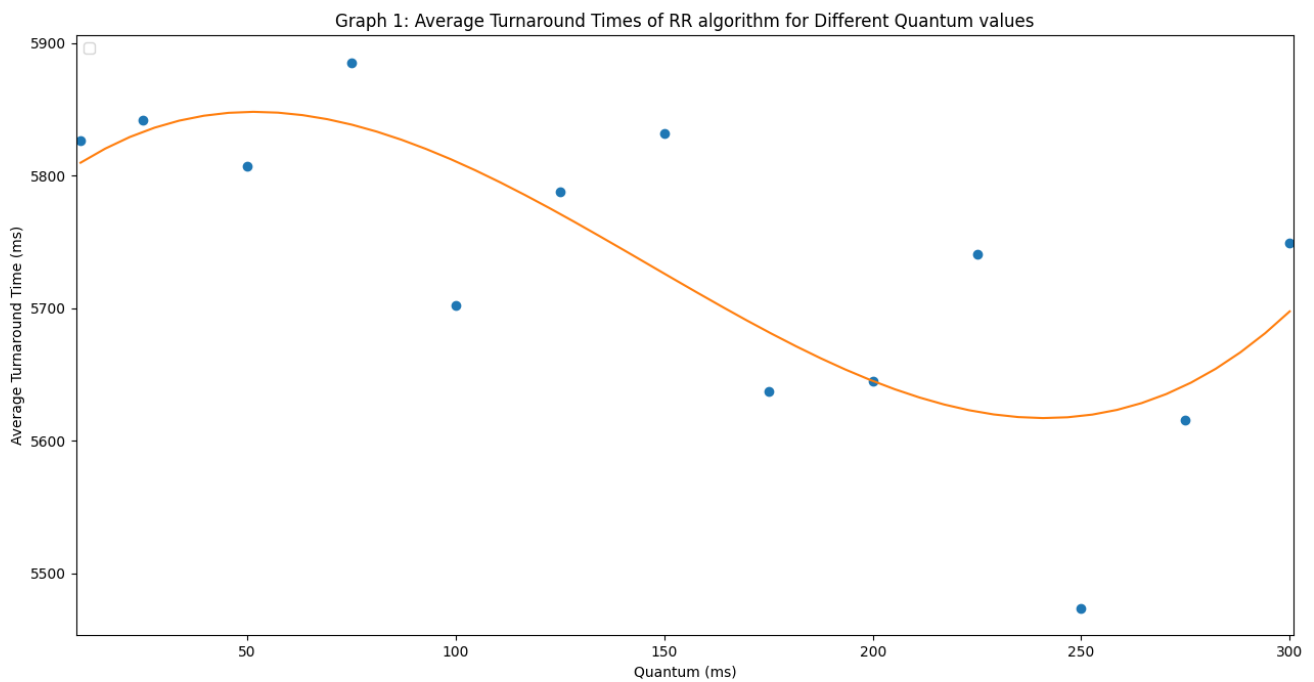


## CS342 Operating Systems - Project 2 Report

I have used an input file that contains 50 processes, and I have executed the scheduling program for different quantum values from an integer set Q where

$$Q = \{10, 25, 50, 75, 100, 125, 150, 175, 200, 225, 250, 275, 300\}$$

Then for the average turnaround times for the Round Robin algorithm, I have plotted a graph:



(Graph 1: Average Turnaround Times of RR algorithm for Different Quantum values)

The data set I have used for this example:

```
1 100 132
2 105 147
3 110 374
4 115 84
5 120 226
6 125 372
7 130 159
8 135 341
9 140 74
10 145 6
11 150 343
12 155 144
```

13 160 307  
14 165 228  
15 170 100  
16 175 207  
17 180 245  
18 185 59  
19 190 381  
20 195 357  
21 200 400  
22 205 13  
23 210 164  
24 215 38  
25 220 31  
26 225 319  
27 230 247  
28 235 180  
29 240 96  
30 245 312  
31 250 334  
32 255 23  
33 260 59  
34 265 107  
35 270 298  
36 275 80  
37 280 78  
38 285 57  
39 290 216  
40 295 147  
41 300 254  
42 305 158  
43 310 86  
44 315 160  
45 320 181  
46 325 378  
47 330 163  
48 335 25  
49 340 232  
50 345 143

## **Conclusion**

In general, I can say that if the processes' bursts are not in ascending order, the FCFS algorithm has the longest average turnaround time since it does not have a selecting fashion and it chooses the next process waiting directly. This generally results in longer waiting times for other processes since a long burst can be chosen first and may cause an increase in a general increase for turnaround times.

Moreover, the SJF algorithm is the fastest or the second-fastest in most cases since it chooses the shortest burst length among all processes and other processes wait lesser. This decreases the general waiting time and shortens the turnaround times also.

Thirdly, the SRJF algorithm generally has the shortest average turnaround time. It is because it chooses the shortest burst, and this decreases waiting times. Moreover, while a burst is being executed, if a shorter burst arrives, it starts to execute that burst since it has a preemptive fashion. However, if all bursts arrive at the same time, this algorithm's average turnaround times are the same as the SJF algorithm.

For the last algorithm, the Round Robin algorithm, I can make some comments based on graph 1. I can say that lesser quantum values add noticeable overhead to average turnaround times. Moreover, I can say that 175 ms is a sweet point for this data set and it results in the shortest average turnaround time, and then it starts to increase again. I can say that as the quantum increases, round-robin is having a similar behavior as the FCFS algorithm. Moreover, in a more general sense, the Round Robin algorithm takes the longest time among all algorithms. Since it does not order the processes according to their burst lengths, but it is only adding them into a queue according to their arrival times, it is not as fast as SJF or SRJF algorithms. However, for the round-robin algorithm it is guaranteed that no process will starve.