CS431 Operating Systems: Winter 2018
Project
(100 points)

Due Date: 2/09/18 (Friday) by 11:59 PM

The purpose of this project is to write a program that simulates an operating system scheduler and to compare each scheduler performance in a report. **You can use Java or C++**

The program implements the following CPU scheduling algorithms:

- First-Come-First-Serve (FCFS)
- Shortest-Job-First (SJF)
- Round-Robin with time quantum = 25
- Round-Robin with time quantum = 50
- Lottery with time quantum = 50

Your program will read the processes, their burst times and their priority from test data file. The process files are located on Blackboard with this document.
The input file will be in the following format :

pid
burst_time
priority

Where the first line is id of the process, the second is the burst time that the process requires, the third line will be the priority of the process. The priority is only to be used in the lottery scheduler.

****Note: the scheduler takes 3 units of CPU time to switch a process. You will need to add this to the runtimes that you track.**

Note: You can make the following assumptions:

- Processes arrive in the order in which are read from the file.
- All processes are in the queue at CPU time = 0

Requirements output data:

- Output the details of each scheduler's execution of each test file to a csv formatted file. You need to show The following columns:
  CpuTime, PID, StartingBurstTime, EndingBurstTime, CompletionTime
- The completion time should be zero unless the process has completed (EndingBustTime = 0).
- Name each output file: *scheduler_name-testfile_name.csv*

Requirements for each scheduler

- When all of the processes of a particular file complete, calculate and output the average turnaround times (completion times) of all processes for each scheduling algorithm.
- Your output must be as a CSV file.

Turn in (via Blackboard)**:**

- Your source code; include a README file to explain how to compile and run your program.
- The project report (Cover sheet, Intro, Analysis (compare and contrast FCFS vs SJF, RR25 vs RR50, and RR50 vs Lottery50), Conclusion). Use average completion time for your comparisons. Your report should be in a PDF format.
- The output files (in a csv format with the labels of each column in the first row)
- Compress your submission into a single file named: YourFullName_p1.zip. Submit this file via blackboard.