CS3204 Operating Systems - Fall 2000
Instructor: Dr. Craig A. Struble
Clarifications: Simulating Process Scheduling and States

Assigned: Oct. 16   **Due:** 11:59.59 p.m., Monday, Oct. 23

1   Introduction

This document clarifies a few points about the second programming assignment, *Simulating Process Scheduling and States*. These clarifications describe implementation decisions I made in my solution for the second programming assignment and you are expected to match these clarifications.

2   Output

2.1   Active Processes

The `Time` column represents the amount of time the process has executed, not the amount of time remaining.

2.2   Terminated Processes

Recall that weighted turnaround time $WT_{TRnd}(p_i)$ for process p_i is defined as

$$WT_{TRnd}(p_i) \quad = \quad T_{TRnd}(p_i)/\tau(p_i).$$

When I mentioned average weighted turnaround time though, I went over it too quickly in class. The average weighted turnaround time $\overline{WT}_{TRnd}$ is not

$$\left(\sum_{i=1}^{n} WT_{TRnd}(p_i) \right)/n.$$

The correct forumula is

$$\overline{WT}_{TRnd} \quad = \quad \left(\sum_{i=1}^{n} T_{TRnd}(p_i) \right) / \left(\sum_{i=1}^{n} \tau(p_i) \right)$$
$$= \quad \overline{T}_{TRnd}/\overline{\tau};$$

that is, the sum of the turnaround times divided by the sum of the service times, or the average turnaround time divided by the average service time.

To understand why, consider the following analogy. If you are trying to determine the average miles per gallon of your car over several trips, it is incorrect to simply sum up the miles per gallon for each trip and divide by the number of trips. Each trip is a different length, so they cannot be considered to carry equal weight in the computation. Similarly, each process has a different service time, so you cannot add up the weighted turnaround times and divide by the number of processes to get an accurate average over all processes.

Because I had not considered this before the midterm, either computation will be accepted as correct for the test, but you must use the proper computation in programming assignment 2.

3 Simulation

If simulation time runs out during execution, all processing should stop immediately. As a result, if the completion of a context switch and simulation time expires simultaneously, no system or process commands are executed until the next `simulate` command is read and executed.

4 Grading

We will be using the command `diff -b -i` to compare your output to the instructor solution output. The implies that whitespace within a line and capitalization will not be considered when comparing your output to the instructor solution output. Extra lines or missing lines **WILL** be checked though. Please use `diff -b -i` to compare your output with the instructor output before submitting your program. A grading checksheet will be posted shortly.