**RBM Report**

**COMP2432 Operating Systems**

1. Introduction

This project is designed for students to apply the concepts and programming skills to a daily-life scenario. The Room Booking Manager system is mainly focus on simulating the CPU scheduling process by scheduling the requests from users. Both the allocation of resources and scheduling principle can be applied in this case.

1. Scope
   1. Introductory to Operating systems (Lecture 1)

The operating systems’ role of resource manager has been reflected by allocating resources to different requests.

* 1. Process management (Lecture 4)

Process creation is involved in this project, since child processes should be created to represent every tenant or facility to be booked.

* 1. Inter-process Communication and Programming (Lecture 5)

The communication channels between parent process and child process need to be established via “pipe”. Since the child process acts like a scheduler in this case, parent process, as a user interface, need to pass the booking details to the child process, while child process need to return the schedule result to parent process.

* 1. CPU scheduling (Lecture 6)

The booking manager system schedules the requests based on first-come-first-served algorithm and priority algorithm, which is simulating the common CPU scheduling algorithm.

1. Concept
   1. First-come-first-served algorithm

 First-come-first-served algorithm is the simplest CPU scheduling algorithm. With this algorithm, processes are assigned the CPU in the order they request it. Basically, there is a single queue of ready processes. Relative importance of jobs measured only by arrival time. The implementation of the FCFS policy is easily managed with a FIFO queue. When a process enters the ready queue, its PBC is linked onto the tail of the queue. The average waiting time under the FCFS policy, however, is often quite long.

* 1. Priority algorithm

Priority scheduling is a method of scheduling processes based on priority. In this method, the scheduler chooses the tasks to work as per the priority.

Indefinite blocking, otherwise called starvation, is one of the major issues concerning priority scheduling algorithms. It is a state where a process is ready to be executed, but faces a long wait in getting assigned to the CPU.  
  
It is often possible that a priority scheduling algorithm can make a low-priority process wait indefinitely. For example, in an intensely loaded system, if there are a number of higher priority processes, the low-priority processes may never get the CPU for execution.

1. Scheduling algorithm (Optimization)
2. Software structure of the system



1. Testing cases
2. Performance analysis
3. Program set up and execution
4. Appendix