The Grocery store program simulates a grocery store with different sections of the store. Each section of the store is connected to the next and allows customers to flow from one section to the other. Along with the ability for customers to move, each section has a fixed size that only accepts a certain number of customers. When running the program the command line accepts 2 arguments, sleep time and numCustomers. If no input is provided then the program utilizes default vales set at 200 wait time and 50 customers. The program first initializes the semaphores and mutexes of each grocery store, then utilizes a for loop to create the customers. Then joins them together.

A customer first gets the waiting room. Once it gets the waiting room, then it attempts to enter the Produce section. Once the customer is able to enter the Produce section the Semaphore for the produce is acquired and the semaphore for the waiting room is released. Then 2 mutexes are acquired for the produce and waiting room. This allows the number of customers in the waiting room and produce section to be decremented and incremented with there respective value. Then the mutexes release and the Produce semaphore releases. Which then the next section acquires the customer and the loop repeates until the customer reaches the end where the enter the cashier stand and pay. After this is completed then they exit the Grocery store where they release all the mutexes and semaphores and leave the store.