CSCE 4600.003
Spring 2016
Project #1
Due: March 23, 2016 at 11:59pm via Blackboard Learn

For this project you will be working in groups of two or three. Each member of your group **must** sign up on the corresponding project sheet in order to receive a grade. Your task is to develop a simulation of different scheduling disciplines that allocate a set of processes to available processors.

Using the *process generator* that you developed in Homework #2, generate a set of 50 processes with different runtime requirements (i.e., cycles). You may assume that the processes arrive in the system every 50 cycles (e.g., at times 0, 50,100, 150, 200, …etc.)

1. Develop a simulation of Round-Robin Scheduling with a quantum of 50 cycles, and schedule your set of processes. Assuming a context switch penalty of 10 cycles (for the scheduler to switch between processes), compute the average waiting time and the total penalty for the set of processes. Repeat the experiment over different sets of processes. You should document (graphically) the distribution of cycle times for your set of processes.

2. Repeat the experiment above for 2 additional scheduling disciplines chosen from (SRT, SJF, FIFO, LRT).

3. Assuming that you have a multi-processor system with 4 processors. Repeat the above experiments and calculate the average waiting time and total context-switch penalty.

NOTE: To analyze the performance of your scheduling strategies, you must conduct multiple experiments over different sets of processes (with different process characteristics).

Deliverables: Write a minimum 5-page report that highlights the performance and differences of the scheduling algorithms. You must discuss all the limitations and assumptions. In detail, show how you analyzed the performance (i.e., average waiting time) and present your results. You must submit well-documented code along with specification of any special compilation procedures. The code must compile and execute properly on the CSE Linux machines to receive credit. Include in the report the list of team members who participated. Only one person needs to submit the required files form each team.

Have FUN!!