

Assignment 2 MTL458

August 2023

1 General Clarifications

- The assignment is to be done in C language. C will be followed for all the assignments in this course.
- The deadline has been extended to 3rd September 11.59 PM.
- You can use any software you wish for plotting gantt charts for the report.
- Your final submission should consist of 3 file, zipped together.
 1. The report for your experiments as mentioned in original assignment PDF. This should be named report[EntryNumber].pdf
For example: report2019MT60766.c
 2. The main file you used to conduct your experiments. Executing the main file should enable us to replicate the experiments you have mentioned in your report. This should be named experiments[EntryNumber].c
For example: experiments2019MT60766.c
 3. A main file for code evaluation as described below. This should be named main[EntryNumber].c
For example: main2019MT60766.c

2 Code Evaluation

Along with the report mentioned in the Assignment statement communicated you need to submit a c file which does the following:

The program accepts input from a text file, the path to which will be specified as a command line argument. The input consists for one workload of processes. Each line of the input file represents a process. The structure of the line is as follows:

PID ArrivalTime JobTime

Take a look at the example input file attached or the input specified in the document uploaded on teams for examples. There can be as many as 2^{15} processes in one workload.

Your program should accept this workload, and then run all the 5 scheduling algorithms on it. It should produce an output which, for every context switch specifies which the PID of the job running, the start time of that context, and the time of the switch. You can understand it as the blueprint of a gantt chart.

An example will be as following:

PID	ArrivalTime	JobTime
P1	0	18
P2	2	7
P3	2	10

Then for FCFS strategy, the blueprint to be given as output looks like this:
P1 0 18 P2 18 25 P3 25 35

It starts with the PID of the job executed first, the time at which it starts, and then the time at which the first context switch occurs. Then for the next context, it again outlines which process is running, the start time of the context and the end time for that context, and so on.

You can take a look at the example output file uploaded to get a better understanding. Along with this, for each strategy, you have to print the average turn around time and the average response time

Hence, the output should look like this:

```
FCFS blue print
AvgTurnAroundTime AvgResponseTime for FCFS
Round robin blue print
AvgTurnAroundTime AvgResponseTime for Round Robin
Shortest Job first blue print
AvgTurnAroundTime AvgResponseTime for Shortest Job first
Shortest remaining time first blue print
AvgTurnAroundTime AvgResponseTime for Shortest remaining time first
Multi-level feedback queue blue print
AvgTurnAroundTime AvgResponseTime for Multi-level feedback queue
```

Your output should consist for 10 lines, in the specified order. Take a look at the example output file for exact details.

The command line arguments to your code will consist of the following:

1. The input file path
2. The output file path
3. The time slice for round robin (TsRR)
4. The time slice for highest priority MLFQ (TsMLFQ1)
5. The time slice for the 2nd queue for MLFQ (TsMLFQ2)
6. The time slice for the 3rd queue for MLFQ (TsMLFQ3)
7. The boost parameter for the MLFQ (BMLFQ).

Hence the calls will look like this:

```
$ gcc main2019MT60766.c.cpp -o main
$ ./main input.txt output.txt TsRR TsMLFQ1 TsMLFQ2 TsMLFQ3 BMLFQ
```

Write your output to the specified output text file. Please watch the tutorial recording and use piazza for any doubts.

3 Clarifications for the report

You are expected to vary any and all the parameters in the assignment to conduct your experiments. The number of experiments, the number of Gantt charts you plot, what distribution you choose for job time is completely up to you. You will be evaluated based on the quality of your experiments and the insights you are able to justify in your reports.

Please make sure to submit the main file for your experiments to recreate them. The report will not be considered without this file.

Thanks a lot, and all the best.