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Operating Systems Concepts: Project 2 Summary

The purpose of Project 2 was to instill the concepts of thread synchronization through semaphores. In Chapter 5 we looked at the barbershop example in class to learn how threads use semaphores for communication and mutual exclusion, as well as the power of binary and counting semaphores. For Project 2 we had to use threads to simulate a bank, using classes such as Customer, Teller, and Loan Officer to represent all the actors in the banking simulation. In my implementation I had each of these classes implement the Runnable interface and each thread took in the object in its constructor.

For the actions of each class, I found that the pseudo code I wrote in my design document was a good representation of the steps that each class needed to take. By abstracting each action every actor in the simulation needs to make, I was able to create a good pseudo code writeup for each class by envisioning what they would do in an actual bank. For example, if I was a customer in a bank, the first thing I would do when I enter would be to get into the appropriate line for whatever task I'm carrying out. After I got the pseudo code in place, my actual code implementation, which I wrote in Java since I have strong Java OOP skills, was much easier to carry out. I followed each step that I wrote in the pseudo code and added in the appropriate logic for that step.

Although completing this project wasn't as difficult since the design took care of most of the planning of the code, I found that I missed some semaphores in my first iteration of the design and only realized that it would be necessary after I had started the coding and ran into an

error. This was due to the fact that I had not realized that the customer thread must sleep during the request and therefore I did not have the teller/officer waiting for the customer to make a request, but the customer to just go ahead and start waiting until the task was done. Overall I thought this was a great project to learn and practice semaphores and threads.