FAST- National University of Computer and Emerging Sciences
CS 205: Operating Systems

Preemptive CPU Scheduler

Project Report

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1. Introduction:

During a computer system's day-to-day operations, it makes use of various data, files, and information which are used to perform or execute various processes. In order to perform the aforementioned operations more quickly, the CPU must make use of one of several different scheduling algorithms, thus allowing efficient use of the CPU's available resources. A Preemptive CPU Scheduler is a program which seeks to identify, evaluate and ultimately organize the execution of processes are necessary for the computer's overall operational efficiency.

2. Modules:

The program seeks to use one or more from amongst a variety of different algorithms in order to efficiently and effectively schedule processes given to it, such as, but not limited to the following:

a) **Round Robin (RR):** Round Robin is a CPU scheduling algorithm where each process is assigned a fixed time slot in a circular way and then executed.

b) **Shortest Remaining Time First (SRTF):** is similar to Shortest Job Next (SJN) algorithm, wherein the processor is allocated to the job closest to completion. Thus, maximizing efficiency.

c) **Preemptive Priority Scheduling (PPS):** In **Preemptive Priority Scheduling**, at the time of arrival of a process in the ready queue, its **Priority** is compared with the **priority** of the other processes present in the ready queue as well as with the one which is being executed by the CPU at that point of time.

3. **Tools**
   a) Ubuntu – Linux Based Distribution
   b) C/C++ Programming Languages
   c) omp.h Library
   d) Ubuntu Kernel
   e) Pthread.h Library

4. **References** (you would be looking for help)
   https://www.geeksforgeeks.org/introduction-of-shortest-remaining-time-first-srtf-algorithm/
   https://en.wikipedia.org/wiki/Round-robin_scheduling
   https://www.javatpoint.com/os-preemptive-priority-scheduling
   https://www.javatpoint.com/os-cpu-scheduling