

Bank Accounts

Used mutexes:

For this solution, I used a separate mutex for each bank account so that when a transaction is made, both the mutex of the sender and the receiver will be locked, so that the transaction is protected and no other transactions which involve these 2 bank accounts will be made.

Tests:

I tested my program using different values for the number of threads and number of operations per thread. The number of accounts is 100.

1st test: 10 threads, 100 operations per thread, elapsed time: 0.09 seconds

2nd test: 10 threads, 1000 operations per thread, elapsed time: 0.25 seconds

3rd test: 10 threads, 5000 operations per thread, elapsed time: 0.92 seconds

4th test: 100 threads, 10 operations per thread, elapsed time: 0.25 seconds

5th test: 100 threads, 100 operations per thread, elapsed time: 0.44 seconds

6th test: 100 threads, 1000 operations per thread, elapsed time: 1.8 seconds

7th test: 100 threads, 2000 operations per thread, elapsed time: 2.04 seconds