**OS Concepts Project 2 Write-up**

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How did you approach the project?

I first worked through the visualization of the project and how each thread would have to interact with each other. After determining what would work best, I implemented classes to help create the structure. Through the project, I had a tracker to keep track of each interaction and where the threads would be at in code, and slowly implemented each interaction.

How did you organize the project? Why?

The project is organized into 1 super class with 3 internal classes. The super class will be the entire bank, with the 3 internal classes being the teller, the customer, and a checking class to close the bank when all other threads have been finished. This helps with visualization of the structure and is built to deal with any number of tellers or customers.

What problems did you encounter?

The two problems I encountered in this project was understanding how semaphores and threads worked in java and having instances where a customer referenced out of bounds on the teller array.

How did you fix them?

For the first issue, I spent most of my time researching multiple examples of semaphores and threads being used and getting multiple visuals on the use of threads and semaphores.

For the second issue, I found out that once a teller semaphore was released, the teller was not getting released in time to set their specific element in the teller array to -1, so Customers were selecting Tellers before the array had been set to -1 and not finding an actual Teller to reference, causing the out\_of\_bounds error. To fix this, I added a line of code in the customer thread to reset the element to -1 so that customers would always find an open teller.

What did you learn doing this project?

I learned how Threads work and the use of semaphores to create synchronization and create interactions.

If you did not complete some feature of the project, why not?

All features should have been completed.