Integration Testing Documentation

Owner: Adithya Solai (adithyasolai7@gmail.com)

What is Integration Testing?

Integration Testing involves testing end-to-end application functionality in a black-box manner. In simple terms, this means setting up the state of the application's MySQL DB, executing some application functionality (deposit, withdraw, etc), and then confirming that the MySQL DB is updated as expected.

The difficult thing about Integration Testing is setting up all the resources that would exist if an actual customer was using the application. In our case, the only resource that needs to be set up is the MySQL DB. This is done with **Test Containers**, as described below.

We currently do not do Integration Testing for front-end components. Front-end testing is somewhat covered in our Unit Tests by confirming that the right HTML page is served to customers, but it is not that extensive.

Test Containers

Test Containers is a package that allows us to dynamically spin up Docker Containers that host small MySQL DBs when running our Integration Tests. This package also will take care of deleting the Docker Container when the Integration Tests are finished. The Docker Desktop application must be opened and running locally on your laptop to get the Integration Tests to work.

ScriptUtils & JdbcTemplate

ScriptUtils allows us to execute files with SQL scripts on the MySQL DB hosted on the Test Container.

JdbcTemplate allows us to run SQL scripts stored in `String` objects on the MySQL DB hosted on the Test Container.