

Home Work 1-Scheduling

Due date : Apr. 24th, 2203.

Write the answer with step by step according to the following questions.

- Five jobs arrive nearly simultaneously for processing and their estimated CPU cycles are, respectively: Job A = 12, Job B = 2, Job C = 15, Job D = 7, and Job E = 3 ms.
 - Using FCFS, and assuming the difference in arrival time is negligible, in what order would they be processed? What is the total time required to process all five jobs? What is the average turnaround time for all five jobs?
 - Using SJN, and assuming the difference in arrival time is negligible, in what order would they be processed? What is the total time required to process all five jobs? What is the average turnaround time for all five jobs?
- Assume that a multi-level queue system with a variable time quantum per queue, and that the incoming job needs 50 ms to run to completion. If the first queue has a time quantum of 5 ms and each queue thereafter has a time quantum that is twice as large as the previous one, how many times will the job be interrupted and on which queue will it finish its execution? Explain how much time it spends in each queue.
- Using the same multi-level queue system from the previous exercises, if a job needs 130 ms to run to completion, how many times will the job be interrupted and on which queue will it finish its execution? Does it matter if there are other jobs in the system?
- Assume that your system has one queue for jobs waiting for printing and another queue for those waiting for access to a disk. Which queue would you expect to have the faster response? Explain your reasoning.
- Using SJN, calculate the start time and finish time for each of these seven jobs:

Job	Arrival Time	CPU Cycle
A	0	2
B	1	11
C	2	4
D	4	1
E	5	9
F	7	4
G	8	2

6. Given the following information:

Job	Arrival Time	CPU Cycle
A	0	15
B	2	2
C	3	14
D	6	10
E	9	1

Calculate which jobs will have arrived ready for processing by the time the first job is finished or first interrupted using each of the following scheduling algorithms.

- a. FCFS
 - b. SJN
 - c. Round robin (use a time quantum of 5, but ignore the time required for context switching and natural wait)
7. Using the same information from the previous exercise, calculate the start time and finish time for each of the five jobs using each of the following scheduling algorithms.
- a. FCFS
 - b. SJN
 - c. Round robin (use a time quantum of 5, but ignore the time required for context switching and natural wait)
8. Using the same information given for Exercise 6, compute the turnaround time for every job for each of the following scheduling algorithms (ignoring context switching overhead times).
- a. FCFS
 - b. SJN
 - c. Round robin (using the time quantum of 5)

9. Given the following information for a real-time system using EDF:

Job:	A	B	C	D	E	F
Arrival time:	0	0	1	1	3	6
Execution Time:	3	1	6	2	7	5
Deadline:	6	1	44	2	16	15

Compute the time-before-deadline for each incoming job. Give the order in which the six jobs will finish, and identify any jobs that fail to meet their deadline. It may help to draw a timeline.