

# COMP304 Assignment II

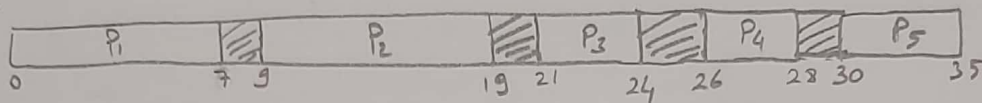
Serkan Berk Bilgiç - 71571

~~SBAH~~

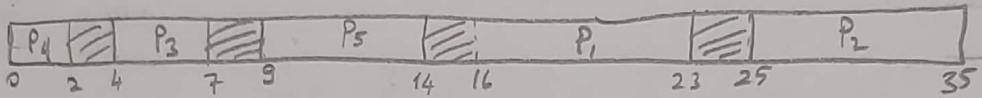
## Problem 1)-

a)-

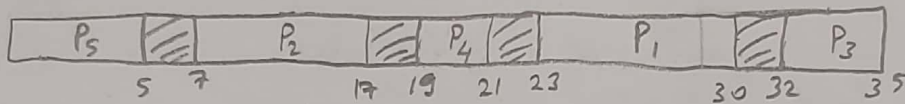
FCFS:



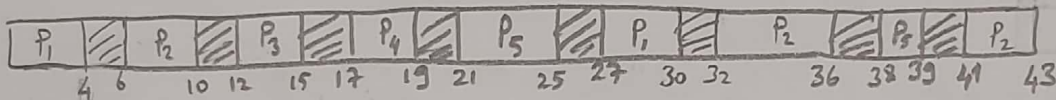
SJF:



Non-preemptive  
Priority



Round  
Robin



with quantum = 4ms

b)-

$$\text{FCFS} = \frac{P_1}{0} + \frac{P_2}{9} + \frac{P_3}{21} + \frac{P_4}{26} + \frac{P_5}{30} / 5 = 17.2 \text{ ms}$$

$$\text{SJF} = 16 + 25 + 4 + 0 + 9 / 5 = 10.8 \text{ ms}$$

$$\text{Non-preemptive Priority} = 23 + 7 + 32 + 19 + 0 / 5 = 16.2 \text{ ms}$$

$$\text{RR} = 0 + 6 + 12 + 17 + 21 / 5 = 11.2 \text{ ms}$$

As expected SJF resulted minimum average waiting time.

c)- Average turn around time

$$\text{FCFS} = 7 + 19 + 24 + 28 + 35 / 5 = 22.6 \text{ ms}$$

$$\text{SJF} = 2 + 7 + 14 + 23 + 35 / 5 = 16.2 \text{ ms}$$

$$\text{Non-preemptive Priority} = 5 + 17 + 21 + 30 + 35 / 5 = 21.6 \text{ ms}$$

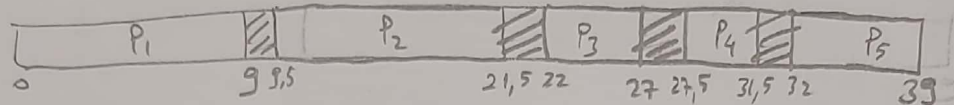
$$\text{RR} = 15 + 19 + 30 + 39 + 43 / 5 = 29.2 \text{ ms}$$

## Problem 2)-

	Burst	Priority
P <sub>1</sub>	9	3
P <sub>2</sub>	12	2
P <sub>3</sub>	5	3
P <sub>4</sub>	4	2
P <sub>5</sub>	7	1

Context switch overhead  
= 0.5 ms

FCFS:



$$\text{Utilization} = \frac{\text{Total Time Spent on Process}}{\text{Total Time Spent on Execution}} \times 100$$

$$\frac{39 - (4 \times 0.5)}{39} \times 100 = \% 94.87$$

$$\text{Average waiting time: } (0 + 9.5 + 22 + 27.5 + 32) / 5 = 19.2 \text{ ms}$$

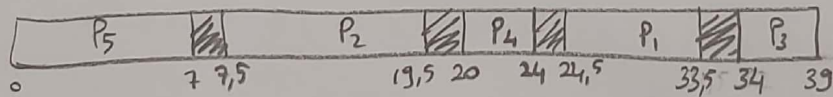
SJF:



$$\text{Utilization} = \frac{39 - 2}{39} \times 100 = \% 94.87$$

$$\text{Average waiting time: } (17.5 + 27 + 4.5 + 0 + 10) / 5 = 11.8 \text{ ms}$$

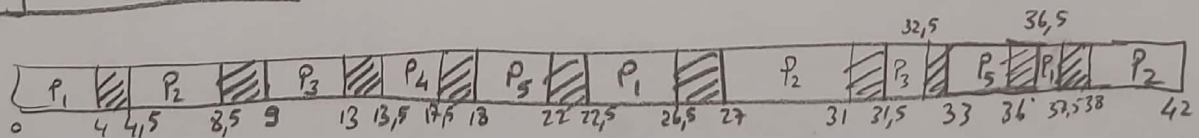
Non-preemptive Priority



$$\text{Utilization} = \frac{37}{39} \times 100 = 94.87\%$$

$$\text{Average waiting time: } (24.5 + 7.5 + 34 + 20 + 0) / 5 = 17.2 \text{ ms}$$

RR:



$$\text{Utilization} = \frac{42 - (10 \times 0.5)}{42} = \frac{37}{42} \times 100 = 88.095\%$$

$$\text{Average waiting time: } (0 + 4.5 + 9 + 13.5 + 18) / 5 = 9 \text{ ms}$$

Except RR CPU has a higher average waiting time compared to the CPU in problem 1. But for Round Robin scheduling algorithm it has lower average waiting time (context switch overhead lower)