

Design choices

1. Online SQL database. Implementation in the Model folder.
2. Overall design follows the MVC pattern.

Object model

1. MVC Design Pattern: Separate the business logic in the controller and the GUI. Make it easier to change or add functions.
2. Observer Design Pattern: Used in ColorJFrame and notifying super users.
3. Singleton Pattern: Used in DatabaseConnector, BgColorController to get the unique instance globally.

Object and GUI relationship

1. Start view:
 - a. MainController, MainView, LogoView: Switch between login, signup, and logo views.
 - b. LoginController, LoginView: For login.
 - c. SignupController, SignupView: For signup.
2. Administrator view
 - a. AdminMainController, AdminMainView: The main view for admin.
 - b. StockController, StockView: Admin view to manage stocks.
 - c. CustomerController, CustomerView: Admin view to manage customers.
3. User View
 - a. UserMainController, UserMainView: The main view for a user.
 - b. UserInfoController, UserInfoView: View to show current user information.
 - c. UserStockController, UserStockView: View to show stock buy&sell button.
 - d. UserStockBuyController, UserStockBuyView: View to buy new stocks.
 - e. UserStockSellController, UserStockSellView: View to sell stocks.
4. Database
 - a. DatabaseConnector: MySQL Database Connector
 - b. CustomerDatabase: Customer database functions for query
 - c. StockDatabase: Stock database functions for query
 - d. OwnDatabase: Own database functions for query
 - e. Customer: Class for storing customer data
 - f. Stock: Class for storing stock data
 - g. OwnStock: Class for storing stock own data
5. Utils
 - a. BgColorController, ColorJFrame, BgColorPanel, TransPanel: For background color change
 - b. Main: Entry point of the application
 - c. SystemInitializer: Initialize a Program
 - d. IntFilter: Utility class for filtering integers from inputs
 - e. StockTableModel: Utility class for limiting specific table data type

Benefits of your design

1. MVC Design Pattern: Make changing either business logic or GUI easier.

2. When new data types are needed, they can be easily extended by adding the relevant classes to the Models.
3. UI Color can be changed by selection.
4. Automatically change stock price after selling/buying.