Operating Systems CSF372
Assignment 1
Group 23

Group Members:

2019A7PS0038H	Pavan Kumar Reddy Yannam
2019A7PS0043H	Vineet Venkatesh
2019A8PS1357H	Avinash Gondela
2019AAPS0241H	Akhilesh Gowrishetty
2019A3PS1323H	Anantha Sai Satwik Vysyaraju
2019A8PS1279H	Bhargava Teja Uppuluri
2019A7PS0017H	Bokkasam Venkata Sai Ruthvik
2019A8PS0651H	Divakarla Vamsi Krishna

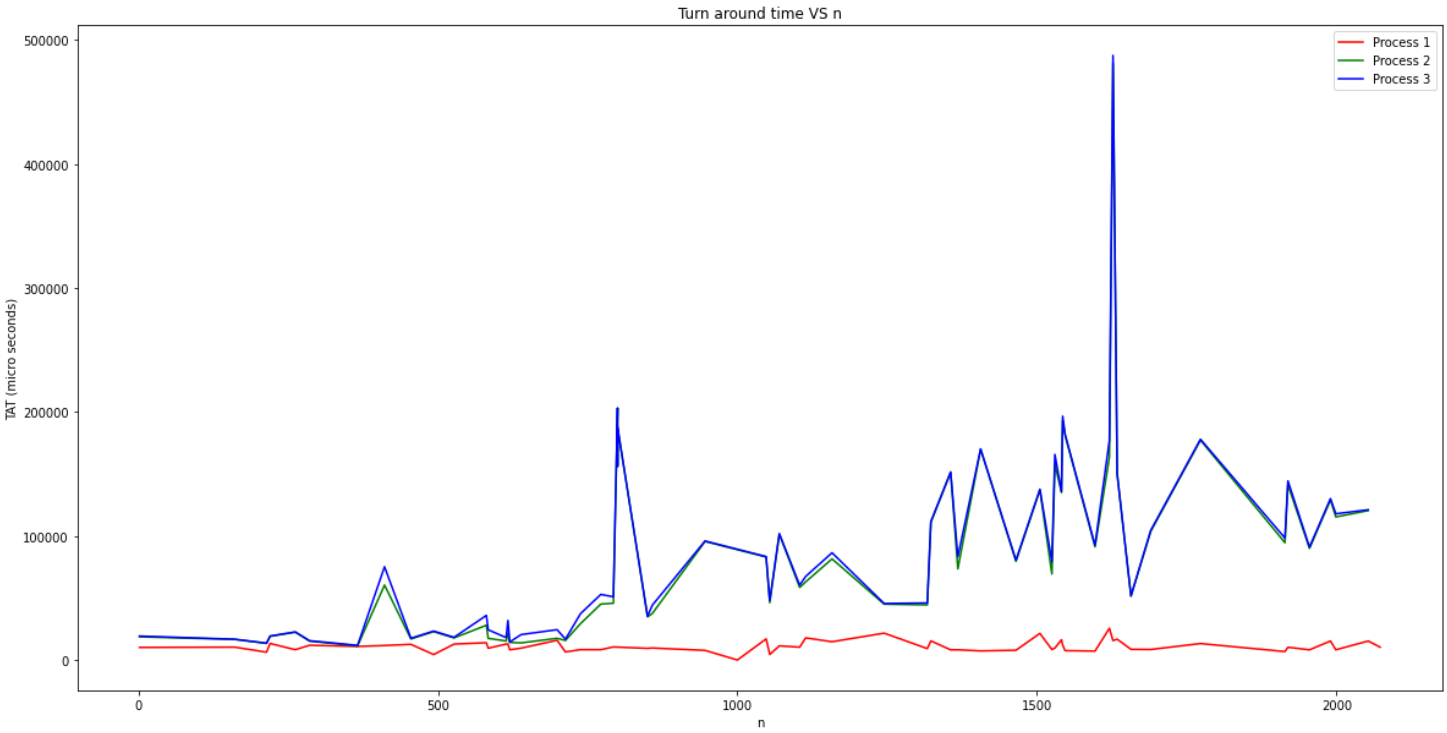
Performance Analysis

First Come First Serve

FCFS stands for First Come First Serve. In this particular scheduling algorithm, the processes present in the ready queue get executed on a first come first serve basis i.e. the process which entered the ready queue gets executed first and so on.

The following are the plots for the turnaround time vs workload for the three processes using the First Come First Serve (FCFS) algorithm.

Figure 1:

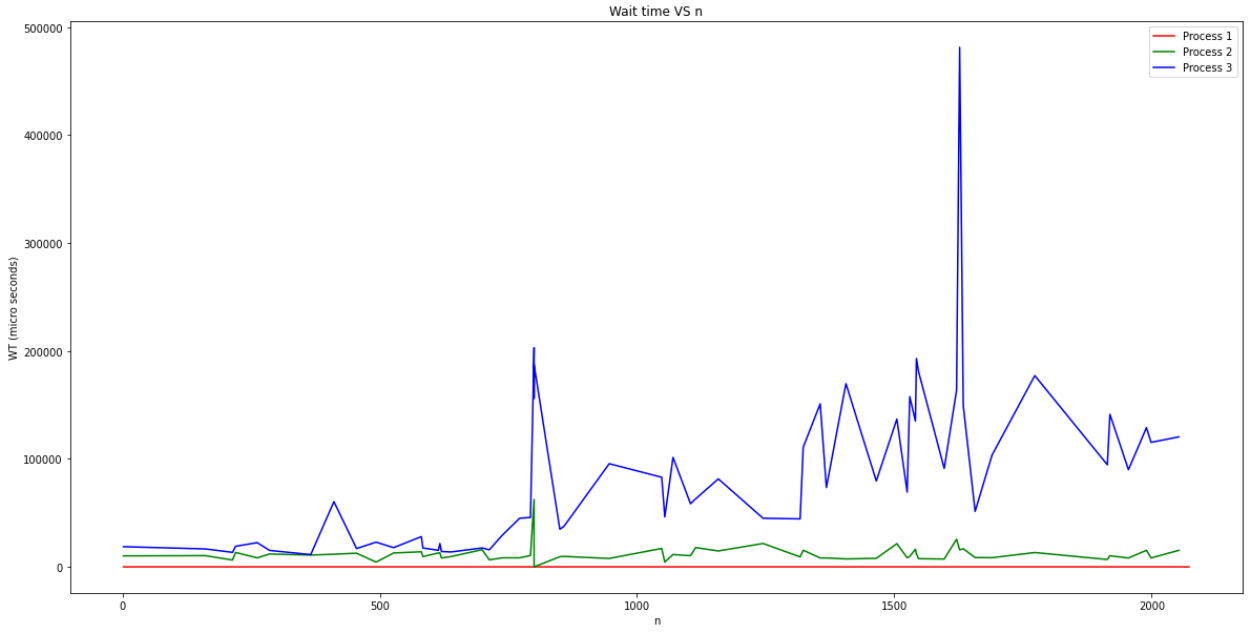


We observe that the turnaround time increases for all three processes as n increases, which is true as turnaround time includes execution time. The execution time increases with an increase in the workload.

Processes C2 and C3 are both I/O processes and hence take more time than C1. C3 also includes addition along with I/O and hence is more computationally expensive than C2 and hence it is visible in the graph that C3 has a slightly higher turnaround time than that of C2.

The following are the plots for the waiting time vs workload for the three processes using the FCFS algorithm.

Figure 2:



We observe the following order for waiting time:

Process 3 > Process 2 > Process 1

The above result is expected as the algorithm used is FCFS, and each process has to wait for the other process to finish before getting executed.

Also, the difference between the wait times for process 1 and Process 2 does not vary much as the workload increases as Process 1 is not an I/O process.

Coming to Process 2 and Process 3, the difference between the waiting time gradually increases since with an increase with the workload execution time for Process 2 increases since it is an I/O process.

Round Robin

Round-robin is one of the algorithms in which processes enter a ready queue and execute for a particular time called time quantum. After the time quantum is finished, the process is removed from the ready queue and is pushed back to the ready queue until the process finishes execution.

The unit of time quantum is microseconds.

Below is the graphs for turnaround time vs workload for round robin algorithm:

Figure 3:

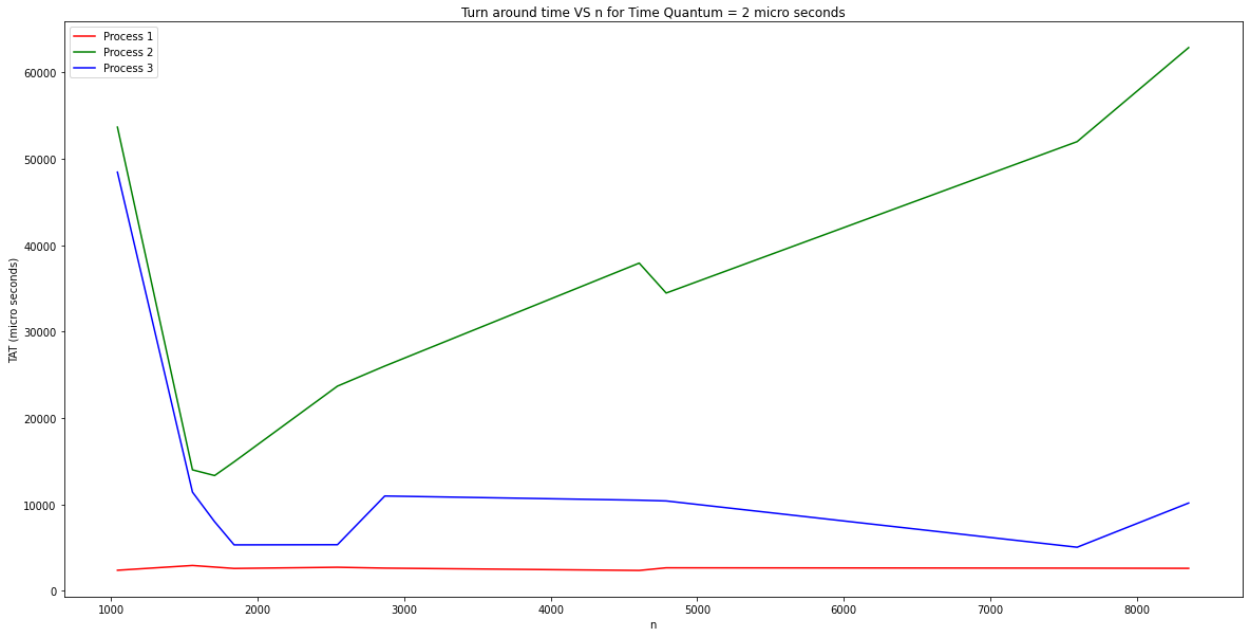


Figure 4:

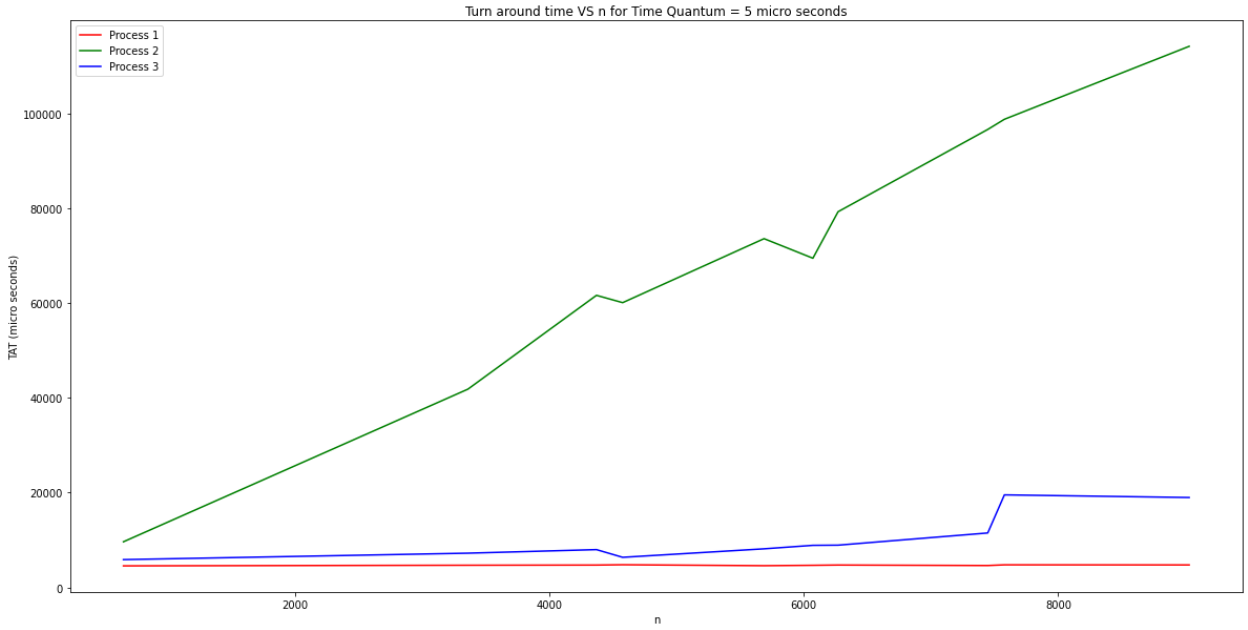
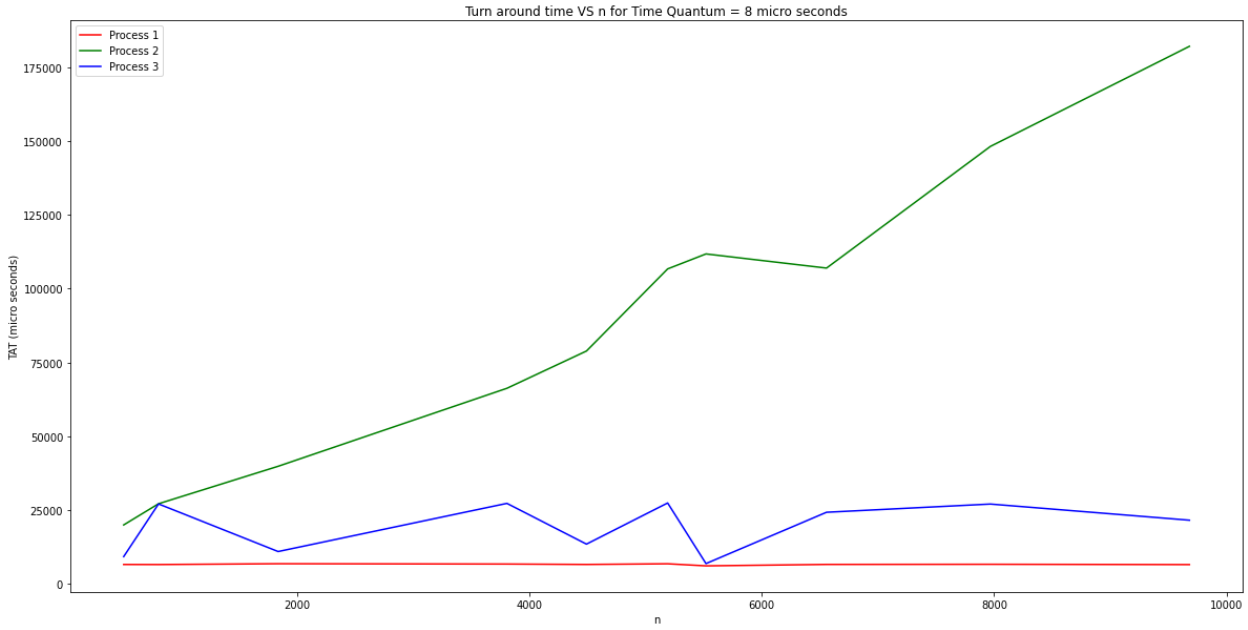


Figure 5:



As we can see from the above graphs, the finishing time for Process 1 is less and hence it has a lesser turnaround time.

Coming to Process 2 and Process 3 which are both I/O processes, the turnaround time is more for Process 3 as it is more computationally expensive due to addition involved.

From the above graphs, as workload increases, turnaround time for Processes 2 and 3 are diverging.

Below is the graphs for waiting time vs workload for round robin algorithm:

Figure 6:

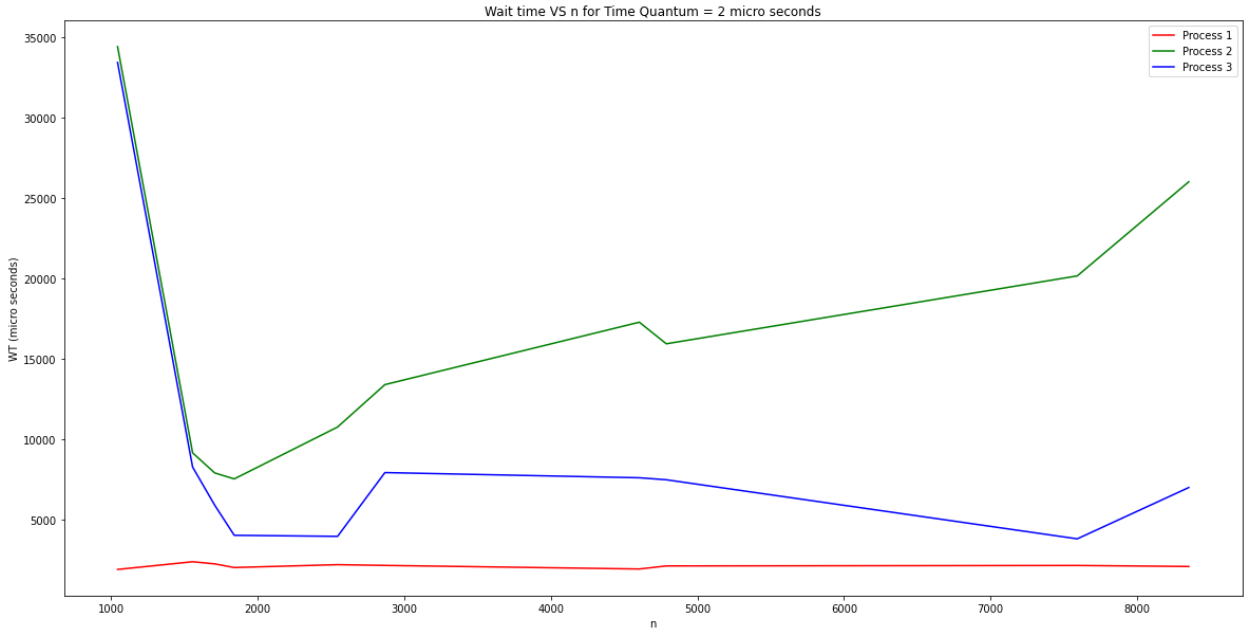


Figure 7:

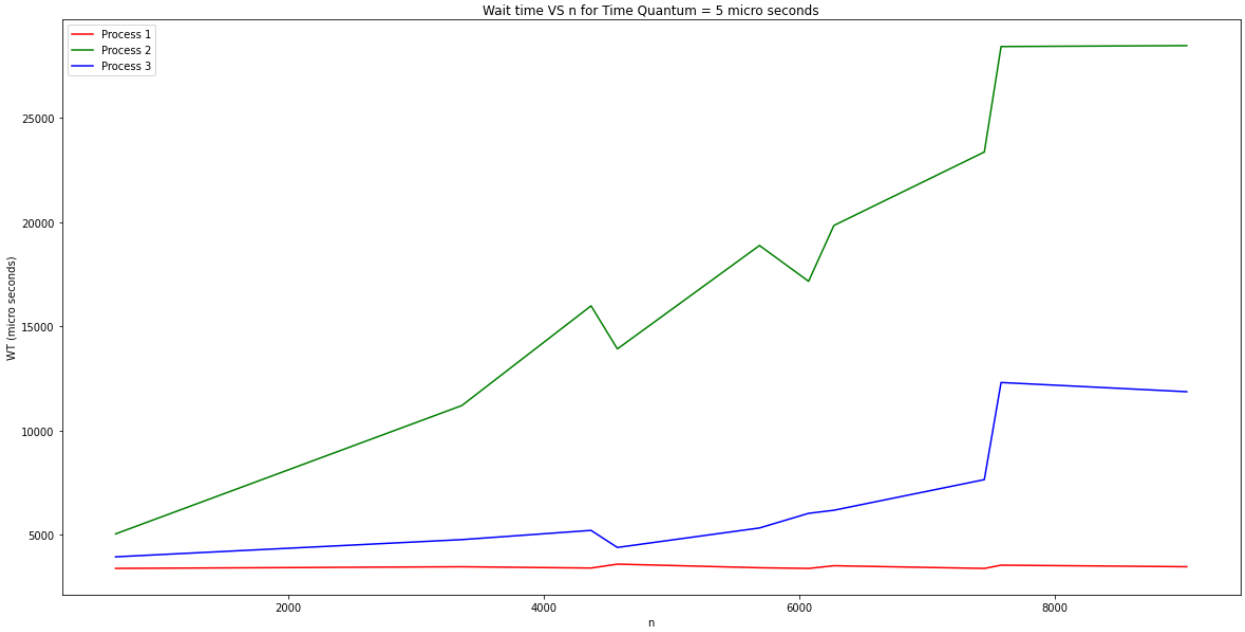
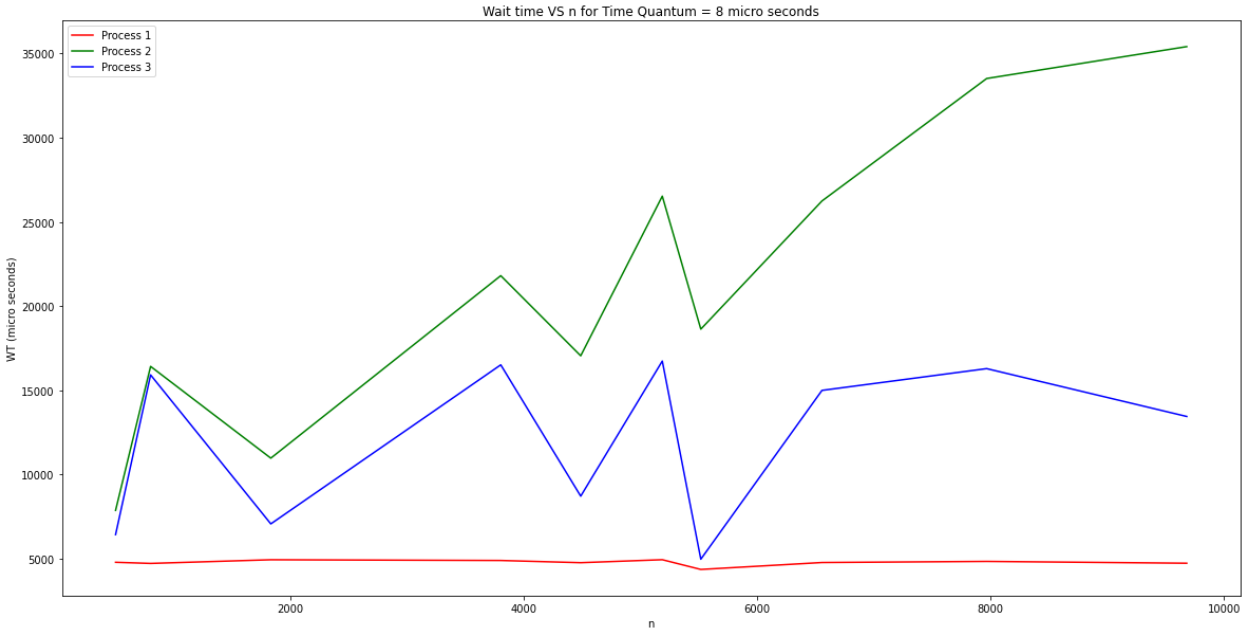


Figure 8:



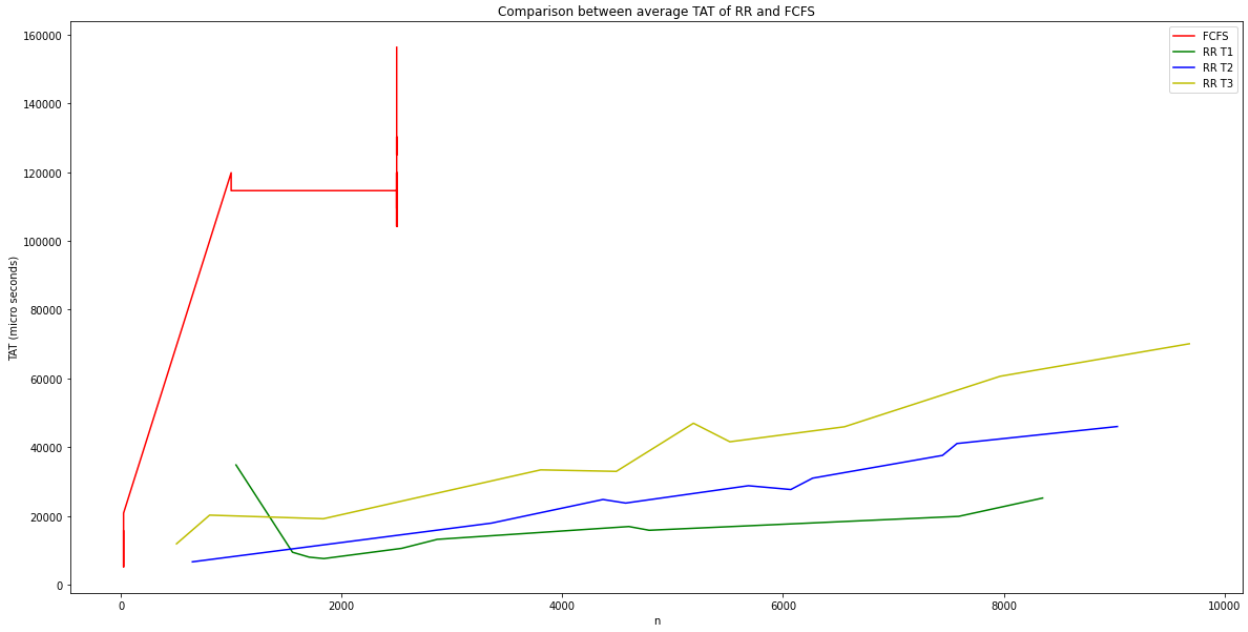
The waiting time is given by Turnaround time - Burst time. The burst time order is: Process 1 < Process 2 < Process 3. Also the turnaround time follows the same order. Hence the waiting time is also in the same order.

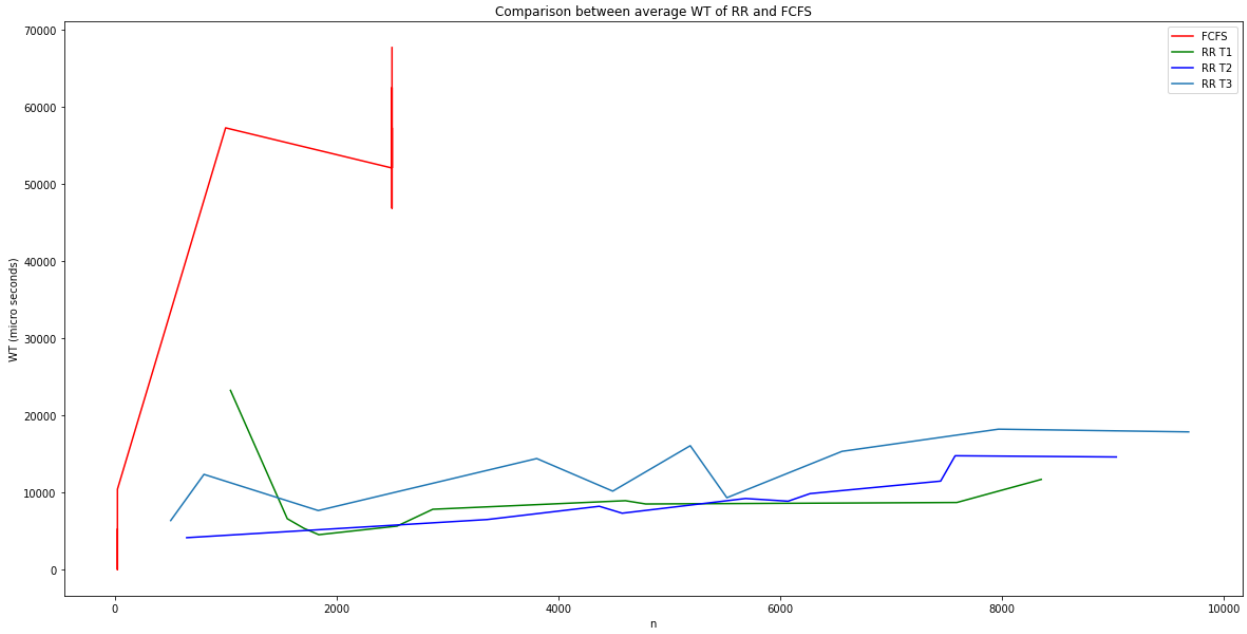
From the above graphs, as workload increases, waiting time for Processes 2 and 3 are diverging.

Comparison between First Come First Serve and Round Robin (RR) on basis of Average Turnaround Time

In this case, we calculated the average turnaround time of FCFS and RR algorithms and also plotted them. Our conclusion is that RR has a lesser average turnaround time compared to FCFS.

Graph:




Comparison between average WT of RR and FCFS
FCFS
RR T1
RR T2
RR T3
WT (micro seconds)
n
0
10000
20000
30000
40000
50000
60000
70000
0
2000
4000
6000
8000
10000