DESIGN A JOB SCHEDULER

DEFINITIONS AND REQUIREMENTS

Job Scheduler

A job scheduler is meant to schedule M jobs on N threads on a single machine. The input contains the following data:

1. Job name
2. Duration: Time taken to complete the job
3. Priority: Priority of the job [P0 > P1 > P2]
4. Deadline: Expiry time after which job should not be run [The clock starts from 0 and deadline is the actual clock time]

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A job scheduler is meant to schedule M jobs on N threads on a single machine. The input contains the following data:

5. UserType: Type of user who has initiated the job. Precedence of users: Root > Admin > User

DEFINITIONS AND REQUIREMENTS

Scheduling Algorithms

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Shortest Job First [SJF]

Shortest Job First (SJF) is a scheduling policy that selects the waiting process with the smallest execution time to execute next.

In case of a tie, choose the job according to the priority order (higher priority job gets scheduled first)

DEFINITIONS AND REQUIREMENTS

First Come First Serve [FCFS]

Jobs are executed on first come, first serve basis. The input would be taken as the order of jobs needing to be scheduled

DEFINITIONS AND REQUIREMENTS

Fixed Priority Scheduling [FPS]

Each process is assigned a priority. Process with the highest priority should be executed first, followed by the next highest priority. In case of tie, choose the job according to the following order

1. User Type
2. Longest Job First

DEFINITIONS AND REQUIREMENTS

Earliest Deadline First [EDF]

The next job would be the one closest to its deadline. In case of tie, choose the job according to the following order

1. Priority (higher priority job is scheduled first)
2. Duration (lower duration job is scheduled first).

In case we cannot schedule a job such that it completes before its deadline then it should be ignored.

DEFINITIONS AND REQUIREMENTS

Input: List of jobs, number of threads
Output: The order of jobs scheduled for each algorithm on each thread as output.