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Programming Part

[P1. Print in Order]

- I decided to use 6 semaphores. I made the first one accept 1 thread and made the rest accept 0 threads. This allowed the rest to properly wait their turn. For me, 6 threads were necessary because I used 4 different methods and made the print statements within those methods have for the most part a pairing sem_wait and sem_post semaphore. This allowed the print statement to be printed in the correct order. I used binary semaphores with only initialized values of 1 and 0 because I did not need many or more than one thread executing all at once for this program.

[P2. Stores-after-COVID19]

- The line in the Shopping method where the sum is getting incremented and decremented can suffer from concurrency bugs. To resolve this, I surrounded the section from integer x getting initialized to the comment about the customer leaving. This ensures that the sum is being properly incremented and decremented. I also used counting semaphores so that the program would be able to run the maximum amount of threads given unlike what a binary semaphore would allow.