Design Document

Introduction

The Stock Trading Application is a http-based application that allows users to buy and sell stocks as well as to obtain the stock quantity and price details. The application provides real-time stock market data and allows users to place orders for stocks.

System Architecture

The Stock Trading Application consists of the following components:

Frontend

The frontend is responsible for processing the client requests via http protocol, communicating its demands to the backend microservices and obtaining the appropriate responses which are directed back to the client.

Backend

The backend consists of two microservices, Order and Catalogue respectively. It is responsible for handling API requests, querying the database for data, and returning responses to the frontend. The backend is built using Python and uses Socket connection to communicate with the frontend.

Database

The database is responsible for storing the application data, including user information, stocks, and orders. The database here are basically csv files (stock_catalogue and trades_data).

System Components

Frontend Components

- **do_GET:** Here the frontend prompts the client to enter the name of the stock whose details are desired by the client.
- **do_POST:** Here the frontend prompts the client to choose the action they want to perform. It could be “buy” or “sell”. Then it prompts them to quote the quantity and price of the desired stock and finally returns the value.

Backend Components

The backend components of the Stock Trading Application include the following:

- **Socket endpoints:** These endpoints handle requests from the frontend and return responses to the frontend. The endpoints include the following:
- **/stocks:** This endpoint returns a list of stocks that match a given search query.
- **/buy:** This endpoint allows users to place buy orders for a particular stock.
- **/sell:** This endpoint allows users to place sell orders for a particular stock.

Connections (Data Flow)

The data flow in the Stock Trading Application is as follows:

1) The user interacts with the frontend by searching for a stock, viewing its details, or placing an order (buy or sell). The connection is established using http protocol.

2) The frontend sends a request to the backend. The request is sent using Python Socket connection.

3) The backend receives the request and queries the database (stock_catalogue and trades_data) for the necessary information. The data is retrieved using csv read and write function.

4) The backend returns a response to the frontend. The response is sent using Python Socket connection.

5) The frontend displays the response to the user. The final response is sent to the client using http connection.

Conclusion

The Stock Trading Application allows users to buy and sell stocks. The application provides existing stock data and allows users to place orders for stocks. The application is built using Python, Socket Connections and HTTP Server-Client connection.