**Synopsis**

**CPU Scheduler**

Version: 1.0

**Which CPU Scheduler is the Faster?**

During the testing phases, I have always noticed that the *Shortest Job First* always seems to be the fastest CPU Scheduler algorithm. This would make sense as the program is performing the smallest chunks of processes first before processing larger chunks of processes which takes more CPU time and delays of execution of smaller tasks.

**Which CPU Scheduler is the Slowest?**

Once I finally got the *Round Robin* to work properly, I quickly noticed that the *Round Robin* with a quantum of ‘4’ seems to be the worst CPU Scheduler in time efficiency. This also makes sense as the CPU Scheduler is designed to split the processes by CPU Quantum rather than executing the process until it is finished. However, a quantum level of ‘8’ is faster than quantum level of ‘4’ nowhere near as efficient as the ‘*Shortest Job First*’. With the quantum level of ‘8’, instead of ‘4’, the CPU is spending more time on the processes rather than minimally as opposed to ‘4’.

**What is the CPU Scheduler Ranks?**

To make reading this section easier, I have decided to place the rankings inside a table from best to worst by time efficiency.

**Time Efficient CPU Scheduler Ranking**

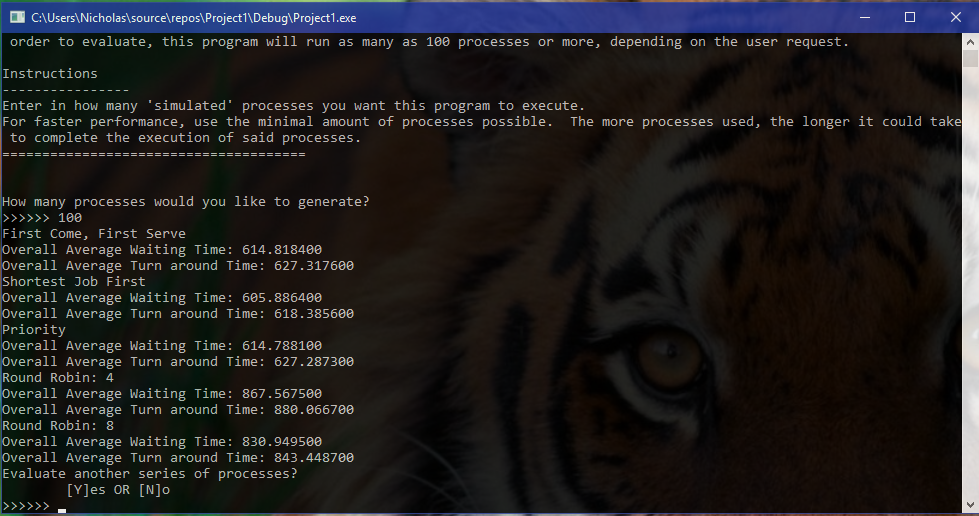
|  |  |
| --- | --- |
| **Rank** | **CPU Scheduler Algorithm** |
| 1 | Shortest Job First |
| 2 | Priority |
| 3 | First Come, First Serve |
| 4 | Round Robin [Quantum 8] |
| 5 | Round Robin [Quantum 4] |

**Evidence**

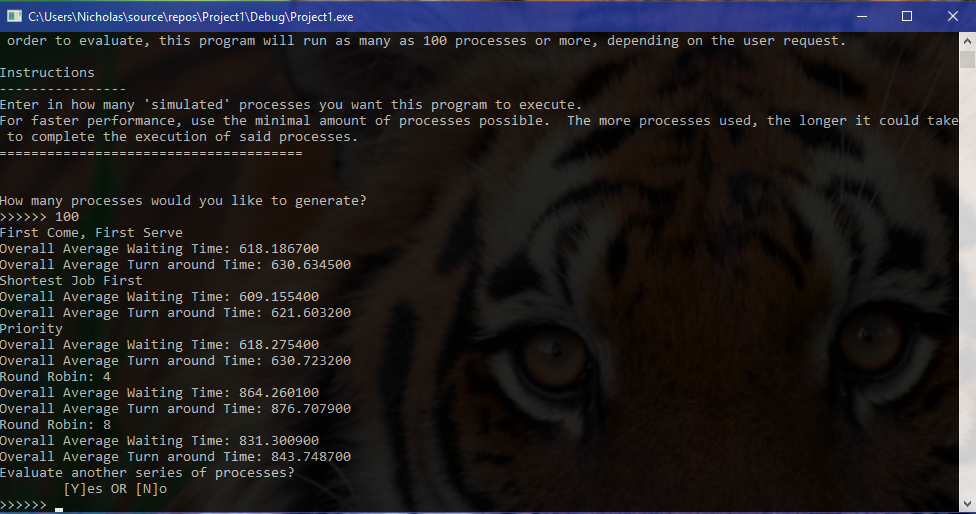
**Test Case with 100 Processes**

|  |  |
| --- | --- |
| **CPU Scheduler** | **Average Wait and Turn Around Times** |
| **CASE 1** | |
| First Come, First Serve (FIFO) | Average Waiting Time: 614.818400  Average Turnaround Time: 627.317600 |
| Shortest Job First | Average Waiting Time: 605.886400  Average Turnaround Time: 618.385600 |
| Priority | Average Waiting Time: 614.788100  Average Turnaround Time: 627.287300 |
| Round Robin [Quantum 4] | Average Waiting Time: 867.567500  Average Turnaround Time: 880.066700 |
| Round Robin [Quantum 8] | Average Waiting Time: 838.949500  Average Turnaround Time: 843.448700 |
| **CASE 2** | |
| First Come, First Serve (FIFO) | Average Waiting Time: 618.186700  Average Turnaround Time:630.634500 |
| Shortest Job First | Average Waiting Time:609.155400  Average Turnaround Time:621.603200 |
| Priority | Average Waiting Time: 618.275400  Average Turnaround Time: 630.723200 |
| Round Robin [Quantum 4] | Average Waiting Time: 867.260100  Average Turnaround Time: 876.707900 |
| Round Robin [Quantum 8] | Average Waiting Time: 831.300900  Average Turnaround Time: 843.748700 |
| **CASE 3** | |
| First Come, First Serve (FIFO) | Average Waiting Time: 617.611900  Average Turnaround Time: 630.055600 |
| Shortest Job First | Average Waiting Time: 608.588600  Average Turnaround Time: 621.032300 |
| Priority | Average Waiting Time: 617.777100  Average Turnaround Time: 630.220800 |
| Round Robin [Quantum 4] | Average Waiting Time: 861.924200  Average Turnaround Time: 874.367900 |
| Round Robin [Quantum 8] | Average Waiting Time: 827.995300  Average Turnaround Time: 840.439000 |

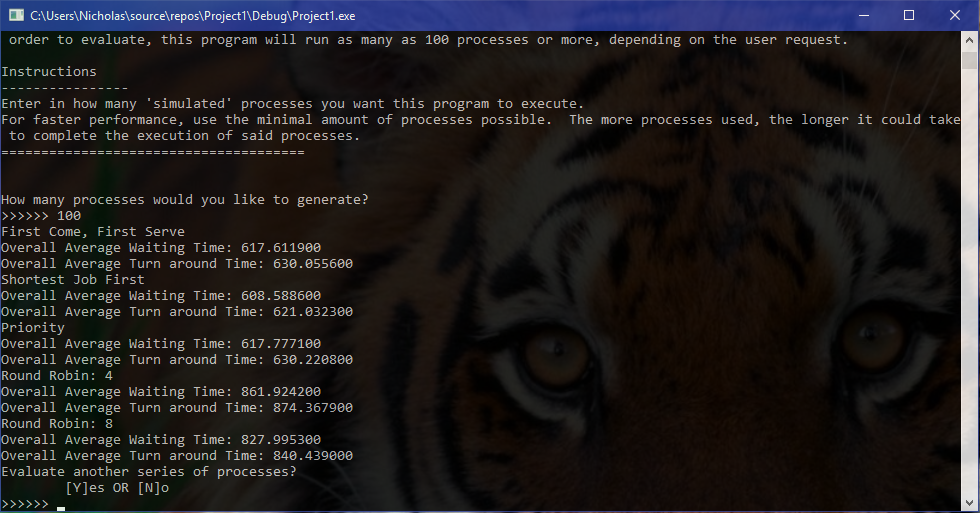
Case 1 [100 Processes]:



Case 2 [100 Processes]:



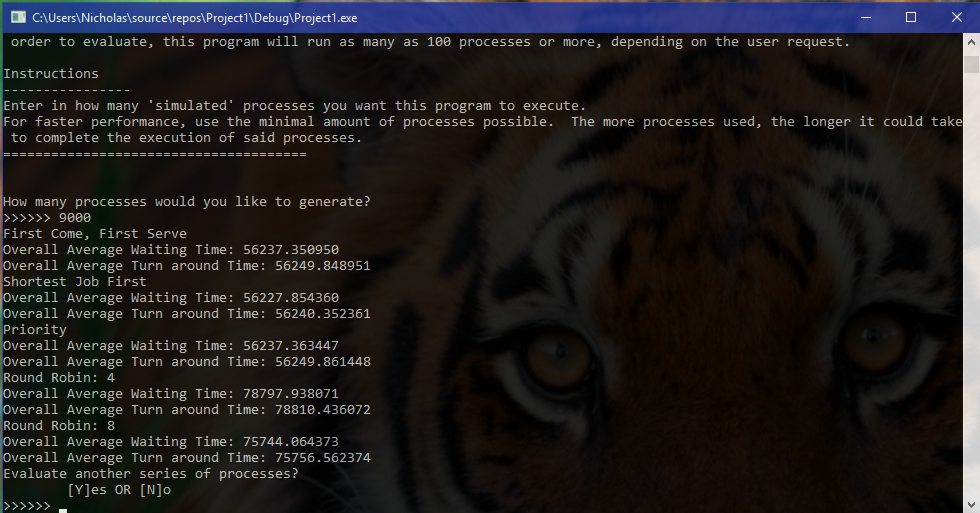
Case 3 [100 Processes]:



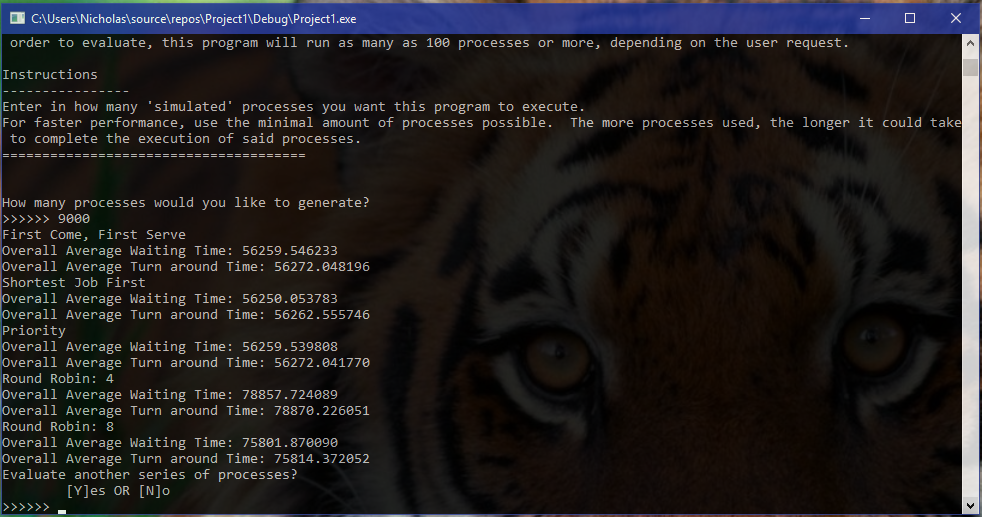
**Test Case with 9000 Processes**

|  |  |
| --- | --- |
| **CPU Scheduler** | **Average Wait and Turn Around Times** |
| **CASE 1** | |
| First Come, First Serve (FIFO) | Average Waiting Time: 56237.350950  Average Turnaround Time: 56249.848951 |
| Shortest Job First | Average Waiting Time: 56227.854360  Average Turnaround Time: 56240.352361 |
| Priority | Average Waiting Time: 56237.363447  Average Turnaround Time: 56249.861448 |
| Round Robin [Quantum 4] | Average Waiting Time: 78797.938071  Average Turnaround Time: 78810.436072 |
| Round Robin [Quantum 8] | Average Waiting Time: 75744.064373  Average Turnaround Time: 75756.562374 |
| **CASE 2** | |
| First Come, First Serve (FIFO) | Average Waiting Time: 56259.546233  Average Turnaround Time: 56272.048196 |
| Shortest Job First | Average Waiting Time: 56250.053783  Average Turnaround Time: 56262.555746 |
| Priority | Average Waiting Time: 56259.539808  Average Turnaround Time: 56272.041770 |
| Round Robin [Quantum 4] | Average Waiting Time: 78857.724089  Average Turnaround Time: 78870.226051 |
| Round Robin [Quantum 8] | Average Waiting Time: 75801.870090  Average Turnaround Time: 75814.372052 |
| **CASE 3** | |
| First Come, First Serve (FIFO) | Average Waiting Time: 56234.554810  Average Turnaround Time: 56247.056789 |
| Shortest Job First | Average Waiting Time: 56225.062736  Average Turnaround Time: 56237.564714 |
| Priority | Average Waiting Time: 56234.541016  Average Turnaround Time: 56247.042994 |
| Round Robin [Quantum 4] | Average Waiting Time: 78858.326114  Average Turnaround Time: 78870.828093 |
| Round Robin [Quantum 8] | Average Waiting Time: 75796.216948  Average Turnaround Time: 75808.718927 |

Case 1 [9000 Processes]:



Case 2 [9000 Processes]:



Case 3 [9000 Processes]:

