1 = ValueType,
57         typename std::enable_if_t<std::is_void_v<std::decay_t<T1>>> * = nullptr>
58     explicit Result() : m_valueOrError{ValueWrapper<std::nullptr_t>{}}
59     {}
60
61     explicit Result(ErrorType error) : m_valueOrError{std::move(error)} {}
62
63     Result(const Result<ValueType, ErrorType> & other) :
64         m_valueOrError{other.m_valueOrError}
65     {}
66
67     Result(Result<ValueType, ErrorType> && other) :
68         m_valueOrError{std::move(other.m_valueOrError)}
69     {}
70
71     Result & operator=(const Result<ValueType, ErrorType> & other)
72     {
73         if (this != &other) {
74             m_valueOrError = other.m_valueOrError;
75         }
76
77         return *this;
78     }
79
80     Result & operator=(Result<ValueType, ErrorType> && other)
81     {
82         if (this != &other) {
83             m_valueOrError = std::move(other.m_valueOrError);
84         }
85
86         return *this;
87     }
88
89     [[nodiscard]] bool isValid() const noexcept
90     {
91         return std::holds_alternative<ValueWrapper<ValueWrapperInnerType>>(
92             m_valueOrError);
93     }
94
95     operator bool() const noexcept
96     {
97

```

```

100     return isValid();
101 }
102
103 template <
104     typename T1 = ValueType,
105     typename std::enable_if_t<!std::is_void_v<std::decay_t<T1>> * =
106         nullptr>
107 [[nodiscard]] T1 & get()
108 {
109     // NOTE: std::get also performs the check of what is stored inside the
110     // variant but it throws std::bad_variant_access which doesn't implement
111     // QException so this exception is not representable inside QFuture
112     // in Qt5. Due to this for Qt5 also performing another check and using
113     // another exception type
114 #if QT_VERSION < QT_VERSION_CHECK(6, 0, 0)
115     if (Q_UNLIKELY(!isValid())) {
116         throw RuntimeError{
117             ErrorString{"Detected attempt to get value from empty Result"}};
118     }
119 #endif
120
121     return std::get<ValueWrapper<std::decay_t<ValueType>>>(m_valueOrError)
122         .value;
123 }
124
125 template <
126     typename T1 = ValueType,
127     typename std::enable_if_t<!std::is_void_v<std::decay_t<T1>> * =
128         nullptr>
129 [[nodiscard]] const T1 & get()const
130 {
131     // NOTE: std::get also performs the check of what is stored inside the
132     // variant but it throws std::bad_variant_access which doesn't implement
133     // QException so this exception is not representable inside QFuture
134     // in Qt5. Due to this for Qt5 also performing another check and using
135     // another exception type
136 #if QT_VERSION < QT_VERSION_CHECK(6, 0, 0)
137     if (Q_UNLIKELY(!isValid())) {
138         throw RuntimeError{
139             ErrorString{"Detected attempt to get value from empty Result"}};
140     }
141 #endif
142
143     return std::get<ValueWrapper<std::decay_t<ValueType>>>(m_valueOrError)
144         .value;
145 }
146
147 template <
148     typename T1 = ValueType,
149     typename std::enable_if_t<!std::is_void_v<std::decay_t<T1>> * =
150         nullptr>
151 [[nodiscard]] T1 & operator*()
152 {
153     return get();
154 }
155
156 template <
157     typename T1 = ValueType,
158     typename std::enable_if_t<!std::is_void_v<std::decay_t<T1>> * =
159         nullptr>
160 [[nodiscard]] const T1 & operator*()const
161 {
162     return get();
163 }
164
165 [[nodiscard]] const ErrorType & error()const
166 {
167     // NOTE: std::get also performs the check of what is stored inside the
168     // variant but it throws std::bad_variant_access which doesn't implement
169     // QException so this exception is not representable inside QFuture
170     // in Qt5. Due to this for Qt5 also performing another check and using
171     // another exception type
172 #if QT_VERSION < QT_VERSION_CHECK(6, 0, 0)
173     if (Q_UNLIKELY(isValid())) {
174         throw RuntimeError{ErrorString{
175             "Detected attempt to get error from non-empty Result"}};
176     }
177 #endif
178
179     return std::get<ErrorType>(m_valueOrError);
180 }
181
182 [[nodiscard]] ErrorType & error()
183 {
184     // NOTE: std::get also performs the check of what is stored inside the
185     // variant but it throws std::bad_variant_access which doesn't implement
186     // QException so this exception is not representable inside QFuture

```

```

187         // in Qt5. Due to this for Qt5 also performing another check and using
188         // another exception type
189 #if QT_VERSION < QT_VERSION_CHECK(6, 0, 0)
190     if (Q_UNLIKELY(isValid())) {
191         throw RuntimeError{ErrorString{
192             "Detected attempt to get error from non-empty Result"}};
193     }
194 #endif
195
196     return std::get<ErrorType>(m_valueOrError);
197 }
198
199 private:
200     std::variant<ValueWrapper<ValueWrapperInnerType>, ErrorType> m_valueOrError;
201 };
202
203 } // namespace quentier

```

## 6.84 Validation.h

```

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17 */
18
19 #pragma once
20
21 #include <quentier/types/Fwd.h>
22 #include <quentier/utility/Linkage.h>
23
24 class QString;
25
26 namespace quentier {
27
28 [[nodiscard]] QUINTIER_EXPORT bool validateNoteTitle(
29     const QString & noteTitle,
30     ErrorString * errorDescription = nullptr) noexcept;
31
32 [[nodiscard]] QUINTIER_EXPORT bool validateNotebookName(
33     const QString & notebookName,
34     ErrorString * errorDescription = nullptr) noexcept;
35
36 [[nodiscard]] QUINTIER_EXPORT bool validateSavedSearchName(
37     const QString & savedSearchName,
38     ErrorString * errorDescription = nullptr) noexcept;
39
40 [[nodiscard]] QUINTIER_EXPORT bool validateTagName(
41     const QString & tagName, ErrorString * errorDescription = nullptr) noexcept;
42
43 } // namespace quentier

```

## 6.85 ApplicationSettings.h

```

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```



```

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17 */
18
19 #pragma once
20
21 #include <quentier/types/Account.h>
22
23 #include <QSettings>
24
25 #include <string_view>
26
27 namespace quentier::utility {
28
29 class QUINTIER_EXPORT ApplicationSettings :
30     public QSettings,
31     public utility::Printable
32 {
33     Q_OBJECT
34 public:
35     explicit ApplicationSettings(const QString & settingsName = {});
36
37     explicit ApplicationSettings(
38         const Account & account, const QString & settingsName = {});
39
40     ApplicationSettings(
41         const Account & account, const char * settingsName,
42         int settingsNameSize = -1);
43
44     ApplicationSettings(const Account & account, std::string_view settingsName);
45
46     ~ApplicationSettings() override;
47
48     struct ArrayCloser
49     {
50         ArrayCloser(ApplicationSettings & settings) : m_settings(settings) {}
51
52         ~ArrayCloser()
53         {
54             m_settings.endArray();
55             m_settings.sync();
56         }
57
58         ApplicationSettings & m_settings;
59     };
60
61     struct GroupCloser
62     {
63         GroupCloser(ApplicationSettings & settings) : m_settings(settings) {}
64
65         ~GroupCloser()
66         {
67             m_settings.endGroup();
68             m_settings.sync();
69         }
70
71         ApplicationSettings & m_settings;
72     };
73
74     void beginGroup(const QString & prefix);
75
76     void beginGroup(const char * prefix, int size = -1);
77
78     void beginGroup(std::string_view prefix);
79
80     [[nodiscard]] int beginReadArray(const QString & prefix);
81
82     [[nodiscard]] int beginReadArray(const char * prefix, int size = -1);
83
84     [[nodiscard]] int beginReadArray(std::string_view prefix);
85
86     void beginWriteArray(const QString & prefix, int arraySize = -1);
87
88     void beginWriteArray(
89         const char * prefix, int arraySize = -1, int prefixSize = -1);
90
91     void beginWriteArray(std::string_view prefix, int arraySize = -1);
92
93     [[nodiscard]] bool contains(const QString & key) const;
94
95     [[nodiscard]] bool contains(const char * key, int size = -1) const;
96
97     [[nodiscard]] bool contains(std::string_view key) const;
98
99     void remove(const QString & key);
100
101

```

```

292 void remove(const char * key, int size = -1);
293
301 void remove(std::string_view key);
302
310 void setValue(const QString & key, const QVariant & value);
311
323 void setValue(const char * key, const QVariant & value, int keySize = -1);
324
333 void setValue(std::string_view key, const QVariant & value);
334
345 [[nodiscard]] QVariant value(
346     const QString & key, const QVariant & defaultValue = {}) const;
347
362 [[nodiscard]] QVariant value(
363     const char * key, const QVariant & defaultValue = {},
364     int keySize = -1) const;
365
377 [[nodiscard]] QVariant value(
378     std::string_view key, const QVariant & defaultValue = {}) const;
379
380 // utility::Printable
381 QTextStream & print(QTextStream & strm) const override;
382
383 private:
384     Q_DISABLE_COPY(ApplicationSettings)
385 };
386
387 } // namespace quentier::utility

```

## 6.86 AnyOfCanceler.h

```

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17 */
18
19 #pragma once
20
21 #include <quentier/utility/cancelers/Fwd.h>
22 #include <quentier/utility/cancelers/ICanceler.h>
23
24 #include <QList>
25
26 namespace quentier::utility::cancelers {
27
28 class QUINTIER_EXPORT AnyOfCanceler : public ICanceler
29 {
30 public:
31     explicit AnyOfCanceler(QList<ICancelerPtr> cancelers);
32     AnyOfCanceler(AnyOfCanceler && other) noexcept;
33     AnyOfCanceler & operator=(AnyOfCanceler && other) noexcept;
34     ~AnyOfCanceler() noexcept override;
35
36     [[nodiscard]] bool isCanceled() const noexcept override;
37
38 private:
39     class Impl;
40     std::unique_ptr<Impl> m_impl;
41 };
42
43 } // namespace quentier::utility::cancelers

```

## 6.87 FutureCanceler.h

```

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```

```

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17 */
18
19 #pragma once
20
21 #include <quentier/utility/cancelers/ICanceler.h>
22
23 #include <QFuture>
24
25 namespace quentier::utility::cancelers {
26
27     template <class T>
28     class FutureCanceler : public ICanceler
29     {
30     public:
31         explicit FutureCanceler(QFuture<T> future) : m_future{std::move(future)} {}
32
33         [[nodiscard]] bool isCanceled() const noexcept override
34         {
35             return m_future.isCanceled();
36         }
37
38     private:
39         QFuture<T> m_future;
40     };
41
42 } // namespace quentier::utility::cancelers

```

## 6.88 ICanceler.h

```

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17 */
18
19 #pragma once
20
21 #include <quentier/utility/Linkage.h>
22
23 namespace quentier::utility::cancelers {
24
25     class QUINTIER_EXPORT ICanceler
26     {
27     public:
28         virtual ~ICanceler() = default;
29
30         [[nodiscard]] virtual bool isCanceled() const = 0;
31     };
32
33 } // namespace quentier::utility::cancelers

```

## 6.89 ManualCanceler.h

```

1 /*

```

```

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17 */
18
19 #pragma once
20
21 #include <quentier/utility/cancelers/ICanceler.h>
22
23 #include <atomic>
24 #include <memory>
25
26 namespace quentier::utility::cancelers {
27
28 class QUENTIER_EXPORT ManualCanceler : public ICanceler
29 {
30 public:
31     ManualCanceler();
32     ManualCanceler(ManualCanceler && other) noexcept;
33     ManualCanceler & operator=(ManualCanceler && other) noexcept;
34     ~ManualCanceler() noexcept override;
35
36     void cancel() noexcept;
37
38     [[nodiscard]] bool isCanceled() const noexcept override;
39
40 private:
41     class Impl;
42     std::unique_ptr<Impl> m_impl;
43 };
44
45 } // namespace quentier::utility::cancelers

```

## 6.90 Compat.h

```

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17 */
18
19 #pragma once
20
21 #include <QHash>
22 #include <QString>
23 #include <QtGlobal>
24
25 // Compatibility with boost parts which require to take a hash of QString
26
27 inline std::size_t hash_value(const QString & x) noexcept
28 {
29     return qHash(x);
30 }

```

## 6.91 DateTime.h

```

1 /*

```

```

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17 */
18
19 #pragma once
20
21 #include <quentier/utility/Linkage.h>
22
23 #include <QFlags>
24
25 namespace quentier::utility {
26
27 [[nodiscard]] constexpr int secondsToMilliseconds(int seconds) noexcept
28 {
29     return seconds * 1000;
30 }
31
32 enum class DateTimePrintOption
33 {
34     IncludeNumericTimestamp = 1 « 1,
35     IncludeMilliseconds = 1 « 2,
36     IncludeTimezone = 1 « 3
37 };
38
39 Q_DECLARE_FLAGS(DateTimePrintOptions, DateTimePrintOption)
40 Q_DECLARE_OPERATORS_FOR_FLAGS(DateTimePrintOptions)
41
42 [[nodiscard]] QString QUENTIER_EXPORT printableDateTimeFromTimestamp(
43     qint64 timestamp,
44     DateTimePrintOptions options = DateTimePrintOptions(
45         DateTimePrintOption::IncludeNumericTimestamp |
46         DateTimePrintOption::IncludeMilliseconds |
47         DateTimePrintOption::IncludeTimezone),
48     const char * customFormat = nullptr);
49
50 } // namespace quentier::utility

```

## 6.92 EventLoopWithExitStatus.h

```

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17 */
18
19 #pragma once
20
21 #include <quentier/types/ErrorMessage.h>
22 #include <quentier/utility/Linkage.h>
23
24 #include <QEventLoop>
25
26 class QDebug;
27 class QTextStream;
28
29 namespace quentier::utility {
30

```

```

31 class QUENTIER_EXPORT EventLoopWithExitStatus : public QEventLoop
32 {
33     Q_OBJECT
34 public:
35     explicit EventLoopWithExitStatus(QObject * parent = nullptr);
36
37     enum class ExitStatus
38     {
39         Success,
40         Failure,
41         Timeout
42     };
43
44     friend QDebug & operator<<(QDebug & dbg, ExitStatus status);
45     friend QDataStream & operator<<(QDataStream & strm, ExitStatus status);
46
47     [[nodiscard]] ExitStatus exitStatus() const;
48     [[nodiscard]] const QString & errorDescription() const;
49
50 public Q_SLOTS:
51     void exitAsSuccess();
52     void exitAsFailure();
53     void exitAsFailureWithError(QString errorDescription);
54     void exitAsFailureWithErrorString(QString errorDescription);
55     void exitAsTimeout();
56
57 private:
58     ExitStatus m_exitStatus;
59     QString m_errorDescription;
60 };
61
62 } // namespace quentier::utility

```

## 6.93 FileIOProcessorAsync.h

```

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16 * along with libquentier. If not, see <http://www.gnu.org/licenses/>.
17 */
18
19 #pragma once
20
21 #include <quentier/types/ErrorMessage.h>
22 #include <quentier/utility/Linkage.h>
23
24 #include <QByteArray>
25 #include <QIODevice>
26 #include <QObject>
27 #include <QString>
28 #include <QUuid>
29
30 namespace quentier::utility {
31
32 class FileIOProcessorAsyncPrivate;
33
34 class QUENTIER_EXPORT FileIOProcessorAsync : public QObject
35 {
36     Q_OBJECT
37 public:
38     explicit FileIOProcessorAsync(QObject * parent = nullptr);
39
40     void setIdleTimePeriod(qint32 seconds);
41
42 Q_SIGNALS:
43     void readyForIO();
44
45     void writeFileRequestProcessed(
46         bool success, QString errorDescription, QUuid requestId);
47
48     void readFileRequestProcessed(

```

```

89         bool success, ErrorString errorDescription, QByteArray data,
90         QUuid requestId);
91
92 public Q_SLOTS:
93     void onWriteFileRequest(
94         QString absoluteFilePath, QByteArray data, QUuid requestId,
95         bool append);
96
97     void onReadFileRequest(QString absoluteFilePath, QUuid requestId);
98
99 private:
100     FileIOProcessorAsyncPrivate * const d_ptr;
101     Q_DECLARE_PRIVATE(FileIOProcessorAsync)
102 };
103
104 } // namespace quentier::utility

```

## 6.94 FileSystem.h

```

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16 * along with libquentier. If not, see <http://www.gnu.org/licenses/>.
17 */
18
19 #pragma once
20
21 #include <quentier/types/Fwd.h>
22 #include <quentier/utility/Linkage.h>
23
24 #include <QString>
25
26 namespace quentier::utility {
27
28 [[nodiscard]] QString QUENTIER_EXPORT relativePathFromAbsolutePath(
29     const QString & absolutePath, const QString & relativePathRootFolderPath);
30
31 [[nodiscard]] bool QUENTIER_EXPORT removeFile(const QString & filePath);
32
33 [[nodiscard]] bool QUENTIER_EXPORT removeDir(const QString & dirPath);
34
35 [[nodiscard]] QByteArray QUENTIER_EXPORT
36     readFileContents(const QString & filePath, ErrorString & errorDescription);
37
38 [[nodiscard]] bool QUENTIER_EXPORT renameFile(
39     const QString & from, const QString & to, ErrorString & errorDescription);
40
41 } // namespace quentier::utility

```

## 6.95 FileSystemWatcher.h

```

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```

```

17 */
18
19 #pragma once
20
21 #include <quentier/utility/Linkage.h>
22
23 #include <QObject>
24 #include <QStringList>
25
26 namespace quentier::utility {
27
28 class QUINTIER_EXPORT FileSystemWatcher : public QObject
29 {
30     Q_OBJECT
31 public:
32     explicit FileSystemWatcher(
33         int removalTimeoutMsec = 500, QObject * parent = nullptr);
34
35     explicit FileSystemWatcher(
36         const QStringList & paths, int removalTimeoutMsec = 500,
37         QObject * parent = nullptr);
38
39     ~FileSystemWatcher() override;
40
41     void addPath(const QString & path);
42     void addPaths(const QStringList & paths);
43
44     [[nodiscard]] QStringList directories() const;
45     [[nodiscard]] QStringList files() const;
46
47     void removePath(const QString & path);
48     void removePaths(const QStringList & paths);
49
50 Q_SIGNALS:
51     void directoryChanged(const QString & path);
52     void directoryRemoved(const QString & path);
53
54     void fileChanged(const QString & path);
55     void fileRemoved(const QString & path);
56
57 private:
58     Q_DISABLE_COPY(FileSystemWatcher)
59
60 private:
61     class FileSystemWatcherPrivate;
62
63     FileSystemWatcherPrivate * d_ptr;
64     Q_DECLARE_PRIVATE(FileSystemWatcher)
65 };
66
67 } // namespace quentier::utility

```

## 6.96 IEncryptor.h

```

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16 * along with libquentier. If not, see <http://www.gnu.org/licenses/>.
17 */
18
19 #pragma once
20
21 #include <quentier/types/ErrorMessage.h>
22 #include <quentier/types/Result.h>
23 #include <quentier/utility/Linkage.h>
24
25 #include <QString>
26
27 class QDebug;
28 class QTextStream;
29

```



```

30 namespace quantier::utility {
31
32 struct QUINTIER_EXPORT IEncryptor
33 {
34     virtual ~IEncryptor() noexcept;
35
36     enum class Cipher
37     {
38         RC2,
39         AES
40     };
41
42     friend QUINTIER_EXPORT QDebug & operator«(QDebug & dbg, Cipher cipher);
43
44     friend QUINTIER_EXPORT QTextStream & operator«(
45         QTextStream & strm, Cipher cipher);
46
47     [[nodiscard]] virtual Result<QString, ErrorString> encrypt(
48         const QString & text, const QString & passphrase) = 0;
49
50     [[nodiscard]] virtual Result<QString, ErrorString> decrypt(
51         const QString & encryptedText, const QString & passphrase,
52         Cipher cipher) = 0;
53 };
54 // namespace quantier::utility

```

## 6.97 IKeychainService.h

```

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16 * along with libquantier. If not, see <http://www.gnu.org/licenses/>.
17 */
18
19 #pragma once
20
21 #include <quantier/exception/IQuantierException.h>
22 #include <quantier/types/ErrorString.h>
23
24 #include <quantier/utility/Fwd.h>
25 #include <quantier/utility/Linkage.h>
26
27 #include <QFuture>
28
29 class QDebug;
30
31 namespace quantier::utility {
32
33 class QUINTIER_EXPORT IKeychainService
34 {
35 public:
36     virtual ~IKeychainService() noexcept;
37
38     enum class ErrorCode
39     {
40         NoError,
41         EntryNotFound,
42         CouldNotDeleteEntry,
43         AccessDeniedByUser,
44         AccessDenied,
45         NoBackendAvailable,
46         NotImplemented,
47         OtherError
48     };
49
50     friend QUINTIER_EXPORT QTextStream & operator«(
51         QTextStream & strm, ErrorCode errorCode);
52
53     friend QUINTIER_EXPORT QDebug & operator«(
54         QDebug & dbg, ErrorCode errorCode);

```

```

86
91     class QUINTIER_EXPORT Exception : public IQuentierException
92     {
93     public:
94         explicit Exception(ErrorCode errorCode) noexcept;
95
96         explicit Exception(
97             ErrorCode errorCode, QString errorDescription) noexcept;
98
99         [[nodiscard]] ErrorCode errorCode() const noexcept;
100        [[nodiscard]] QString exceptionDisplayName() const override;
101
102        void raise() const override;
103        [[nodiscard]] Exception * clone() const override;
104
105     private:
106         const ErrorCode m_errorCode;
107     };
108
109 public:
123     [[nodiscard]] virtual QFuture<void> writePassword(
124         QString service, QString key, QString password) = 0;
125
139     [[nodiscard]] virtual QFuture<QString> readPassword(
140         QString service, QString key) const = 0;
141
154     [[nodiscard]] virtual QFuture<void> deletePassword(
155         QString service, QString key) = 0;
156 };
157
158 } // namespace quentier::utility

```

## 6.98 Initialize.h

```

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17 */
18
19 #pragma once
20
21 #include <quentier/utility/Linkage.h>
22
23 namespace quentier::utility {
24
29 void QUINTIER_EXPORT initializeLibquentier();
30
31 } // namespace quentier::utility

```

## 6.99 LRUCache.hpp

```

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```

```

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17 */
18
19 #pragma once
20
21 #include <QHash>
22
23 #include <cstddef>
24 #include <list>
25
26 namespace quentier::utility {
27
28 template <
29     class Key, class Value,
30     class Allocator = std::allocator<std::pair<Key, Value>>
31 class LRUCache
32 {
33 public:
34     explicit LRUCache(const std::size_t maxSize = 100) : m_maxSize{maxSize} {}
35
36     using key_type = Key;
37     using mapped_type = Value;
38     using allocator_type = Allocator;
39     using value_type = std::pair<key_type, mapped_type>;
40     using container_type = std::list<value_type, allocator_type>;
41     using size_type = typename container_type::size_type;
42     using difference_type = typename container_type::difference_type;
43     using iterator = typename container_type::iterator;
44     using const_iterator = typename container_type::const_iterator;
45     using reverse_iterator = std::reverse_iterator<iterator>;
46     using const_reverse_iterator = std::reverse_iterator<const_iterator>;
47
48     using reference = value_type &;
49     using const_reference = const value_type &;
50     using pointer = typename std::allocator_traits<allocator_type>::pointer;
51
52     using const_pointer =
53         typename std::allocator_traits<allocator_type>::const_pointer;
54
55     [[nodiscard]] iterator begin() noexcept
56     {
57         return m_container.begin();
58     }
59
60     [[nodiscard]] const_iterator begin() const noexcept
61     {
62         return m_container.begin();
63     }
64
65     [[nodiscard]] reverse_iterator rbegin() noexcept
66     {
67         return m_container.rbegin();
68     }
69
70     [[nodiscard]] const_reverse_iterator rbegin() const noexcept
71     {
72         return m_container.rbegin();
73     }
74
75     [[nodiscard]] iterator end() noexcept
76     {
77         return m_container.end();
78     }
79
80     [[nodiscard]] const_iterator end() const noexcept
81     {
82         return m_container.end();
83     }
84
85     [[nodiscard]] reverse_iterator rend() noexcept
86     {
87         return m_container.rend();
88     }
89
90     [[nodiscard]] const_reverse_iterator rend() const noexcept
91     {
92         return m_container.rend();
93     }
94
95     [[nodiscard]] bool empty() const noexcept
96     {
97         return m_container.empty();
98     }
99
100     [[nodiscard]] std::size_t size() const noexcept
101     {
102         return m_currentSize;

```

```

103     }
104
105     [[nodiscard]] std::size_t max_size() const noexcept
106     {
107         return m_maxSize;
108     }
109
110     void clear()
111     {
112         m_container.clear();
113         m_mapper.clear();
114         m_currentSize = 0;
115     }
116
117     void put(const key_type & key, const mapped_type & value)
118     {
119         Q_UNUSED(remove(key))
120
121         m_container.push_front(value_type(key, value));
122         m_mapper[key] = m_container.begin();
123         ++m_currentSize;
124
125         fixupSize();
126     }
127
128     [[nodiscard]] const mapped_type * get(const key_type & key) const noexcept
129     {
130         auto mapperIt = m_mapper.find(key);
131         if (mapperIt == m_mapper.end()) {
132             return nullptr;
133         }
134
135         auto it = mapperIt.value();
136         if (it == m_container.end()) {
137             return nullptr;
138         }
139
140         m_container.splice(m_container.begin(), m_container, it);
141         mapperIt.value() = m_container.begin();
142         return &(mapperIt.value()->second);
143     }
144
145     [[nodiscard]] bool exists(const key_type & key) const noexcept
146     {
147         const auto mapperIt = m_mapper.find(key);
148         if (mapperIt == m_mapper.end()) {
149             return false;
150         }
151
152         const auto it = mapperIt.value();
153         return (it != m_container.end());
154     }
155
156     bool remove(const key_type & key) noexcept
157     {
158         const auto mapperIt = m_mapper.find(key);
159         if (mapperIt == m_mapper.end()) {
160             return false;
161         }
162
163         const auto it = mapperIt.value();
164         Q_UNUSED(m_container.erase(it))
165         Q_UNUSED(m_mapper.erase(mapperIt))
166
167         if (m_currentSize != 0) {
168             --m_currentSize;
169         }
170
171         return true;
172     }
173
174     void setMaxSize(const std::size_t maxSize)
175     {
176         if (maxSize >= m_maxSize) {
177             m_maxSize = maxSize;
178             return;
179         }
180
181         std::size_t diff = m_maxSize - maxSize;
182         for (std::size_t i = 0; (i < diff) && !m_container.empty(); ++i) {
183             auto lastIt = m_container.end();
184             --lastIt;
185
186             const key_type & lastElementKey = lastIt->first;
187             Q_UNUSED(m_mapper.remove(lastElementKey))
188             Q_UNUSED(m_container.erase(lastIt))
189

```

```

190         if (m_currentSize != 0) {
191             --m_currentSize;
192         }
193     }
194 }
195
196 private:
197     void fixupSize()
198     {
199         if (m_currentSize <= m_maxSize) {
200             return;
201         }
202
203         if (Q_UNLIKELY(m_container.empty())) {
204             return;
205         }
206
207         auto lastIt = m_container.end();
208         --lastIt;
209
210         const key_type & lastElementKey = lastIt->first;
211
212         Q_UNUSED(m_mapper.remove(lastElementKey))
213         Q_UNUSED(m_container.erase(lastIt))
214
215         if (m_currentSize != 0) {
216             --m_currentSize;
217         }
218     }
219
220 private:
221     mutable container_type m_container;
222     std::size_t m_currentSize = 0;
223     std::size_t m_maxSize;
224
225     mutable QHash<Key, iterator> m_mapper;
226 };
227
228 } // namespace quantier::utility

```

## 6.100 MessageBox.h

```

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17 */
18
19 #pragma once
20
21 #include <quantier/utility/Linkage.h>
22
23 #include <QMessageBox>
24
25 namespace quantier::utility {
26
27 int QUINTIER_EXPORT genericMessageBox(
28     QWidget * parent, const QString & title, const QString & briefText,
29     const QString & detailedText = {},
30     QMessageBox::StandardButtons standardButtons = QMessageBox::Ok);
31
32 int QUINTIER_EXPORT informationMessageBox(
33     QWidget * parent, const QString & title, const QString & briefText,
34     const QString & detailedText = {},
35     QMessageBox::StandardButtons standardButtons = QMessageBox::Ok);
36
37 int QUINTIER_EXPORT warningMessageBox(
38     QWidget * parent, const QString & title, const QString & briefText,
39     const QString & detailedText = {},
40     QMessageBox::StandardButtons standardButtons = QMessageBox::Ok);
41

```

```

42 int QUINTIER_EXPORT criticalMessageBox(
43     QWidget * parent, const QString & title, const QString & briefText,
44     const QString & detailedText = {},
45     QMessageBox::StandardButtons standardButtons = QMessageBox::Ok);
46
47 [[nodiscard]] int QUINTIER_EXPORT questionMessageBox(
48     QWidget * parent, const QString & title, const QString & briefText,
49     const QString & detailedText = {},
50     QMessageBox::StandardButtons standardButtons = QMessageBox::Ok |
51     QMessageBox::Cancel);
52
53 void QUINTIER_EXPORT
54     internalErrorMessageBox(QWidget * parent, QString detailedText = {});
55
56 } // namespace quentier::utility

```

## 6.101 PlatformUtils.h

```

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17 */
18
19 #pragma once
20
21 #include <quentier/utility/Linkage.h>
22
23 #include <QString>
24 #include <QUrl>
25
26 namespace quentier::utility {
27
28 [[nodiscard]] QString QUINTIER_EXPORT getCurrentUserName();
29
30 [[nodiscard]] QString QUINTIER_EXPORT getCurrentUserFullName();
31
32 void QUINTIER_EXPORT openUrl(const QUrl & url);
33
34 } // namespace quentier::utility

```

## 6.102 Printable.h

```

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17 */
18
19 #pragma once
20
21 #include <quentier/utility/Linkage.h>
22
23 #include <QDebug>
24 #include <QHash>

```

```

25 #include <QIODevice>
26 #include <QSet>
27 #include <QString>
28 #include <QTextStream>
29
30 namespace quentier::utility {
31
32     class QUINTIER_EXPORT Printable
33     {
34     public:
35         virtual ~Printable() noexcept;
36
37         virtual QTextStream & print(QTextStream & strm) const = 0;
38
39         [[nodiscard]] QString toString() const;
40
41         friend QUINTIER_EXPORT QTextStream & operator<<
42             (QTextStream & strm, const Printable & printable);
43
44         friend QUINTIER_EXPORT QDebug & operator<<
45             (QDebug & debug, const Printable & printable);
46     };
47
48 // namespace quentier::utility
49
50 // printing operators for existing classes not inheriting from Printable
51
52 template <class T>
53 [[nodiscard]] QString ToString(const T & object)
54 {
55     QString str;
56     QTextStream strm(&str, QIODevice::WriteOnly);
57     strm << object;
58     return str;
59 }
60
61 template <class TKey, class TValue>
62 [[nodiscard]] QString ToString(const QHash<TKey, TValue> & object)
63 {
64     QString str;
65     QTextStream strm(&str, QIODevice::WriteOnly);
66     strm << QStringLiteral("QHash:  \n");
67
68     using CIter = typename QHash<TKey, TValue>::const_iterator;
69     CIter hashEnd = object.end();
70     for (CIter it = object.begin(); it != hashEnd; ++it) {
71         strm << QStringLiteral("[") << it.key() << QStringLiteral("] = ")
72             << it.value() << QStringLiteral("; \n");
73     }
74     return str;
75 }
76
77 template <class T>
78 [[nodiscard]] QString ToString(const QSet<T> & object)
79 {
80     QString str;
81     QTextStream strm(&str, QIODevice::WriteOnly);
82     strm << QStringLiteral("QSet:  \n");
83
84     using CIter = typename QSet<T>::const_iterator;
85     CIter setEnd = object.end();
86     for (CIter it = object.begin(); it != setEnd; ++it) {
87         strm << QStringLiteral("[") << *it << QStringLiteral("; \n");
88     }
89     return str;
90 }
91
92 #define QUINTIER_DECLARE_PRINTABLE(type, ...)
93 \
94 QUINTIER_EXPORT QTextStream & operator<<
95 (QTextStream & strm, const type & obj);
96 inline QDebug & operator<<(QDebug & debug, const type & obj)
97 {
98     debug << ToString<type, ##__VA_ARGS__>(obj);
99     return debug;
100 }
101 // QUINTIER_DECLARE_PRINTABLE

```

## 6.103 QuentierApplication.h

```

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```

```

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14 *
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16 * along with libquentier. If not, see <http://www.gnu.org/licenses/>.
17 */
18
19 #pragma once
20
21 #include <quentier/utility/Linkage.h>
22
23 #include <QApplication>
24
25 namespace quentier::utility {
26
27 class QUINTIER_EXPORT QuentierApplication : public QApplication
28 {
29     Q_OBJECT
30 public:
31     QuentierApplication(int & argc, char * argv[]); // NOLINT
32     ~QuentierApplication() noexcept override;
33
34     [[nodiscard]] bool notify(QObject * object, QEvent * event) override;
35     [[nodiscard]] bool event(QEvent * event) override;
36 };
37
38 } // namespace quentier::utility

```

## 6.104 QuentierUndoCommand.h

```

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17 */
18
19 #pragma once
20
21 #include <quentier/types/ErrorMessage.h>
22
23 #include <QObject>
24 #include <QUndoCommand>
25
26 namespace quentier::utility {
27
28 class QuentierUndoCommand : public QObject, public QUndoCommand
29 {
30     Q_OBJECT
31 public:
32     QuentierUndoCommand(QUndoCommand * parent = nullptr);
33     QuentierUndoCommand(const QString & text, QUndoCommand * parent = nullptr);
34     ~QuentierUndoCommand() noexcept override;
35
36     void undo() final;
37     void redo() final;
38
39     [[nodiscard]] bool onceUndoExecuted() const noexcept
40     {
41         return m_onceUndoExecuted;
42     }
43
44 Q_SIGNALS:
45     void notifyError(ErrorMessage error);

```



```

71
72 protected:
73     virtual void undoImpl() = 0;
74     virtual void redoImpl() = 0;
75
76 private:
77     bool m_onceUndoExecuted = false;
78 };
79
80 } // namespace quantier::utility

```

## 6.105 ShortcutManager.h

```

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17 */
18
19 #pragma once
20
21 #include <quantier/types/Account.h>
22 #include <quantier/utility/Linkage.h>
23
24 #include <QKeySequence>
25 #include <QObject>
26
27 namespace quantier::utility {
28
29 class QUANTIER_EXPORT ShortcutManager : public QObject
30 {
31     Q_OBJECT
32 public:
33     explicit ShortcutManager(QObject * parent = nullptr);
34
35     enum QuantierShortcutKey
36     {
37         NewNote = 5000,
38         NewTag,
39         NewNotebook,
40         NewSavedSearch,
41         AddAttachment,
42         SaveAttachment,
43         OpenAttachment,
44         CopyAttachment,
45         CutAttachment,
46         RemoveAttachment,
47         RenameAttachment,
48         AddAccount,
49         ExitAccount,
50         SwitchAccount,
51         AccountInfo,
52         NoteSearch,
53         NewNoteSearch,
54         ShowNotes,
55         ShowNotebooks,
56         ShowTags,
57         ShowSavedSearches,
58         ShowDeletedNotes,
59         ShowStatusBar,
60         ShowToolBar,
61         PasteUnformatted,
62         Font,
63         UpperIndex,
64         LowerIndex,
65         AlignLeft,
66         AlignCenter,
67         AlignRight,
68         AlignFull,
69         IncreaseIndentation,
70         DecreaseIndentation,

```

```

71         IncreaseFontSize,
72         DecreaseFontSize,
73         InsertNumberedList,
74         InsertBulletedList,
75         Strikethrough,
76         Highlight,
77         InsertTable,
78         InsertRow,
79         InsertColumn,
80         RemoveRow,
81         RemoveColumn,
82         InsertHorizontalLine,
83         InsertToDoTag,
84         EditHyperlink,
85         CopyHyperlink,
86         RemoveHyperlink,
87         Encrypt,
88         Decrypt,
89         DecryptPermanently,
90         BackupLocalStorage,
91         RestoreLocalStorage,
92         UpgradeLocalStorage,
93         LocalStorageStatus,
94         SpellCheck,
95         SpellCheckIgnoreWord,
96         SpellCheckAddWordToUserDictionary,
97         SaveImage,
98         AnnotateImage,
99         ImageRotateClockwise,
100        ImageRotateCounterClockwise,
101        Synchronize,
102        FullSync,
103        ImportFolders,
104        Preferences,
105        ReleaseNotes,
106        ViewLogs,
107        About,
108        UnknownKey = 100000
109    };
110
111    [[nodiscard]] QKeySequence shortcut (
112        int key, const Account & account, const QString & context = {}) const;
113
114    [[nodiscard]] QKeySequence shortcut (
115        const QString & nonStandardKey, const Account & account,
116        const QString & context = {}) const;
117
118    [[nodiscard]] QKeySequence defaultShortcut (
119        int key, const Account & account, const QString & context = {}) const;
120
121    [[nodiscard]] QKeySequence defaultShortcut (
122        const QString & nonStandardKey, const Account & account,
123        const QString & context = {}) const;
124
125    [[nodiscard]] QKeySequence userShortcut (
126        int key, const Account & account, const QString & context = {}) const;
127
128    [[nodiscard]] QKeySequence userShortcut (
129        const QString & nonStandardKey, const Account & account,
130        const QString & context = {}) const;
131
132    Q_SIGNALS:
133        void shortcutChanged(
134            int key, QKeySequence shortcut, const Account & account,
135            QString context);
136
137        void nonStandardShortcutChanged(
138            QString nonStandardKey, QKeySequence shortcut, const Account & account,
139            QString context);
140
141    public Q_SLOTS:
142        void setUserShortcut (
143            int key, const QKeySequence & shortcut, const Account & account,
144            QString context = {});
145
146        void setNonStandardUserShortcut (
147            QString nonStandardKey, const QKeySequence & shortcut,
148            const Account & account, QString context = {});
149
150        void setDefaultShortcut (
151            int key, const QKeySequence & shortcut, const Account & account,
152            QString context = {});
153
154        void setNonStandardDefaultShortcut (
155            QString nonStandardKey, const QKeySequence & shortcut,
156            const Account & account, QString context = {});
157
158
159
160
161
162
163
164
165
166
167
168
169
170
171
172
173
174
175
176
177
178
179
180
181
182
183

```

```

184 private:
185     class ShortcutManagerPrivate;
186
187     ShortcutManagerPrivate * const d_ptr;
188     Q_DECLARE_PRIVATE(ShortcutManager)
189 };
190
191 } // namespace quantier::utility

```

## 6.106 Size.h

```

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17 */
18
19 #pragma once
20
21 #include <quantier/utility/Linkage.h>
22
23 #include <QString>
24
25 namespace quantier::utility {
26
27 [[nodiscard]] QString QUENTIER_EXPORT humanReadableSize(quint64 bytes);
28
29 } // namespace quantier::utility

```

## 6.107 StandardPaths.h

```

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17 */
18
19 #pragma once
20
21 #include <quantier/types/Account.h>
22 #include <quantier/utility/Linkage.h>
23
24 #define LIBQUENTIER_PERSISTENCE_STORAGE_PATH \
25 "LIBQUENTIER_PERSISTENCE_STORAGE_PATH"
26
27 namespace quantier::utility {
28
29 constexpr const char * gLibquantierPersistenceStoragePath =
30     "LIBQUENTIER_PERSISTENCE_STORAGE_PATH";
31
32 [[nodiscard]] QString QUENTIER_EXPORT
33     applicationPersistentStoragePath(bool * nonStandardLocation = nullptr);
34
35 [[nodiscard]] QString QUENTIER_EXPORT
36     accountPersistentStoragePath(const Account & account);
37
38 }

```

```

58
63 [[nodiscard]] QString QUINTIER_EXPORT applicationTemporaryStoragePath();
64
70 [[nodiscard]] QString QUINTIER_EXPORT homePath();
71
75 [[nodiscard]] QString QUINTIER_EXPORT documentsPath();
76
77 } // namespace quentier::utility

```

## 6.108 StringUtils.h

```

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17 */
18
19 #pragma once
20
21 #include <quentier/utility/Linkage.h>
22
23 #include <QList>
24 #include <QSet>
25 #include <QString>
26
27 namespace quentier::utility {
28
29 class QUINTIER_EXPORT StringUtils
30 {
31 public:
32     StringUtils();
33     ~StringUtils() noexcept;
34
35     void removePunctuation(
36         QString & str, const QList<QChar> & charactersToPreserve = {}) const;
37
38     void removeDiacritics(QString & str) const;
39     void removeNewlines(QString & str) const;
40
41 private:
42     class StringUtilsPrivate;
43     StringUtilsPrivate * const d_ptr;
44     Q_DECLARE_PRIVATE(StringUtils);
45 };
46
47 } // namespace quentier::utility

```

## 6.109 SuppressWarnings.h

```

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17 */
18

```

```

19 #pragma once
20
22 // Common macros
24
25 #define STRINGIFY(a) #a
26
27 // Define empty macros doing nothing for supported compilers, they would be used
28 // as fallback when any of these compilers are not actually used
29
30 #define SAVE_WARNINGS
31
32 #define CLANG_SUPPRESS_WARNING(warning)
33 #define GCC_SUPPRESS_WARNING(warning)
34 #define MSVC_SUPPRESS_WARNING(warning)
35
36 #define RESTORE_WARNINGS
37
39 // Clang implementation
41
42 #if defined(__clang__)
43
44 #undef CLANG_SUPPRESS_WARNING
45
46 #define CLANG_SUPPRESS_WARNING(warning) \
47 _Pragma(Stringify(clang diagnostic ignored #warning))
48
49 #undef SAVE_WARNINGS
50
51 #define SAVE_WARNINGS _Pragma("clang diagnostic push")
52
53 #undef RESTORE_WARNINGS
54
55 #define RESTORE_WARNINGS _Pragma("clang diagnostic pop")
56
57 #endif // clang
58
60 // GCC implementation
62
63 // Clang can mimic gcc so need to ensure it's indeed gcc
64 #if defined(__GNUC__) && !defined(__clang__)
65
66 #undef GCC_SUPPRESS_WARNING
67
68 #define GCC_SUPPRESS_WARNING(warning) \
69 _Pragma(Stringify(GCC diagnostic ignored #warning))
70
71 #undef SAVE_WARNINGS
72
73 #define SAVE_WARNINGS _Pragma("GCC diagnostic push")
74
75 #undef RESTORE_WARNINGS
76
77 #define RESTORE_WARNINGS _Pragma("GCC diagnostic pop")
78
79 #endif // GCC
80
82 // MSVC implementation
84
85 #if defined(_MSC_VER)
86
87 #undef MSVC_SUPPRESS_WARNING
88
89 #define MSVC_SUPPRESS_WARNING(number) __pragma(warning(disable : number))
90
91 #undef SAVE_WARNINGS
92
93 #define SAVE_WARNINGS __pragma(warning(push))
94
95 #undef RESTORE_WARNINGS
96
97 #define RESTORE_WARNINGS __pragma(warning(pop))
98
99 #endif // MSVC

```

## 6.110 SysInfo.h

```

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17 */
18
19 #pragma once
20
21 #include <quentier/utility/Linkage.h>
22
23 #include <QString>
24
25 namespace quentier::utility {
26
27 class QUENTIER_EXPORT SysInfo
28 {
29 public:
30     SysInfo();
31     ~SysInfo() noexcept;
32
33     [[nodiscard]] quint64 pageSize();
34     [[nodiscard]] quint64 totalMemory();
35     [[nodiscard]] quint64 freeMemory();
36
37     [[nodiscard]] QString stackTrace();
38
39     [[nodiscard]] QString platformName();
40
41 private:
42     Q_DISABLE_COPY(SysInfo)
43
44 private:
45     class SysInfoPrivate;
46     SysInfoPrivate * const d_ptr;
47     Q_DECLARE_PRIVATE(SysInfo)
48 };
49
50 } // namespace quentier::utility

```

## 6.111 TagSortByParentChildRelations.h

```

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17 */
18
19 #pragma once
20
21 #include <quentier/types/Fwd.h>
22 #include <quentier/utility/Linkage.h>
23
24 #include <qevercloud/types/Fwd.h>
25
26 #include <QList>
27
28 namespace quentier::utility {
29
30 bool QUENTIER_EXPORT sortTagsByParentChildRelations(
31     QList<qevercloud::Tag> & tagList, ErrorString & errorDescription);
32
33 } // namespace quentier::utility

```

## 6.112 MockIKeychainService.h

```

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17 */
18
19 #include <quentier/utility/IKeychainService.h>
20
21 #include <gmock/gmock.h>
22
23 namespace quentier::utility::tests::mocks {
24
25 class MockIKeychainService : public IKeychainService
26 {
27 public:
28     MOCK_METHOD(
29         QFuture<void>, writePassword,
30         (QString service, QString key, QString password), (override));
31
32     MOCK_METHOD(
33         QFuture<QString>, readPassword, (QString service, QString key),
34         (const, override));
35
36     MOCK_METHOD(
37         QFuture<void>, deletePassword, (QString service, QString key),
38         (override));
39 };
40
41 } // namespace quentier::utility::tests::mocks

```

## 6.113 UidGenerator.h

```

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17 */
18
19 #pragma once
20
21 #include <quentier/utility/Linkage.h>
22
23 #include <QString>
24 #include <QUuid>
25
26 namespace quentier::utility {
27
28 class QUENTIER_EXPORT UidGenerator
29 {
30 public:
31     [[nodiscard]] static QString generate();
32     [[nodiscard]] static QString uidToString(const QUuid & uid);
33 };
34
35 } // namespace quentier::utility

```

## 6.114 Unreachable.h

```
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17 */
18
19 #pragma once
20
21 #include <QtGlobal>
22
23 #ifdef _MSC_VER
24 #define UNREACHABLE
25 do {
26     Q_ASSERT(false);
27     __assume(0);
28 } while (false)
29 #else
30 #define UNREACHABLE
31 do {
32     Q_ASSERT(false);
33     __builtin_unreachable();
34 } while (false)
35 #endif
```



# Index

- ~ApplicationSettings
  - quentier::utility::ApplicationSettings, [23](#)
- AccessDenied
  - quentier::utility::IKeychainService, [64](#)
- AccessDeniedByUser
  - quentier::utility::IKeychainService, [64](#)
- Account.h, [239](#)
- addedLinkedNotebooks
  - quentier::synchronization::ISyncChunksDataCountersCipher
    - [91](#)
- addedNotebooks
  - quentier::synchronization::ISyncChunksDataCounters,
    - [91](#)
- addedSavedSearches
  - quentier::synchronization::ISyncChunksDataCounters,
    - [91](#)
- addedTags
  - quentier::synchronization::ISyncChunksDataCounters,
    - [91](#)
- AES
  - quentier::utility::IEncryptor, [57](#)
- Affiliation
  - quentier::local\_storage::ILocalStorage, [70](#)
- Any
  - quentier::local\_storage::ILocalStorage, [71](#)
- AnyOfCanceler.h, [250](#)
- ApplicationSettings
  - quentier::utility::ApplicationSettings, [21](#), [22](#)
- ApplicationSettings.h, [248](#)
- apply
  - quentier::local\_storage::IPatch, [78](#)
- AttributeName
  - quentier::enml::conversion\_rules::ISkipRule, [88](#)
- AttributeValue
  - quentier::enml::conversion\_rules::ISkipRule, [88](#)
- AuthenticationInfo.h, [212](#)
- authenticationTime
  - quentier::synchronization::IAuthenticationInfo, [45](#)
- authToken
  - quentier::synchronization::IAuthenticationInfo, [45](#)
- authTokenExpirationTime
  - quentier::synchronization::IAuthenticationInfo, [45](#)
- backend
  - quentier::NoteEditor, [133](#)
- backupLocalStorage
  - quentier::local\_storage::IPatch, [78](#)
- beginGroup
  - quentier::utility::ApplicationSettings, [23](#), [24](#)
- beginReadArray
  - quentier::utility::ApplicationSettings, [24](#), [25](#)
- beginWriteArray
  - quentier::utility::ApplicationSettings, [25](#), [26](#)
- cancel
  - quentier::utility::cancelers::ManualCanceler, [121](#)
- caseSensitivity
  - quentier::enml::conversion\_rules::ISkipRule, [88](#)
- contains
  - quentier::utility::IEncryptor, [57](#)
- clear
  - quentier::NoteEditor, [133](#)
- Compat.h, [252](#)
- contains
  - quentier::utility::ApplicationSettings, [26](#), [27](#)
- convertDecryptedText
  - quentier::enml::IENMLTagsConverter, [59](#)
- convertEncryptedText
  - quentier::enml::IENMLTagsConverter, [59](#)
- convertEnmlToHtml
  - quentier::enml::IConverter, [49](#)
- convertEnmlToPlainText
  - quentier::enml::IConverter, [49](#)
- convertEnmlToWordsList
  - quentier::enml::IConverter, [50](#)
- convertEnToDo
  - quentier::enml::IENMLTagsConverter, [60](#)
- convertHtmlToDoc
  - quentier::enml::IConverter, [50](#)
- convertHtmlToEnml
  - quentier::enml::IConverter, [51](#)
- convertHtmlToXhtml
  - quentier::enml::IConverter, [51](#)
- convertHtmlToXml
  - quentier::enml::IConverter, [51](#)
- convertPlainTextToWordsList
  - quentier::enml::IConverter, [52](#)
- convertResource
  - quentier::enml::IENMLTagsConverter, [60](#)
- convertToNote
  - quentier::NoteEditor, [134](#)
- CouldNotDeleteEntry
  - quentier::utility::IKeychainService, [64](#)
- currentNoteLocalId
  - quentier::NoteEditor, [134](#)
- Date.h, [252](#)
- decrypt
  - quentier::utility::IEncryptor, [58](#)

- defaultFont
  - quentier::NoteEditor, 134
- defaultPalette
  - quentier::NoteEditor, 134
- defaultShortcut
  - quentier::utility::ShortcutManager, 156
- deletePassword
  - quentier::utility::IKeychainService, 65
- displayName
  - quentier::Account, 17
- downloadFinished
  - quentier::synchronization::ISyncEventsNotifier, 96
- DownloadNotesStatus.h, 212
- downloadNoteThumbnails
  - quentier::synchronization::ISyncOptions, 102
- DownloadResourcesStatus.h, 213
- Element
  - quentier::enml::conversion\_rules::ISkipRule, 88
- encrypt
  - quentier::utility::IEncryptor, 58
- EntryNotFound
  - quentier::utility::IKeychainService, 64
- ErrorCode
  - quentier::utility::IKeychainService, 64
- Errors.h, 202
- ErrorString.h, 240
- EventLoopWithExitStatus.h, 253
- evernoteAccountType
  - quentier::Account, 17
- evernoteHost
  - quentier::Account, 17
- exceptionDisplayName
  - quentier::InvalidArgument, 77
  - quentier::local\_storage::LocalStorageOpenException, 117
  - quentier::local\_storage::LocalStorageOperationException, 118
  - quentier::OperationCanceled, 143
  - quentier::RuntimeError, 154
  - quentier::utility::IKeychainService::Exception, 37
- exportNotesToEnex
  - quentier::enml::IConverter, 52
- expungedLinkedNotebooks
  - quentier::synchronization::ISyncChunksDataCounters, 92
- expungedNotebooks
  - quentier::synchronization::ISyncChunksDataCounters, 92
- expungedSavedSearches
  - quentier::synchronization::ISyncChunksDataCounters, 92
- expungedTags
  - quentier::synchronization::ISyncChunksDataCounters, 92
- Factory.h, 215–217
- failedToSendNotes
  - quentier::synchronization::ISendStatus, 83
- failedToSendSavedSearches
  - quentier::synchronization::ISendStatus, 83
- failedToSendTags
  - quentier::synchronization::ISendStatus, 84
- FileIOProcessorAsync.h, 254
- FileSystem.h, 255
- FileSystemWatcher.h, 255
- fromVersion
  - quentier::local\_storage::IPatch, 78
- Future.h, 218
- FutureCanceler.h, 250
- Fwd.h, 221–226
- html
  - quentier::enml::IHtmlData, 62
- HtmlUtils.h, 163
- IAuthenticationInfo.h, 203
- IAuthenticationInfoBuilder.h, 203
- IAuthenticator.h, 194
- ICanceler.h, 251
- IConverter.h, 163
- id
  - quentier::Account, 17
- IDecryptedTextCache.h, 164
- idleTime
  - quentier::NoteEditor, 134
- IDownloadNotesStatus.h, 204
- IDownloadResourcesStatus.h, 205
- IEncryptor.h, 256
- IENMLTagsConverter.h, 165
- IHtmlData.h, 166
- IKeychainService.h, 257
- ILocalStorage.h, 169
- ILocalStorageNotifier.h, 177
- importEnex
  - quentier::enml::IConverter, 52
- inAppNoteLinkPasteRequested
  - quentier::NoteEditor, 134
- includeContents
  - quentier::enml::conversion\_rules::ISkipRule, 88
- initialize
  - quentier::NoteEditor, 135
- Initialize.h, 258
- inkNoteImagesStorageDir
  - quentier::synchronization::ISyncOptions, 102
- INoteEditorBackend.h, 187
- INoteStoreFactory.h, 194
- InvalidArgument.h, 167
- IPatch.h, 178
- IQuentierException.h, 167
- isCanceled
  - quentier::utility::cancelers::AnyOfCanceler, 20
  - quentier::utility::cancelers::FutureCanceler< T >, 43
  - quentier::utility::cancelers::ManualCanceler, 121
- isEditorPageModified

- quentier::NoteEditor, 135
- isEmpty
  - quentier::Account, 17
- ISendStatus.h, 206
- ISkipRule.h, 161
- ISkipRuleBuilder.h, 162
- isModified
  - quentier::NoteEditor, 135
- isNoteLoaded
  - quentier::NoteEditor, 136
- isValid
  - quentier::Result< ValueType, ErrorType, typename >, 152
- ISyncChunksDataCounters.h, 207
- ISyncConflictResolver.h, 195
- ISyncEventsNotifier.h, 197
- ISynchronizer.h, 198
- ISyncOptions.h, 208
- ISyncOptionsBuilder.h, 209
- ISyncResult.h, 210
- ISyncState.h, 210
- ISyncStateBuilder.h, 211
- ISyncStateStorage.h, 198
- IUserStoreFactory.h, 199
  
- linkedNotebookNotesDownloadProgress
  - quentier::synchronization::ISyncEventsNotifier, 97
- linkedNotebookResourcesDownloadProgress
  - quentier::synchronization::ISyncEventsNotifier, 97
- linkedNotebookSendStatusUpdate
  - quentier::synchronization::ISyncEventsNotifier, 97
- linkedNotebookSyncChunksDataProcessingProgress
  - quentier::synchronization::ISyncEventsNotifier, 98
- linkedNotebookSyncChunksDownloaded
  - quentier::synchronization::ISyncEventsNotifier, 98
- linkedNotebookSyncChunksDownloadProgress
  - quentier::synchronization::ISyncEventsNotifier, 98
- LocalStorageOpenException.h, 179
- LocalStorageOperationException.h, 179
- LRUCache.hpp, 258
  
- ManualCanceler.h, 251
- matchMode
  - quentier::enml::conversion\_rules::ISkipRule, 88
- MatchMode.h, 162
- maxConcurrentNoteDownloads
  - quentier::synchronization::ISyncOptions, 103
- maxConcurrentResourceDownloads
  - quentier::synchronization::ISyncOptions, 103
- MessageBox.h, 261
- mine
  - quentier::synchronization::ISyncConflictResolver::ConflictResolutionMode, 129
- MockIAuthenticator.h, 200
- MockIKeychainService.h, 271
- MockILocalStorage.h, 182
- MockINoteStoreFactory.h, 200
- MockISyncConflictResolver.h, 201
- MockISyncStateStorage.h, 201
  
- name
  - quentier::Account, 18
- needToRepeatIncrementalSync
  - quentier::synchronization::ISendStatus, 84
- NoBackendAvailable
  - quentier::utility::IKeychainService, 64
- NoError
  - quentier::utility::IKeychainService, 64
- notebookModifier
  - quentier::local\_storage::NoteSearchQuery, 142
- NoteEditor.h, 190
- notesDownloadProgress
  - quentier::synchronization::ISyncEventsNotifier, 99
- NoteSearchQuery.h, 180
- noteStoreUrl
  - quentier::synchronization::IAuthenticationInfo, 45
- NoteUtils.h, 241
- notifier
  - quentier::local\_storage::ILocalStorage, 71
- notifySyncStateUpdated
  - quentier::synchronization::ISyncStateStorage, 108
- NotImplemented
  - quentier::utility::IKeychainService, 64
- numEncryptNodes
  - quentier::enml::IHtmlData, 62
- numDecryptNodes
  - quentier::enml::IHtmlData, 62
- numToDoNodes
  - quentier::enml::IHtmlData, 63
- numHyperlinkNodes
  - quentier::enml::IHtmlData, 63
  
- onReadFileRequest
  - quentier::utility::FileIOProcessorAsync, 39
- onWriteFileRequest
  - quentier::utility::FileIOProcessorAsync, 39
- OperationCanceled.h, 168
- OtherError
  - quentier::utility::IKeychainService, 64
  
- patchLongDescription
  - quentier::local\_storage::IPatch, 79
- patchShortDescription
  - quentier::local\_storage::IPatch, 79
- PlatformUtils.h, 262
- Post.h, 226
- print
  - quentier::Account, 18
  - quentier::enml::conversion\_rules::ISkipRule, 89
  - quentier::enml::IHtmlData, 63
  - quentier::ErrorString, 34
  - quentier::local\_storage::NoteSearchQuery, 142
  - quentier::ResourceRecognitionIndexItem, 150
  - quentier::ResourceRecognitionIndices, 151
  - quentier::utility::ApplicationSettings, 27
- Printable.h, 262
  
- QPromise< T >, 145

- Qt5Promise.h, 227
- QtFutureContinuations.h, 229
- QtFutureHelpers.h, 235
- quentier::Account, 15
  - displayName, 17
  - evernoteAccountType, 17
  - evernoteHost, 17
  - id, 17
  - isEmpty, 17
  - name, 18
  - print, 18
  - setDisplayName, 18
  - shardId, 18
  - type, 18
- quentier::enml::conversion\_rules::ISkipRule, 87
  - AttributeName, 88
  - AttributeValue, 88
  - caseSensitivity, 88
  - Element, 88
  - includeContents, 88
  - matchMode, 88
  - print, 89
  - Target, 88
  - target, 89
  - value, 89
- quentier::enml::conversion\_rules::ISkipRuleBuilder, 89
- quentier::enml::IConverter, 48
  - convertEnmlToHtml, 49
  - convertEnmlToPlainText, 49
  - convertEnmlToWordsList, 50
  - convertHtmlToDoc, 50
  - convertHtmlToEnml, 51
  - convertHtmlToXhtml, 51
  - convertHtmlToXml, 51
  - convertPlainTextToWordsList, 52
  - exportNotesToEnex, 52
  - importEnex, 52
  - validateAndFixupEnml, 53
  - validateEnml, 53
- quentier::enml::IDecryptedTextCache, 54
- quentier::enml::IENMLTagsConverter, 58
  - convertDecryptedText, 59
  - convertEncryptedText, 59
  - convertEnToDo, 60
  - convertResource, 60
- quentier::enml::IHtmlData, 61
  - html, 62
  - numEncryptNodes, 62
  - numDecryptNodes, 62
  - numEnToDoNodes, 63
  - numHyperlinkNodes, 63
  - print, 63
- quentier::ErrorString, 33
  - print, 34
- quentier::INoteEditorBackend, 73
- quentier::InvalidArgument, 76
  - exceptionDisplayName, 77
- quentier::IQuentierException, 80
  - print, 81
- quentier::local\_storage::ILocalStorage, 66
  - Affiliation, 70
  - Any, 71
  - notifier, 71
  - TagNotesRelation, 70
  - WithNotes, 71
  - WithoutNotes, 71
- quentier::local\_storage::ILocalStorage::ListGuidsFilters, 109
- quentier::local\_storage::ILocalStorage::ListLinkedNotebooksOptions, 109
- quentier::local\_storage::ILocalStorage::ListNotebooksOptions, 110
- quentier::local\_storage::ILocalStorage::ListNotesOptions, 111
- quentier::local\_storage::ILocalStorage::ListObjectsFilters, 112
- quentier::local\_storage::ILocalStorage::ListOptionsBase, 113
- quentier::local\_storage::ILocalStorage::ListSavedSearchesOptions, 114
- quentier::local\_storage::ILocalStorage::ListTagsOptions, 115
- quentier::local\_storage::ILocalStorageNotifier, 71
- quentier::local\_storage::IPatch, 78
  - apply, 78
  - backupLocalStorage, 78
  - fromVersion, 78
  - patchLongDescription, 79
  - patchShortDescription, 79
  - removeLocalStorageBackup, 79
  - restoreLocalStorageFromBackup, 79
  - toVersion, 80
- quentier::local\_storage::LocalStorageOpenException, 116
  - exceptionDisplayName, 117
- quentier::local\_storage::LocalStorageOperationException, 117
  - exceptionDisplayName, 118
- quentier::local\_storage::NoteSearchQuery, 139
  - notebookModifier, 142
  - print, 142
  - queryString, 142
- quentier::local\_storage::tests::mocks::MockILocalStorage, 123
- quentier::NoteEditor, 130
  - backend, 133
  - clear, 133
  - convertToNote, 134
  - currentNoteLocalId, 134
  - defaultFont, 134
  - defaultPalette, 134
  - idleTime, 134
  - inAppNoteLinkPasteRequested, 134
  - initialize, 135
  - isEditorPageModified, 135
  - isModified, 135

- isNoteLoaded, 136
- saveNoteToLocalStorage, 136
- setAccount, 136
- setBackend, 136
- setCurrentNoteLocalId, 136
- setDefaultFont, 137
- setDefaultPalette, 137
- setFocus, 137
- setInitialPageHtml, 137
- setNoteDeletedPageHtml, 138
- setNoteLoadingPageHtml, 138
- setNoteNotFoundPageHtml, 138
- setNoteTitle, 138
- setTagIds, 138
- setUndoStack, 139
- undoStack, 139
- quentier::OperationCanceled, 142
  - exceptionDisplayName, 143
- quentier::ResourceRecognitionIndexItem, 148
  - print, 150
- quentier::ResourceRecognitionIndexItem::IBarcodeItem, 47
- quentier::ResourceRecognitionIndexItem::IObjectItem, 77
- quentier::ResourceRecognitionIndexItem::IShapeItem, 86
- quentier::ResourceRecognitionIndexItem::ITextItem, 108
- quentier::ResourceRecognitionIndices, 150
  - print, 151
- quentier::Result< ValueType, ErrorType, typename >, 152
  - isValid, 152
- quentier::RuntimeError, 153
  - exceptionDisplayName, 154
- quentier::SpellChecker, 158
- quentier::synchronization::AuthenticationExpiredError, 32
- quentier::synchronization::IAuthenticationInfo, 44
  - authenticationTime, 45
  - authToken, 45
  - authTokenExpirationTime, 45
  - noteStoreUrl, 45
  - shardId, 45
  - userId, 46
  - userStoreCookies, 46
  - webApiUrlPrefix, 46
- quentier::synchronization::IAuthenticationInfoBuilder, 46
- quentier::synchronization::IAuthenticator, 47
- quentier::synchronization::IDownloadNotesStatus, 54
- quentier::synchronization::IDownloadResourcesStatus, 56
- quentier::synchronization::INoteStoreFactory, 76
- quentier::synchronization::ISendStatus, 82
  - failedToSendNotebooks, 83
  - failedToSendNotes, 83
  - failedToSendSavedSearches, 83
  - failedToSendTags, 84
- needToRepeatIncrementalSync, 84
- stopSynchronizationError, 84
- totalAttemptedToSendNotebooks, 84
- totalAttemptedToSendNotes, 84
- totalAttemptedToSendSavedSearches, 85
- totalAttemptedToSendTags, 85
- totalSuccessfullySentNotebooks, 85
- totalSuccessfullySentNotes, 85
- totalSuccessfullySentSavedSearches, 86
- totalSuccessfullySentTags, 86
- quentier::synchronization::ISyncChunksDataCounters, 90
  - addedLinkedNotebooks, 91
  - addedNotebooks, 91
  - addedSavedSearches, 91
  - addedTags, 91
  - expungedLinkedNotebooks, 92
  - expungedNotebooks, 92
  - expungedSavedSearches, 92
  - expungedTags, 92
  - totalExpungedLinkedNotebooks, 92
  - totalExpungedNotebooks, 92
  - totalExpungedSavedSearches, 92
  - totalExpungedTags, 93
  - totalLinkedNotebooks, 93
  - totalNotebooks, 93
  - totalSavedSearches, 93
  - totalTags, 93
  - updatedLinkedNotebooks, 93
  - updatedNotebooks, 93
  - updatedSavedSearches, 94
  - updatedTags, 94
- quentier::synchronization::ISyncConflictResolver, 94
- quentier::synchronization::ISyncConflictResolver::ConflictResolution, 32
- quentier::synchronization::ISyncConflictResolver::ConflictResolution::Ignore, 61
- quentier::synchronization::ISyncConflictResolver::ConflictResolution::Move, 129
  - T >, 129
  - mine, 129
- quentier::synchronization::ISyncConflictResolver::ConflictResolution::UseSelf, 160
- quentier::synchronization::ISyncConflictResolver::ConflictResolution::UseOther, 160
- quentier::synchronization::ISyncEventsNotifier, 95
  - downloadFinished, 96
  - linkedNotebookNotesDownloadProgress, 97
  - linkedNotebookResourcesDownloadProgress, 97
  - linkedNotebookSendStatusUpdate, 97
  - linkedNotebookSyncChunksDataProcessingProgress, 98
  - linkedNotebookSyncChunksDownloaded, 98
  - linkedNotebookSyncChunksDownloadProgress, 98
  - notesDownloadProgress, 99
  - resourcesDownloadProgress, 99
  - startLinkedNotebooksDataDownloading, 99
  - syncChunksDataProcessingProgress, 100
  - syncChunksDownloaded, 100

- syncChunksDownloadProgress, 100
- userOwnSendStatusUpdate, 100
- quentier::synchronization::ISynchronizer, 101
- quentier::synchronization::ISyncOptions, 101
  - downloadNoteThumbnails, 102
  - inkNoteImagesStorageDir, 102
  - maxConcurrentNoteDownloads, 103
  - maxConcurrentResourceDownloads, 103
  - requestContext, 103
  - retryPolicy, 103
- quentier::synchronization::ISyncOptionsBuilder, 104
- quentier::synchronization::ISyncResult, 104
- quentier::synchronization::ISyncState, 105
- quentier::synchronization::ISyncStateBuilder, 106
- quentier::synchronization::ISyncStateStorage, 107
  - notifySyncStateUpdated, 108
- quentier::synchronization::IUserStoreFactory, 108
- quentier::synchronization::RateLimitReachedError, 148
  - rateLimitDurationSec, 148
- quentier::synchronization::tests::mocks::MockIAuthenticator, 121
- quentier::synchronization::tests::mocks::MockINoteStoreFactory, 126
- quentier::synchronization::tests::mocks::MockISyncConflictResolver, 127
- quentier::synchronization::tests::mocks::MockISyncStateStorage, 128
- quentier::threading::detail::ResultTypeHelper< F, Arg, Enable >, 152
- quentier::threading::detail::ResultTypeHelper< F, Arg, typename std::enable\_if\_t< !std::is\_invocable\_v< std::decay\_t< F >, QFuture< Arg > > >, 152
- quentier::threading::detail::ResultTypeHelper< F, Arg, typename std::enable\_if\_t< std::is\_invocable\_v< std::decay\_t< F >, QFuture< Arg > > >, 153
- quentier::threading::detail::ResultTypeHelper< F, void, typename std::enable\_if\_t< !std::is\_invocable\_v< std::decay\_t< F >, QFuture< void > > >, 153
- quentier::threading::detail::ResultTypeHelper< F, void, typename std::enable\_if\_t< std::is\_invocable\_v< std::decay\_t< F >, QFuture< void > > >, 153
- quentier::threading::TrackedTask< LockableObject, Function >, 159
- quentier::utility::ApplicationSettings, 20
  - ~ApplicationSettings, 23
  - ApplicationSettings, 21, 22
  - beginGroup, 23, 24
  - beginReadArray, 24, 25
  - beginWriteArray, 25, 26
  - contains, 26, 27
  - print, 27
  - remove, 27, 28
  - setValue, 28, 29
  - value, 29, 30
- quentier::utility::ApplicationSettings::ArrayCloser, 31
- quentier::utility::ApplicationSettings::GroupCloser, 43
- quentier::utility::cancelers::AnyOfCanceler, 19
  - isCanceled, 20
- quentier::utility::cancelers::FutureCanceler< T >, 42
  - isCanceled, 43
- quentier::utility::cancelers::ICanceler, 47
- quentier::utility::cancelers::ManualCanceler, 120
  - cancel, 121
  - isCanceled, 121
- quentier::utility::EventLoopWithExitStatus, 35
- quentier::utility::FileIOProcessorAsync, 37
  - onReadFileRequest, 39
  - onWriteFileRequest, 39
  - readFileRequestProcessed, 39
  - setIdleTimePeriod, 40
  - writeFileRequestProcessed, 40
- quentier::utility::FileSystemWatcher, 41
- quentier::utility::IEncryptor, 57
  - AES, 57
  - Cipher, 57
  - decrypt, 58
  - encrypt, 58
- quentier::utility::IKeychainService, 63
  - AccessDenied, 64
  - AccessDeniedByUser, 64
  - CouldNotDeleteEntry, 64
  - deletePassword, 65
  - EntryNotFound, 64
  - ErrorCode, 64
  - NoBackendAvailable, 64
  - NoError, 64
  - NotImplemented, 64
  - OtherError, 64
  - readPassword, 65
  - writePassword, 65
- quentier::utility::IKeychainService::Exception, 36
  - exceptionDisplayName, 37
- quentier::utility::LRUCache< Key, Value, Allocator >, 119
- quentier::utility::Printable, 144
- quentier::utility::QuentierApplication, 145
- quentier::utility::QuentierUndoCommand, 146
- quentier::utility::ShortcutManager, 155
  - defaultShortcut, 156
  - shortcut, 157
  - userShortcut, 157
- quentier::utility::StringUtils, 159
- quentier::utility::SysInfo, 159
- quentier::utility::tests::mocks::MockIKeychainService, 122
- quentier::utility::UidGenerator, 160
- QuentierApplication.h, 263
- QuentierLogger.h, 186
- QuentierUndoCommand.h, 264
- queryString
  - quentier::local\_storage::NoteSearchQuery, 142



- rateLimitDurationSec
  - quentier::synchronization::RateLimitReachedError, 148
- RC2
  - quentier::utility::IEncryptor, 57
- readFileRequestProcessed
  - quentier::utility::FileIOProcessorAsync, 39
- readPassword
  - quentier::utility::IKeychainService, 65
- RegisterMetatypes.h, 242
- remove
  - quentier::utility::ApplicationSettings, 27, 28
- removeLocalStorageBackup
  - quentier::local\_storage::IPatch, 79
- requestContext
  - quentier::synchronization::ISyncOptions, 103
- ResourceRecognitionIndexItem.h, 242
- ResourceRecognitionIndices.h, 244
- resourcesDownloadProgress
  - quentier::synchronization::ISyncEventsNotifier, 99
- ResourceUtils.h, 245
- restoreLocalStorageFromBackup
  - quentier::local\_storage::IPatch, 79
- Result.h, 245
- retryPolicy
  - quentier::synchronization::ISyncOptions, 103
- Runnable.h, 237
- RuntimeError.h, 168
- saveNoteToLocalStorage
  - quentier::NoteEditor, 136
- SendStatus.h, 213
- setAccount
  - quentier::NoteEditor, 136
- setBackend
  - quentier::NoteEditor, 136
- setCurrentNoteLocalId
  - quentier::NoteEditor, 136
- setDefaultFont
  - quentier::NoteEditor, 137
- setDefaultPalette
  - quentier::NoteEditor, 137
- setDisplayName
  - quentier::Account, 18
- setFocus
  - quentier::NoteEditor, 137
- setIdleTimePeriod
  - quentier::utility::FileIOProcessorAsync, 40
- setInitialPageHtml
  - quentier::NoteEditor, 137
- setNoteDeletedPageHtml
  - quentier::NoteEditor, 138
- setNoteLoadingPageHtml
  - quentier::NoteEditor, 138
- setNoteNotFoundPageHtml
  - quentier::NoteEditor, 138
- setNoteTitle
  - quentier::NoteEditor, 138
- setTagIds
  - quentier::NoteEditor, 138
- setUndoStack
  - quentier::NoteEditor, 139
- setValue
  - quentier::utility::ApplicationSettings, 28, 29
- shardId
  - quentier::Account, 18
  - quentier::synchronization::IAuthenticationInfo, 45
- shortcut
  - quentier::utility::ShortcutManager, 157
- ShortcutManager.h, 265
- Size.h, 267
- SpellChecker.h, 193
- StandardPaths.h, 267
- startLinkedNotebooksDataDownloading
  - quentier::synchronization::ISyncEventsNotifier, 99
- stopSynchronizationError
  - quentier::synchronization::ISendStatus, 84
- StringUtils.h, 268
- SuppressWarnings.h, 268
- SyncChunksDataCounters.h, 214
- syncChunksDataProcessingProgress
  - quentier::synchronization::ISyncEventsNotifier, 100
- syncChunksDownloaded
  - quentier::synchronization::ISyncEventsNotifier, 100
- syncChunksDownloadProgress
  - quentier::synchronization::ISyncEventsNotifier, 100
- SyncResult.h, 214
- SyncState.h, 215
- SysInfo.h, 269
- TagNotesRelation
  - quentier::local\_storage::ILocalStorage, 70
- TagSortByParentChildRelations.h, 270
- Target
  - quentier::enml::conversion\_rules::ISkipRule, 88
- target
  - quentier::enml::conversion\_rules::ISkipRule, 89
- totalAttemptedToSendNotebooks
  - quentier::synchronization::ISendStatus, 84
- totalAttemptedToSendNotes
  - quentier::synchronization::ISendStatus, 84
- totalAttemptedToSendSavedSearches
  - quentier::synchronization::ISendStatus, 85
- totalAttemptedToSendTags
  - quentier::synchronization::ISendStatus, 85
- totalExpungedLinkedNotebooks
  - quentier::synchronization::ISyncChunksDataCounters, 92
- totalExpungedNotebooks
  - quentier::synchronization::ISyncChunksDataCounters, 92
- totalExpungedSavedSearches
  - quentier::synchronization::ISyncChunksDataCounters, 92
- totalExpungedTags

- quentier::synchronization::ISyncChunksDataCounters::value
    - 93
- totalLinkedNotebooks
  - quentier::synchronization::ISyncChunksDataCounters,
    - 93
- totalNotebooks
  - quentier::synchronization::ISyncChunksDataCounters,
    - 93
- totalSavedSearches
  - quentier::synchronization::ISyncChunksDataCounters,
    - 93
- totalSuccessfullySentNotebooks
  - quentier::synchronization::ISendStatus, 85
- totalSuccessfullySentNotes
  - quentier::synchronization::ISendStatus, 85
- totalSuccessfullySentSavedSearches
  - quentier::synchronization::ISendStatus, 86
- totalSuccessfullySentTags
  - quentier::synchronization::ISendStatus, 86
- totalTags
  - quentier::synchronization::ISyncChunksDataCounters,
    - 93
- toVersion
  - quentier::local\_storage::IPatch, 80
- TrackedTask.h, 238
- type
  - quentier::Account, 18
- UidGenerator.h, 271
- undoStack
  - quentier::NoteEditor, 139
- Unreachable.h, 272
- updatedLinkedNotebooks
  - quentier::synchronization::ISyncChunksDataCounters,
    - 93
- updatedNotebooks
  - quentier::synchronization::ISyncChunksDataCounters,
    - 93
- updatedSavedSearches
  - quentier::synchronization::ISyncChunksDataCounters,
    - 94
- updatedTags
  - quentier::synchronization::ISyncChunksDataCounters,
    - 94
- userId
  - quentier::synchronization::IAuthenticationInfo, 46
- userOwnSendStatusUpdate
  - quentier::synchronization::ISyncEventsNotifier,
    - 100
- userShortcut
  - quentier::utility::ShortcutManager, 157
- userStoreCookies
  - quentier::synchronization::IAuthenticationInfo, 46
- validateAndFixupEnml
  - quentier::enml::IConverter, 53
- validateEnml
  - quentier::enml::IConverter, 53
- Validation.h, 248
- quentier::enml::conversion\_rules::ISkipRule, 89
  - quentier::utility::ApplicationSettings, 29, 30
  - webApiUrlPrefix
  - quentier::synchronization::IAuthenticationInfo, 46
  - WithNotes
  - quentier::local\_storage::ILocalStorage, 71
  - WithoutNotes
  - quentier::local\_storage::ILocalStorage, 71
  - writeFileRequestProcessed
  - quentier::utility::FileIOProcessorAsync, 40
  - writePassword
  - quentier::utility::IKeychainService, 65