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Software Design

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Developer Documentation

Server:

Before anything else, the `ServerDriver` class must be run. This instantiates a multithreaded server capable of handling up to 100 simultaneous connections. The server is used to issue SQL commands the `MySQLTool` class. This class makes a connection to the database and dispatches the commands. It then holds any resulting queries. MySQL servers are more efficient when there is only one person reading / writing; this is why we use the server as a middle-man so 100 clients aren't bombarding the server. `MySQLTool` utilizes the `my-sql-connector` library discussed in class. The server also contains a basic Swing GUI for maintenance purposes. It allows a server monitor to manually enter SQL commands and view the activity over the threads.

Client:

To start the client-side application, run the main method in the `UserLogin` class in the `client.java` package. This class acts as the driver for the main GUI. All client GUI components were developed using JavaFX. When a button is pressed that requires data to be pulled from the database, a `ClientNetworking` object is instantiated. This class facilitates generating SQL commands corresponding to the data needed. It connects to the server, sends the command, stores any query results, then disconnects. The query results are used to update various informational fields in the GUI. All traffic through the `ClientNetworking` is logged using the `Logger` class. It is then saved to a file for potential debugging assistance. The `QueryTableModel` and `Transaction` classes are unused in our final product.

A few miscellaneous design decisions:

- Passwords are Salted and Hashed for increased security
- We have a package for encrypting data sent between server and client, but ran out of time to implement
- The `ClientDriver` class is used for testing, it has not functionality in final product
- Extensive error handling for the numerous points of failure present in network communication