ĐẠI HỌC QUỐC GIA THÀNH PHỐ HỒ CHÍ MINH
TRƯỜNG ĐẠI HỌC BÁCH KHOA
Khoa học - Kỹ thuật Máy tính

HỆ ĐIỀU HÀNH

Bài thực hành số 7

Scheduling

GVHD: Hoàng Lê Hải Thanh

SV thực hiện: Trương Hoài Nam – 1813175

TP. HỒ CHÍ MINH, THÁNG 05/2020

Mục lục

1 EXERCISE

1.1 Suppose that the following processes arrive for execution at the times indicated

Process	Arrival Time	Burst Time
P1	0.0	8
P2	0.4	4
P3	1.0	1

a. What is the average turnaround time for these processes with the FCFS scheduling algorithm?

- Average Turnarround Time = $\frac{8+7.6+4+11+1}{3} = 10.53$

b. What is the average turnaround time for these processes with the SJF scheduling algorithm?

- Average Turnarround Time = $\frac{8+1+7+8.6+4}{3} = 9.53$

c. The SJF algorithm is supposed to improve performance, but notice that we chose to run process P1 at time 0 because we did not know that two shorter processes would arrive soon. Compute what the average turnaround time will be if the CPU is left idle for the first 1 unit and then SJF scheduling is used. Remember that processes P1 and P2 are waiting during this idle time, so their waiting time may increase. This algorithm could be called future-knowledge scheduling.

- Average Turnarround Time = $\frac{1+1.6+4+6+8}{3} = 6.87$

1.2 Consider the following set of processes, with the length of the CPU burst given in milliseconds:

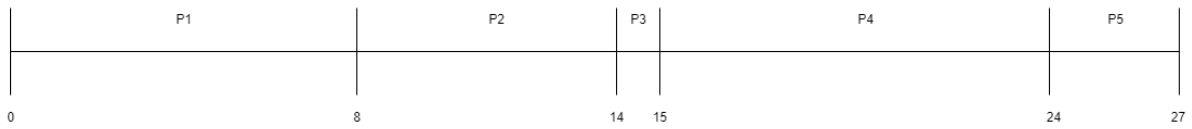
Process	Burst Time	Priority
P1	8	4
P2	6	1
P3	1	2
P4	9	2
P5	3	3

∗ **FCFS:**

- Average Waiting Time = $\frac{0+8+14+15+24}{5} = 12.2$ (ms)

- Average Turnarround Time = $\frac{0+8+8+6+14+1+15+9+24+3}{5} = 17.6$ (ms)

- Gantt chart:

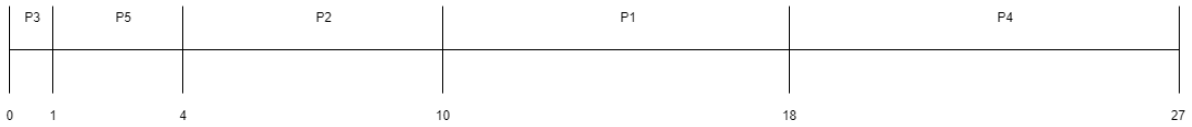


* **SJF:**

- Average Waiting Time = $\frac{10+4+0+18+1}{5} = 6.6$ (ms)

- Average Turnarround Time = $\frac{10+8+4+6+0+1+18+9+1+3}{5} = 12$ (ms)

- Gantt chart:



* **Non-Preemptive Priority (a larger priority number implies a higher priority):**

- Average Waiting Time = $\frac{0+21+11+12+8}{5} = 10.4$ (ms)

- Average Turnarround Time = $\frac{0+8+21+6+11+1+12+9+8+3}{5} = 15.8$ (ms)

- Gant chart:

* **Round-Robin (quantum = 1):**

- Average Waiting Time = $\frac{17+15+2+18+10}{5} = 12.4$ (ms)

- Average Turnarround Time = $\frac{17+8+15+6+2+1+18+9+10+3}{5} = 17.8$ (ms)

- Gantt chart: