Remote SQL Storage

For user documentation, see https://docs.jabref.org/collaborative-work/sqldatabase.

Handling large shared databases

Synchronization times may get long when working with a large database containing several thousand entries. Therefore, synchronization only happens if several conditions are fulfilled:

- Edit to another field.
- Major changes have been made (pasting or deleting more than one character).

Class `org.jabref.logic.util.CoarseChangeFilter.java` checks both conditions.

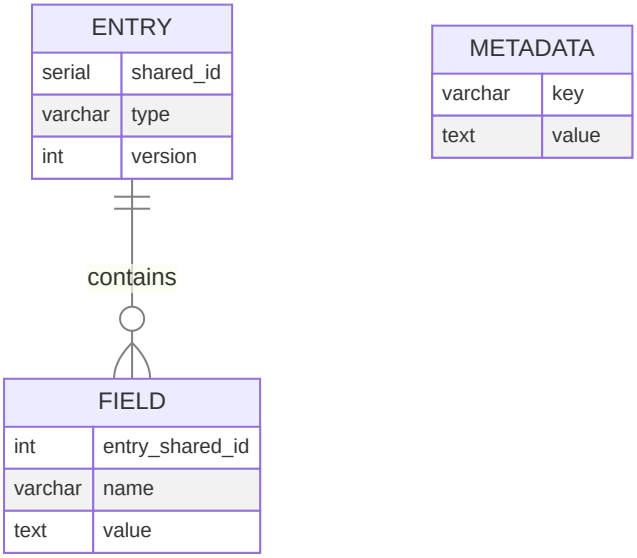
Remaining changes that have not been synchronized yet are saved at closing the database rendering additional closing time. Saving is realized in `org.jabref.logic.shared.DBMSSynchronizer.java`. Following methods account for synchronization modes:

- `pullChanges` synchronizes the database unconditionally.
- `pullLastEntryChanges` synchronizes only if there are remaining entry changes. It is invoked when closing the shared database (`closeSharedDatabase`).

Database structure

The following examples base on PostgreSQL. Other databases work similar.

The database structure is created at org.jabref.logic.shared.PostgreSQLProcessor#setUp.



The “secret sauce” is the `version` of an entry. This version is used as version in the sense of an Optimistic Offline Lock, which in turn is a well-established technique to prevent conflicts in concurrent business transactions. It assumes that the chance of conflict is low. Implementation details are found at https://www.baeldung.com/cs/offline-concurrency-control.

The `shared_id` and `version` are handled in `org.jabref.model.entry.SharedBibEntryData`.

Synchronization

PostgreSQL supports to register listeners on the database on changes. (MySQL does not). The listening is implemented at `org.jabref.logic.shared.listener.PostgresSQLNotificationListener`. It “just” fetches updates from the server when a change occurred there. Thus, the changes are not actively pushed from the server, but still need to be fetched by the client.
