

Quarkus - Using Liquibase

Liquibase is an open source tool for database schema change management.

Quarkus provides first class support for using Liquibase as will be explained in this guide.

Setting up support for Liquibase

To start using Liquibase with your project, you just need to:

- add your changeLog to the `src/main/resources/db/changeLog.xml` file as you usually do with Liquibase
- activate the `migrate-at-start` option to migrate the schema automatically or inject the `Liquibase` object and run your migration as you normally do.

In your `pom.xml`, add the following dependencies:

- the Liquibase extension
- your JDBC driver extension (`quarkus-jdbc-postgresql`, `quarkus-jdbc-h2`, `quarkus-jdbc-mariadb`, ...)

```
<dependencies>
  <!-- Liquibase specific dependencies -->
  <dependency>
    <groupId>io.quarkus</groupId>
    <artifactId>quarkus-liquibase</artifactId>
  </dependency>

  <!-- JDBC driver dependencies -->
  <dependency>
    <groupId>io.quarkus</groupId>
    <artifactId>quarkus-jdbc-postgresql</artifactId>
  </dependency>
</dependencies>
```

Liquibase support relies on the Quarkus datasource config. It can be customized for the default datasource as well as for every `named datasource`. First, you need to add the datasource config to the `application.properties` file in order to allow Liquibase to manage the schema.

The following is an example for the `application.properties` file:

```

# configure your datasource
quarkus.datasource.db-kind=postgresql
quarkus.datasource.username=sarah
quarkus.datasource.password=connor
quarkus.datasource.jdbc.url=jdbc:postgresql://localhost:5432/mydata
base

# Liquibase minimal config properties
quarkus.liquibase.migrate-at-start=true

# Liquibase optional config properties
# quarkus.liquibase.change-log=db/changeLog.xml
# quarkus.liquibase.validate-on-migrate=true
# quarkus.liquibase.clean-at-start=false
# quarkus.liquibase.database-change-log-lock-table-
name=DATABASECHANGELOGLOCK
# quarkus.liquibase.database-change-log-table-
name=DATABASECHANGELOG
# quarkus.liquibase.contexts=Context1,Context2
# quarkus.liquibase.labels=Label1,Label2
# quarkus.liquibase.default-catalog-name=DefaultCatalog
# quarkus.liquibase.default-schema-name=DefaultSchema
# quarkus.liquibase.liquibase-catalog-name=liquibaseCatalog
# quarkus.liquibase.liquibase-schema-name=liquibaseSchema
# quarkus.liquibase.liquibase-tablespace-name=liquibaseSpace

```

Add a changeLog file to the default folder following the Liquibase naming conventions: [src/main/resources/db/changeLog.xml](#) The yaml, json, xml and sql changeLog file formats are also supported.

```

<?xml version="1.1" encoding="UTF-8" standalone="no"?>
<databaseChangeLog xmlns=
"http://www.liquibase.org/xml/ns/dbchangelog"
  xmlns:ext="http://www.liquibase.org/xml/ns/dbchangelog-ext"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xsi:schemaLocation=
"http://www.liquibase.org/xml/ns/dbchangelog-ext
http://www.liquibase.org/xml/ns/dbchangelog/dbchangelog-ext.xsd
http://www.liquibase.org/xml/ns/dbchangelog
http://www.liquibase.org/xml/ns/dbchangelog/dbchangelog-
3.5.xsd">

  <changeSet author="quarkus" id="1">
    <createTable tableName="quarkus">
      <column name="ID" type="VARCHAR(255)">
        <constraints nullable="false"/>
      </column>
      <column name="NAME" type="VARCHAR(255)"/>
    </createTable>
  </changeSet>
</databaseChangeLog>

```

Now you can start your application and Quarkus will run the Liquibase's update method according to your config:

```

import org.quarkus.liquibase.LiquibaseFactory; ①

@ApplicationScoped
public class MigrationService {
    // You can Inject the object if you want to use it manually
    @Inject
    LiquibaseFactory liquibaseFactory; ②

    public void checkMigration() {
        // Get the list of liquibase change set statuses
        try (Liquibase liquibase = liquibaseFactory.
createLiquibase()) {
            List<ChangeSetStatus> status = liquibase
.getChangeSetStatuses(liquibaseFactory.createContexts(),
liquibaseFactory.createLabels());
        }
    }
}

```

① The Quarkus extension provides a factory to initialize a Liquibase instance

② Inject the Quarkus liquibase factory if you want to use the liquibase methods directly

Multiple datasources

Liquibase can be configured for multiple datasources. The Liquibase properties are prefixed exactly the same way as the named datasources, for example:

```
quarkus.datasource.db-kind=h2
quarkus.datasource.username=username-default
quarkus.datasource.jdbc.url=jdbc:h2:tcp://localhost/mem:default
quarkus.datasource.jdbc.min-size=3
quarkus.datasource.jdbc.max-size=13

quarkus.datasource.users.db-kind=h2
quarkus.datasource.users.username=username1
quarkus.datasource.users.jdbc.url=jdbc:h2:tcp://localhost/mem:users
quarkus.datasource.users.jdbc.min-size=1
quarkus.datasource.users.jdbc.max-size=11

quarkus.datasource.inventory.db-kind=h2
quarkus.datasource.inventory.username=username2
quarkus.datasource.inventory.jdbc.url=jdbc:h2:tcp://localhost/mem:inventory
quarkus.datasource.inventory.jdbc.min-size=2
quarkus.datasource.inventory.jdbc.max-size=12

# Liquibase configuration for the default datasource
quarkus.liquibase.schemas=DEFAULT_TEST_SCHEMA
quarkus.liquibase.change-log=db/changeLog.xml
quarkus.liquibase.migrate-at-start=true

# Liquibase configuration for the "users" datasource
quarkus.liquibase.users.schemas=USERS_TEST_SCHEMA
quarkus.liquibase.users.change-log=db/users.xml
quarkus.liquibase.users.migrate-at-start=true

# Liquibase configuration for the "inventory" datasource
quarkus.liquibase.inventory.schemas=INVENTORY_TEST_SCHEMA
quarkus.liquibase.inventory.change-log=db/inventory.xml
quarkus.liquibase.inventory.migrate-at-start=true
```

Notice there's an extra bit in the key. The syntax is as follows: `quarkus.liquibase.[optional name.][datasource property]`.



Without configuration, Liquibase is set up for every datasource using the default settings.

Using the Liquibase object

In case you are interested in using the `Liquibase` object directly, you can inject it as follows:



If you enabled the `quarkus.liquibase.migrate-at-start` property, by the time you use the Liquibase instance, Quarkus will already have run the migrate operation.

```
import org.quarkus.liquibase.LiquibaseFactory;

@ApplicationScoped
public class MigrationService {
    // You can Inject the object if you want to use it manually
    @Inject
    LiquibaseFactory liquibaseFactory; ①

    @Inject
    @LiquibaseDataSource("inventory") ②
    LiquibaseFactory liquibaseFactoryForInventory;

    @Inject
    @Named("liquibase_users") ③
    LiquibaseFactory liquibaseFactoryForUsers;

    public void checkMigration() {
        // Use the liquibase instance manually
        try (Liquibase liquibase = liquibaseFactory.
createLiquibase()) {
            liquibase.dropAll(); ④
            liquibase.validate();
            liquibase.update(liquibaseFactory.createContexts(),
liquibaseFactory.createLabels());
            // Get the list of liquibase change set statuses
            List<ChangeSetStatus> status = liquibase
.getChangeSetStatuses(liquibaseFactory.createContexts(),
liquibaseFactory.createLabels()); ⑤
        }
    }
}
```

- ① Inject the LiquibaseFactory object
- ② Inject Liquibase for named datasources using the Quarkus `LiquibaseDataSource` qualifier
- ③ Inject Liquibase for named datasources
- ④ Use the Liquibase instance directly
- ⑤ List of applied or not applied liquibase ChangeSets

Configuration Reference

 Configuration property fixed at build time - All other configuration properties are overridable at runtime

Configuration property	Type	Default
 <code>quarkus.liquibase.change-log</code> The liquibase change log file. All included change log files in this file are scanned and add to the projects.	string	<code>db/changeLog.xml</code>
<code>quarkus.liquibase.migrate-at-start</code> <code>true</code> to execute Liquibase automatically when the application starts, <code>false</code> otherwise.	boolean	<code>false</code>
<code>quarkus.liquibase.validate-on-migrate</code> <code>true</code> to validate the applied changes against the available ones, <code>false</code> otherwise. It is only used if <code>migration-at-start</code> is <code>true</code>	boolean	<code>true</code>
<code>quarkus.liquibase.clean-at-start</code> <code>true</code> to execute Liquibase clean command automatically when the application starts, <code>false</code> otherwise.	boolean	<code>false</code>
<code>quarkus.liquibase.contexts</code> Comma-separated case-sensitive list of ChangeSet contexts to execute for liquibase.	list of string	
<code>quarkus.liquibase.labels</code> Comma-separated case-sensitive list of expressions defining labeled ChangeSet to execute for liquibase.	list of string	
<code>quarkus.liquibase.database-change-log-lock-table-name</code> The liquibase change log lock table name. Name of table to use for tracking concurrent Liquibase usage.	string	<code>DATABA SECHAN GELOGL OCK</code>
<code>quarkus.liquibase.database-change-log-table-name</code> The liquibase change log table name. Name of table to use for tracking change history.	string	<code>DATABA SECHAN GELOG</code>

<code>quarkus.liquibase.default-catalog-name</code>		
The name of Liquibase's default catalog.	string	
<code>quarkus.liquibase.default-schema-name</code>		
The name of Liquibase's default schema. Overwrites the default schema name (returned by the RDBMS) with a different database schema.	string	
<code>quarkus.liquibase.liquibase-catalog-name</code>		
The name of the catalog with the liquibase tables.	string	
<code>quarkus.liquibase.liquibase-schema-name</code>		
The name of the schema with the liquibase tables.	string	
<code>quarkus.liquibase.liquibase-tablespace-name</code>		
The name of the tablespace where the -LOG and -LOCK tables will be created (if they do not exist yet).	string	
 <code>quarkus.liquibase."named-data-sources".change-log</code>		
The liquibase change log file. All included change log files in this file are scanned and add to the projects.	string	<code>db/changeLog.xml</code>
<code>quarkus.liquibase."named-data-sources".migrate-at-start</code>		
<code>true</code> to execute Liquibase automatically when the application starts, <code>false</code> otherwise.	boolean	<code>false</code>
<code>quarkus.liquibase."named-data-sources".validate-on-migrate</code>		
<code>true</code> to validate the applied changes against the available ones, <code>false</code> otherwise. It is only used if <code>migration-at-start</code> is <code>true</code>	boolean	<code>true</code>
<code>quarkus.liquibase."named-data-sources".clean-at-start</code>		
<code>true</code> to execute Liquibase clean command automatically when the application starts, <code>false</code> otherwise.	boolean	<code>false</code>
<code>quarkus.liquibase."named-data-sources".contexts</code>		
Comma-separated case-sensitive list of ChangeSet contexts to execute for liquibase.	list of string	

<code>quarkus.liquibase."named-data-sources".labels</code>	list of string	
Comma-separated case-sensitive list of expressions defining labeled ChangeSet to execute for liquibase.		
<code>quarkus.liquibase."named-data-sources".database-change-log-lock-table-name</code>	string	DATABA SECHAN GELOGL OCK
The liquibase change log lock table name. Name of table to use for tracking concurrent Liquibase usage.		
<code>quarkus.liquibase."named-data-sources".database-change-log-table-name</code>	string	DATABA SECHAN GELOG
The liquibase change log table name. Name of table to use for tracking change history.		
<code>quarkus.liquibase."named-data-sources".default-catalog-name</code>	string	
The name of Liquibase's default catalog.		
<code>quarkus.liquibase."named-data-sources".default-schema-name</code>	string	
The name of Liquibase's default schema. Overwrites the default schema name (returned by the RDBMS) with a different database schema.		
<code>quarkus.liquibase."named-data-sources".liquibase-catalog-name</code>	string	
The name of the catalog with the liquibase tables.		
<code>quarkus.liquibase."named-data-sources".liquibase-schema-name</code>	string	
The name of the schema with the liquibase tables.		
<code>quarkus.liquibase."named-data-sources".liquibase-tablespace-name</code>	string	
The name of the tablespace where the -LOG and -LOCK tables will be created (if they do not exist yet).		