

Due Date: Monday, 20 December 2023, @23:59 pm (midnight)

In this project you will implement a program to compare the performance of some CPU scheduling algorithms that we discussed in class. Your program should get a file (e.g., "jobs.txt") as the command-line input, and read the contents of the file. This file contains a set of processes. For example, consider the file with the following content:

```
1:(45,15);(16,20);(80,10);(40,-1)
2:(15,10);(60,15);(90,10);(85,20);(20,-1)
3:(30,15);(40,20);(5,15);(10,15);(15,-1)
```

In this example we have 3 processes, each process is represented in a separate line. The general format of a line is as follows:

<process-id>:(< cpu-burst₁, io-burst₁>);(< cpu-burst₂, io-burst₂>);...(< cpu-burst_i, io-burst_i>)

The first token is the unique process id. After process-id you have a colon (:) delimiter. Then you will see a list of tuples separated by semi-colons (;). Each tuple indicates the next cpu-burst and io-burst lengths of the process. The cpu and io burst length in terms of milliseconds. If the last io-burst is -1, then it means that the process terminates without making an I/O.

- Note that this input is just an example, I may use a different input file having a different content for testing your codes, but the format of the file will be same. (Be careful on duplicate last line issue when reading from the input file)
- You will assume that all the jobs arrive at the same time (t=0), the order of arrival is the same as the order of process-ids (i.e., smaller ids arrive earlier).

You will also assume that, the process never waits at the device queues and I/O starts immediately.

First Come First Served (FCFS) Algorithm

Implement FCFS scheduling policy. You should print the following

- a. Average turnaround time:** The average of the turnaround times of **all process**
- b. Average waiting time:** The average of the total waiting time for **all processes**.

Submission Guidelines: You can implement this project in C.

Make sure that compilation is **error-free** and **warning-free**.

In the beginning of codes write the name and student ids of the authors as a comment

For C: You should rename your file as "group_yourgroupid.c", Your codes will be compiled using gcc on an Ubuntu 22.04 (kernel 4.4.0) as follows:

```
gcc --std=c99 -Wall -O2 -o GroupXX.exe group_yourgroupid.c
```

and executed as follows:

```
./GroupXX.exe jobs.txt
```