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Parallel Programming

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SimpleTradeClientServer

When I began testing the server with multiple clients at once before making it thread-safe, the total printed out from the balance string was not equal to one million because multiple threads were making changes to the balance and requesting the balance at the same time, resulting in an incorrect total. In ITradingAccountImpl, there are two instance variables, the cash, and the security, that when changed by multiple threads simultaneously would print out incorrect totals. If the server is thread-safe, multiple clients should be able to make transactions simultaneously and the balances should still equal 1 million. Here is the faulty example:

My solution was to make all the methods accessing the cash and security variables in ITradingAccountImpl synchronized. After I did this and tested the server again with multiple clients at once, the total was always 1 million because synchronized controls the access to resources shared by multiple threads. Once the methods were synchronized, the cash and security variables were protected from thread interference and became thread-safe.