

COMPUTER SCIENCE AND ENGINEERING

Indian Institute of Technology Palakkad CS3110: Operating Systems Lab Lab 5

13-Feb-2025

1. Write a C program to emulate workloads of n process. A possible output for n=4 is below:

P1 5 C 20 I 10 C 200 I 10 P2 0 C 200 I 10 C 56 P3 100 C 300 P3 20 C 10 I 400

Points to note about the output format:

- There should be one line per process.
- The first value in each line corresponds to the process's name.
- Second value denotes the process start time.
- This is followed by a finite list of tuples (x, y) corresponding to a sequence of jobs.
- $x \in \{C, I\}$ denotes the job type (CPU or I/O), and y is a non-negative integer denoting the job duration.
- Number of jobs and their duration should be random.
- For each process, the first job should always be a CPU job.
- In each process, jobs of the same type are not adjacent to each other.
- 2. Write C program(s) to parse files with the above output format, and see how the following schedulers perform under scheduling metrics such as response time and turnaround time.
 - First In, First Out (FIFO)
 - Shortest Job First (SJF)
 - Shortest Time-to-Completion First (STCF) without I/O awareness
 - Shortest Time-to-Completion First (STCF) with I/O awareness
 - Round Robin (RR)
 - Multi-Level Feedback Queue (MLFQ)
- 3. Write C program(s) to compare performance of lottery and stride scheduling. Some useful assumptions: (a) there are n long-lived processes with only CPU jobs; (b) process i has $w_i \in \mathbb{Z}^+$ tickets.