INDIAN INSTITUTE
OF TECHNOLOGY
PALAKKAD

COMPUTER SCIENCE AND ENGINEERING
Indian Institute of Technology Palakkad
CS3110: Operating Systems Lab
Lab 5

02-Sep-2024

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.