CSCI 330 M04

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CPU Scheduling Project:

For this project, we were tasked with creating a simulation demonstrating how Round Robin Scheduling works inside a CPU. To do this we randomized our values for burst time, waiting time and turn around time to input into our algorithm along with user input on how many processes to create and the number of time quantum's. From there our code calculates the average waiting time, response time, turnaround time and average throughput. As we learned in class, CPU scheduling refers to deciding which process will take control of the CPU in order to complete itself while other processes are suspended. It is taken further by using different algorithms in order to effectively use the CPU to ensure resource utilization and efficiency. These algorithms maximize the CPU productivity and reduces the chances of the CPU failing.

In our project we simulated the algorithm for Round Robin which is a preemptive scheduling process that ensures that the CPU is allocated fairly to each process and also to prevent starvation. Below are a few runs of our code displaying the randomized data of each process and the calculated values for the CPU in regard to Waiting, Response, and Turnaround Times.

```
************************************************

******** Round Robin CPU Scheduling ********

************************************************
Enter number of process:
3

 Please Enter Time quantum:
5

process         BurstTime       WaitingTime     TurnAroundTime
process1        14              19              33
process2        8               21              29
process3        27              15              42

 Average Waiting Time = 18.333334

 Average Turn Around Time = 34.666668

 Average Response Time = 3
```

Figure 1 Sample Run 1 with 3 processes and 5 time quantum

```
 Please Enter Time quantum:
5

process         BurstTime       WaitingTime     TurnAroundTime
process1        8               16              24
process2        30              25              55
process3        21              31              52

 Average Waiting Time = 24.0

 Average Turn Around Time = 43.666668

 Average Response Time = 3

 Average Throughoutput = 19

Can only enter input while your programming is running
```

Figure 2 Sample Run 2 with 3 processes and 5 time quantum

```
 Please Enter Time quantum:
5

process         BurstTime       WaitingTime     TurnAroundTime
process1        33              35              68
process2        13              31              44
process3        29              44              73

 Average Waiting Time = 36.666668

 Average Turn Around Time = 61.666668

 Average Response Time = 3

 Average Throughoutput = 25
```

Figure 3 Sample Run 3 with 3 processes and 5 time quantum