# Summary

### Simulation discussion:

This project simulates 300 customer in a theater. 300 customer will firstly be in a line of box office agent, which has a total number of 2. When they are at the box office agent, they need to generate a random number to represent the movie they want to watch. Then by using the semaphore, the box agents and the customer cooperate to finish the process of buying ticket. Then there is 50% chance for the customer to visit the concession. By using semaphore as well, the customer will also buy the food they want. Finally, they fill visit the ticket taker and enter the theater. However, if the ticket they want has been sold out, they will leave and will not visit concession and ticket taker.

## Difficuites:

Using semaphores appears to be very difficult for me at first. I made several designs and most of them failed. So I began to program and revise it as I write the codes. Finally I figure out how to do that. Also, opening files was difficult for me, but fortunately I found some website to tell me how to do that.

**What I learnt**

Frankly speaking, this project really took me a long time to finish. But it was the first time for me to write program under Unix environment. By doing this project, not only did I learnt the concept of concurrency, but also I knew how to use semaphores to control multiple threads. Also, I learnt some usages of Java. For example, I learnt how to open file, make thread, how to make thread wait and release, how to make threads sleep.

During the project, I encountered many problems. For example, when I tried to implement system call as well as interrupt, I often got the wrong results. At last I figured out that it was so because they both use system stack, which if anything wrong with the pop and push in the stack, will give birth to the wrong answer. Along with having a better understanding of the function of low level concepts of CPU, Memory and Operating System, I also learnt something besides the project itself, which I think is of more importance for my future career. During the project, I learnt some basic Unix and vi commands and how to open file, communicate between processes in Java. One of the most important thing I learnt is to debug using System.out.println();, which I believe will be very helpful in the future. In a word. I really enjoy this project for it is challenge and the ideal of running a program in another program is really cool!