

Stock Market Order Matching Engine

Data Structures Project Proposal

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Project Topic

I have chosen to build a **Stock Market Order Matching Engine** for my data structures project.

What is This Project About?

In simple terms, this project is like building an automatic marketplace for buying and selling stocks. Just like in real stock markets, people place buy or sell orders, and the system finds the best match for them.

For example:

- Person A wants to buy 100 Apple shares at \$150
- Person B wants to sell 100 Apple shares at \$150

My system steps in, matches both orders, and completes the trade automatically. Basically, it works like a smart middleman that connects buyers and sellers whenever their prices match

Main Features of the System

My system will allow users to:

1. **Place Buy/Sell Orders** - Users can tell the system what stock they want to buy or sell, at what price, and how many shares.
2. **Automatic Matching** - The system will automatically find matching orders. If someone wants to buy at \$150 and someone wants to sell at \$150, it matches them instantly.
3. **View Portfolio** - Users can see what stocks they own, how much cash they have, and whether they're making profit or loss.
4. **Cancel Orders** - If an order hasn't been matched yet, users can cancel it.
5. **Order History** - Users can search through all orders they've ever placed.

6. **See Order Book** - Users can view all current pending orders for any stock to understand the market.