Lab 5

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1 Questions

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

The processes are assumed to have arrived in the order P1, P2, P3, P4, P5, all at time 0.

- Draw four Gantt charts that illustrates the execution of these processes using the followings scheduling algorithms: FCFS, SJF, nonpreemptive priority (a smaller priority number implies a higher priority), and RR (quantum = 1).
- What is the turnaround time of each process for each of the scheduling algorithms in part a?
  - FCFS: P1 = 10ms, P2 = 11ms, P3 = 13ms, P4 = 14ms, P5 = 19ms
  - SJF: P1 = 19ms, P2 = 1ms, P3 = 4ms, P4 = 2ms, P5 = 9ms
  - Nonpreemptive Priority: P1 = 16ms, P2 = 1ms, P3 = 18ms, P4 = 19ms, P5 = 6ms
  - Round-Robin: P1 = 19ms, P2 = 2ms, P3 = 7ms, P4 = 4ms, P5 = 14ms
- What is the waiting time of each process for each of these scheduling algorithms?
  - FCFS: P1 = 0ms, P2 = 10ms, P3 = 11ms, P4 = 13ms, P5 = 14ms
  - SJF: P1 = 9ms, P2 = 0ms, P3 = 2ms, P4 = 1ms, P5 = 4ms

Process	Burst Time	Priority
P1	10	3
P2	1	1
P3	2	3
P4	1	4
P5	5	2

Table 1.1: Table

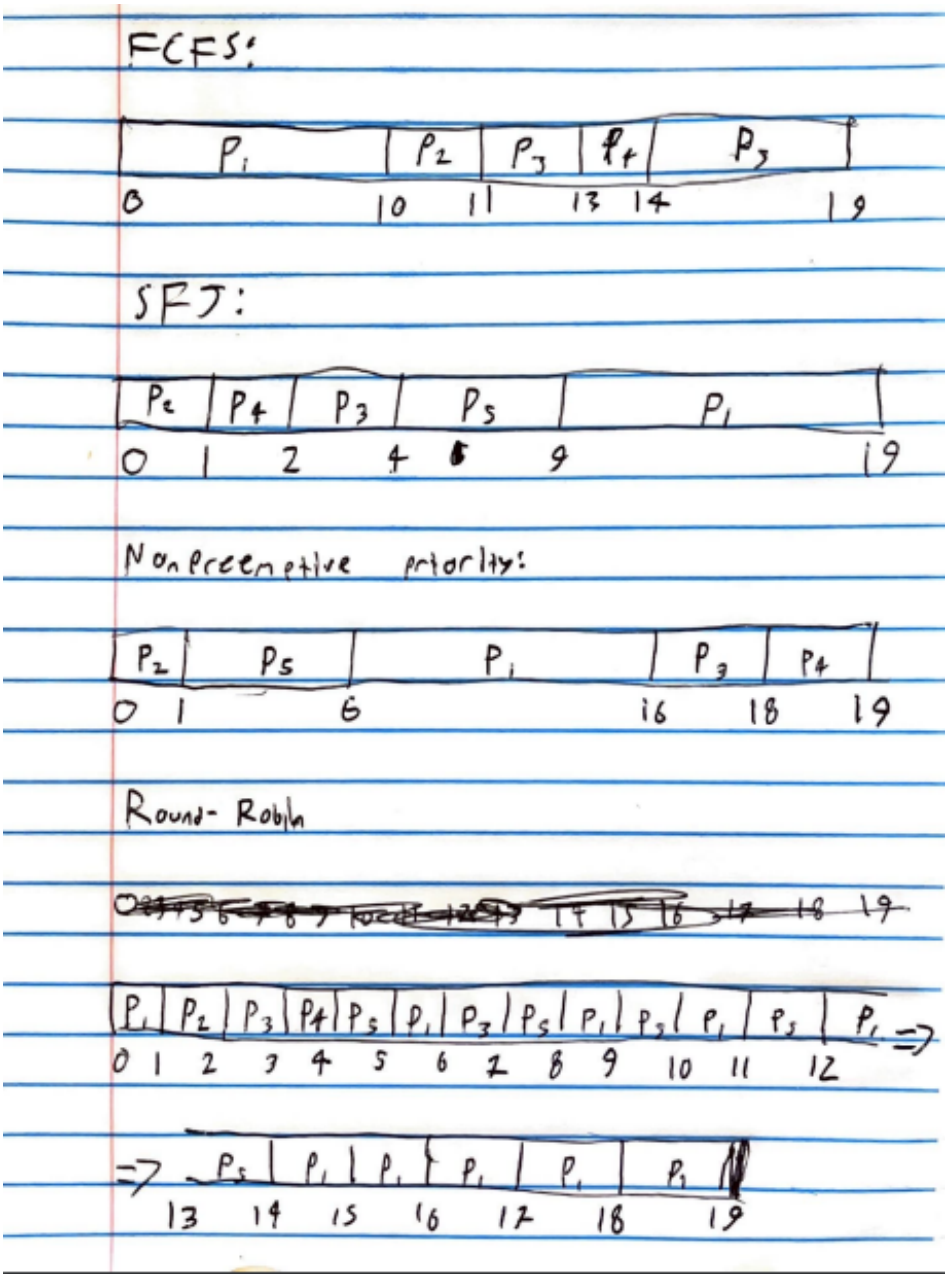

Figure 1.1: Gantt charts for FCFS, SJF, nonpreemptive priority, and round-robin

  - Nonpreemptive Priority: P1 = 6ms, P2 = 0ms, P3 = 16ms, P4 = 18ms, P5 = 1ms
  - Round-Robin: P1 = 9ms, P2 = 1ms, P3 = 5ms, P4 = 3ms, P5 = 9ms
- Which of the algorithms results in the minimum average waiting time (over all processes)?
  - FCFS = 9.6ms
  - SJF = 3.2ms
  - Nonpreemptive Priority = 8.2ms
  - Round-Robin = 5.4ms
  - Shortest-Job-First Scheduling results in the minimum average waiting time with 3.2ms.