

Problem 1

- a) The Gantt charts of Shortest Job First and Round Robin scheduling algorithm for given processes are listed below.

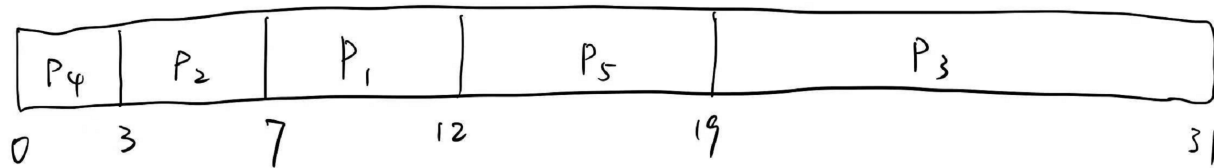


Figure 1: Gantt chart of SJF scheduling algorithm.

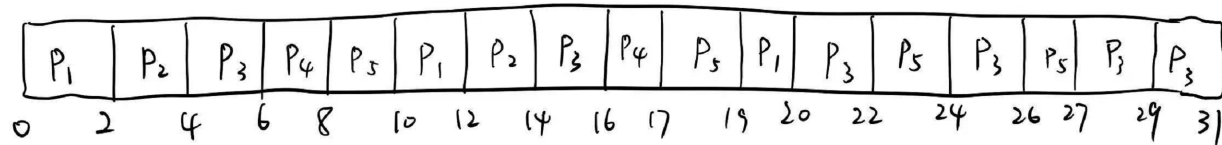


Figure 2: Gantt chart of RR scheduling algorithm.

- b) The turnaround time is equal to the time of the completion of a process minus its arrival time.

The turnaround time of SJF algorithm is listed below:

Process 1	Process 2	Process 3	Process 4	Process 5
12	7	31	3	19

The turnaround time of RR algorithm is listed below:

Process 1	Process 2	Process 3	Process 4	Process 5
20	14	31	17	27

- c) The waiting time is equal to the process' turnaround time minus its burst time.

The waiting time of SJF algorithm is listed below:

Process 1	Process 2	Process 3	Process 4	Process 5
7	3	19	0	12

The waiting time of RR algorithm is listed below:

Process 1	Process 2	Process 3	Process 4	Process 5
15	10	19	14	20

d) The average waiting time of SJF algorithm is:

$$(7 + 3 + 19 + 0 + 12)/5 = 41/5 = 8.2 \text{ milliseconds}$$

The average waiting time of RR algorithm is:

$$(15 + 10 + 19 + 14 + 20)/5 = 78/5 = 15.6 \text{ milliseconds}$$

For these given process, the SJF scheduling algorithm has the minimum average waiting time of 8.2 ms.

Problem 2

a) The total distance the disk arm moves of SCAN algorithm is:

$$(4999 - 2150) + (4999 - 230) = 7618$$

b) The total distance the disk arm moves of C-LOOK algorithm is:

$$(4760 - 2150) + (2074 - 230) = 4454$$