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**Project 2 Report**

**Summary:**

**10pts**

**Part II:**

Overall, this project has given me a complete understanding of threads. It helped me understand why threads are used in processes and how efficient it makes the code execution by using threads. I also understood how to create a data structure in C. It helped build my experience in using structs and pointers in order to make read friendly code. I also learned how a basic bank system works, and I thoughts going into processing multiple requests by users at the same time. Finally, I learned the difference between fine and coarse grained locking, which helped me enhance my understanding in mutex locks.

**6.2:**

**5pts** Average run time for each program (use the “real” time):

Average time for fine grained was 1min 9.685s and the average time for coarse grained was 1min 7.420s.

**6.3:**

**3.2.1:**

**3pts** Which technique was faster - coarse or fine grained locking?

**3pts** Why was this technique faster?

Coarse grained was faster.

**3pts** Are there any instances where the other technique would be faster?

Since the time to lock all the accounts for a transactions was omitted, there was more CPU time given to the threads making the overall run-time faster.

**3pts** What would happen to the performance if a lock was used for every 10 accounts? Why?

When many threads are accessing the same memory location in the shared memory, coarse grained slows down the process because of on major lock, but fine grained is much more efficient in memory access.

**3pts** Discuss the probable "optimal" locking granularity (fine, coarse, or medium)?

It would be more efficient than fine grained if the access of every account is equally likely in the code, but if only one set of accounts very accessed most of the time, then there would be huge time delay and also would waste space because some locks stay unused.

Medium is optimal solution because there are both pros and cons for fine and coarse. If we are unclear on accounts usage, having a medium grained locking system would keep the delays for account accesses and lock processing consistent.