

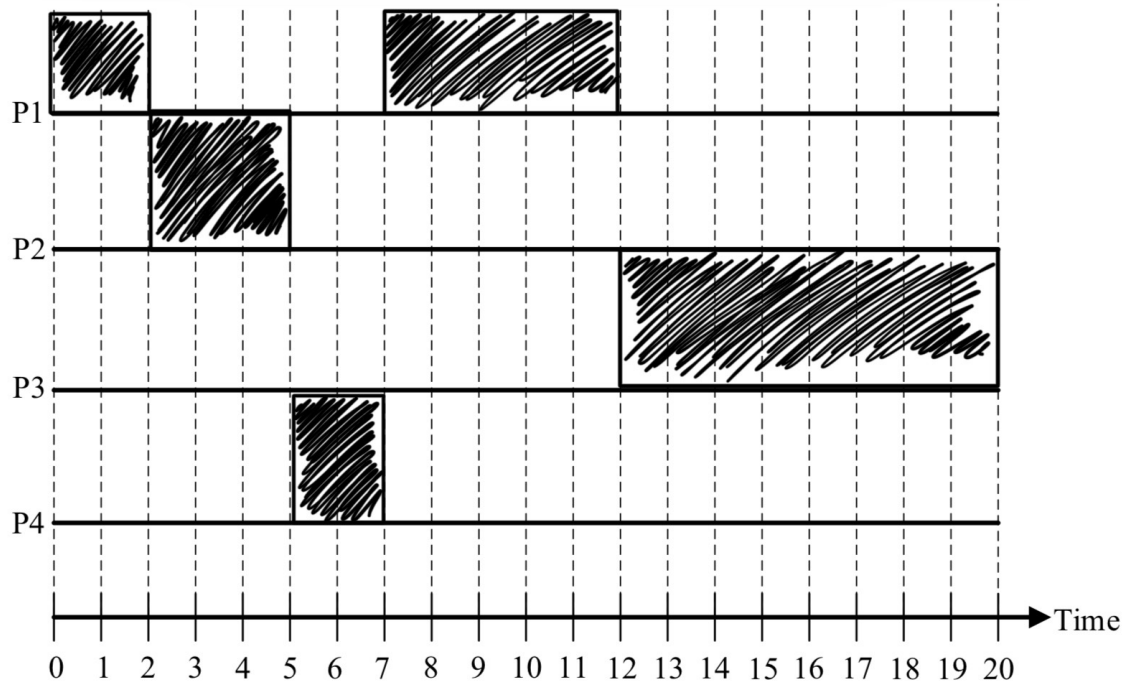
# CS481 PA03

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1. In the single-core compute system, Shorted Remaining-time First (SRF) is one of the scheduling algorithms to determine the next process in the ready queue to be executed by the CPU. Assume that there are four processes in the ready queue, and the information of these four processes are as follows:

	Arrival time	Service time
P1	0	7
P2	2	3
P3	1	8
P4	4	2



Waiting times;

$$P_1 = 5$$

$$P_2 = 0$$

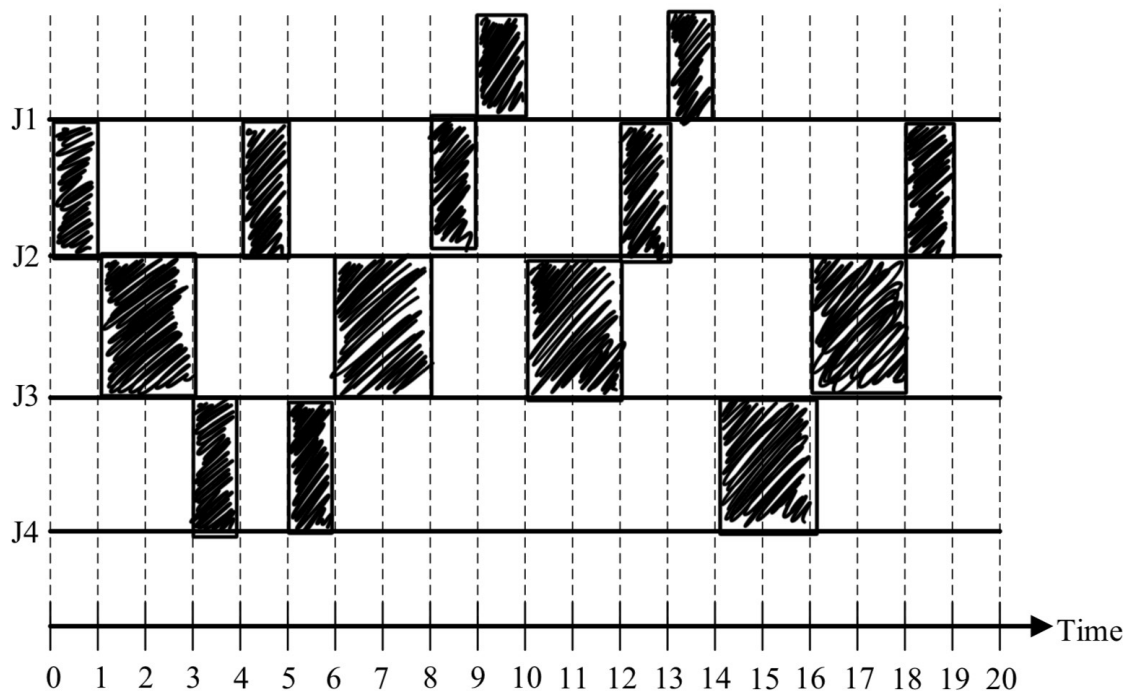
$$P_3 = 11$$

$$P_4 = 1$$

$$P_{avg} = \frac{17}{4} = 4.25$$

2. In the single-core real-time OS, **Earliest Deadline First (EDF)** is a popular scheduling algorithm to schedule jobs/processes. Assume that there are four periodical jobs in the system, and the information of these jobs are as follows;

	Service time (C)	Relative Deadline (D)	Period (T)
J1	2	16	20
J2	1	3	4
J3	2	4	5
J4	2	8	10



If the service time of J1 becomes 3, are there any jobs that miss their deadlines? If no, please calculate the overall CPU utilization; if yes, please specify which jobs and when their deadlines are missed

If we change J1 service time to 3, we will indeed run into an issue and end up missing one of the iterations of J3. The CPU utilization is 100 % which explains why the job was missed in this case. In this case we would run into a conflict when J2 would not complete before it's relative deadline.