**Operating Systems**

**CS4348**

**Project #3: OS Scheduling Algorithms**

**Due Date: Saturday, April 27, 2024**

## I. Project Organization

This project demonstrates two of the six different scheduling algorithms in the textbook.

You should do the following pieces to complete your project. Each piece is explained below:

* Code 60 points
* Output 30 points
* Summary 10 points

# Code

Your code should be nicely formatted with plenty of comments. The code should be easy to read, properly indented, employ good naming standards, good structure, etc.

# Output

Output will be graded by running your program. Each algorithm’s output is 15 points.

# Summary

The summary section should discuss your project experience. You should discuss how you approached the project, including anything difficult or interesting, what was learned, and the end result. This should be at least 1 page in length.

## II. Project Description

**Language/Platform/Approach**

This project must target a Unix platform and execute properly on our CS1 server.

The project must be written in C, C++, or Java.

### Problem Overview

This project will simulate a scheduler scheduling a set of jobs.

The project will allow the user to execute a set of scheduling algorithms on an input set of jobs. It will output a representation of how the jobs are executed.

**Design**

You may design your own implementation approach, but here are a few constraints.

Your program should read in a list of jobs from a tab-delimited text file given at the command line. The format of the text file should have one line for each job, where each line has a job name, a start time and a duration. The job name must be a letter from A-Z. The first job should be named A, and the remaining jobs should be named sequentially following the alphabet, so if there are five jobs, they are named A-E. The arrival times of these jobs should be in order.

The jobs should be scheduled first using the FCFS scheduler, then scheduled again using the RR scheduler with a quantum size of one.

Your output should be a graph as shown in the slides. The graph can be text or you can use a graphics package such as JavaFX to draw the graph. For text, you may draw the graph down the page rather than across.

Your program should be able to reproduce the sample shown in the book as well as any similar set of jobs.

**Sample Output**

Below is sample text-based output for FCFS (your output should also show RR). For graphical output, you can make the graph look like the ones in the textbook and slides.

FCFS

A XXX

B XXXXXX

C XXXX

D XXXXX

E XX

FCFS (this is another way you may print the output instead of the one above)

A B C D E

X  
X  
X

X  
 X  
 X  
 X  
 X  
 X

X

X

X

X

X

X

X

X

X

X

X

## III. Project Guidelines

### Submitting

Submit your project on eLearning. Include in your submission the following files:

1. Source files
2. Summary document

### Academic Honesty

All work must be your own. If cheating is suspected, you will be referred to the Office of Community Standards and Conduct for investigation. Copying may be detected in a number of ways, including by software which compares your code with all other students’ source code, by comparison with code on the Internet, or by a visual inspection of your source code.

### Resources

The slides and textbook describe the two algorithms to be used.

**Compiling/Running**

Java:  
 compile: javac Project3.java  
 run: java Project3 jobs.txt

C/C++:

compile: gcc project3.c -o project3 or g++ project3.cpp -o project3  
 run: project3 jobs.txt

\* see eLearning announcement for the exact commands