**SUMMARY**

The goal of this project was to simulate the customer flow of a cinema from the outside waiting queue to taking a seat and watching a movie. The requirements were as follows; 25 customer wait in line to purchase a ticket for the movie of their choice, the customer are sold a ticket buy the box office agent, there are two of them. If the movie is sold out the customer leave. Otherwise, the customer then proceeds to the ticket tacker who tears the ticket. At this point half of the customers decide to either to visit the concession stand or to directly enter the movie theater. Once at the concession stand the customer can either buy a soda, popcorn or both. After their purchase all the remain customer enter the theater to watching the movie.

I found this project challenging and exciting. The first challenge was the design; primarily the order of execution, secondarily was the critical sections. The second challenge was the coding aspect itself since there are multiple ways of implementing this program. I used semaphores and queues as building blocks for this project. The third challenge was debugging since; the execution of the program is different every time replicating a bug was uncertain.

This project is one where spending most of the time in the design and conception phase paid dividends. By spending so much time on the design it allowed me to build this program one module at a time. Testing each module before moving on to the next one. For instance, I first build a class to read and parse the movie file and tested it. Then I build thread for the 25 customer and tested them. Then I moved to the box office thread and had them interact with the customer queue and tested it and so on and so fourth. This had two benefits; first if a bug occurred I could be certain of where to look for it and second since, I use a large amount of semaphores this ensured that I would not be confused about the different semaphore roles.

Although challenging I also found this project to be exciting, this was my first time working with thread and I felt a new found meaning to the catch phrase divide and conquer. I found myself wondering how I could apply those techniques in other project.