Take-home Exercise: Senior Exchange Software Engineer

This exercise is designed to help us understand how you think and approach your work. While the code should work, we are also looking for readability, testing and efficiency. Please do not spend more than 3 hours, but if you need more time, we ask that you provide detailed descriptions of what you would have done given ample time.

Please provide a link to a GitHub project, instructions on how to run the program and tests. If the repository is private, please invite: "hoi"

Brief:
This exercise is to write a simple matching engine. The program should read from two input files: symbols and orders. A symbol may be halted, in which case, do not accept any orders for that symbol.

For symbols that are not halted, two conditions must be met for the order to be accepted:

1. Must have all required fields
2. For a given symbol, no more than 3 orders may be accepted in a 1 second window

An order can be one of two sides: buy or sell.
There are two types of orders:

1. Limit orders will try to execute at or better than the price defined (lower is better for buyers and higher is better for sellers). All fields are required. If the order does not match, it will sit on the order book waiting to be matched.
2. Market orders will execute at any price. All fields except price is required. If a price is set, please ignore it. If the order does not match, it will be rejected with the reason that there was no match.

Assume all orders are for 1 share, which means, if there is a match, orders will match with exactly 1 other order of the same symbol and with the best price. Best price means lowest price for buyers and highest price for sellers.

If an order matches with another order, a trade is made. A trade consists of: symbol, price, timestamp

Produce 3 output files:

1. trades.txt - contains all trades that were made
2. rejected.txt - contains all rejected orders and their rejected reasons
3. orderbook.txt - contains all orders that were not traded by the end

Feel free to reach out with any questions or clarifications, but particularly over the weekend or evening we may not be able to respond. If you do not hear from us, you can make any assumptions that seem reasonable and simply document them in the README.