CS4130 – Operating Systems

Project 1: Scheduler Simulator

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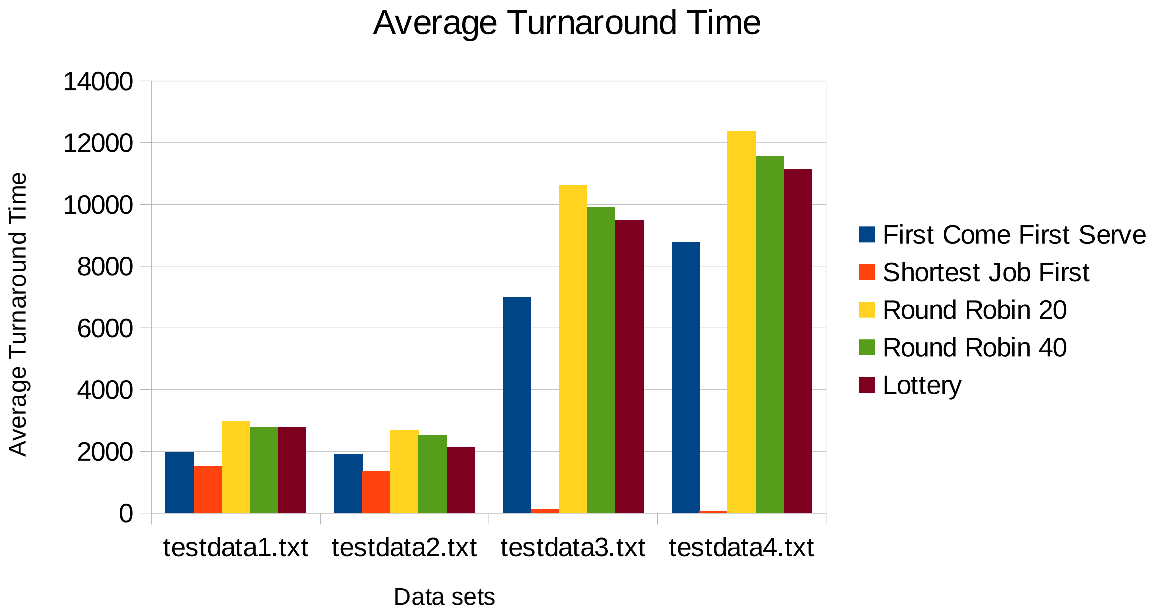
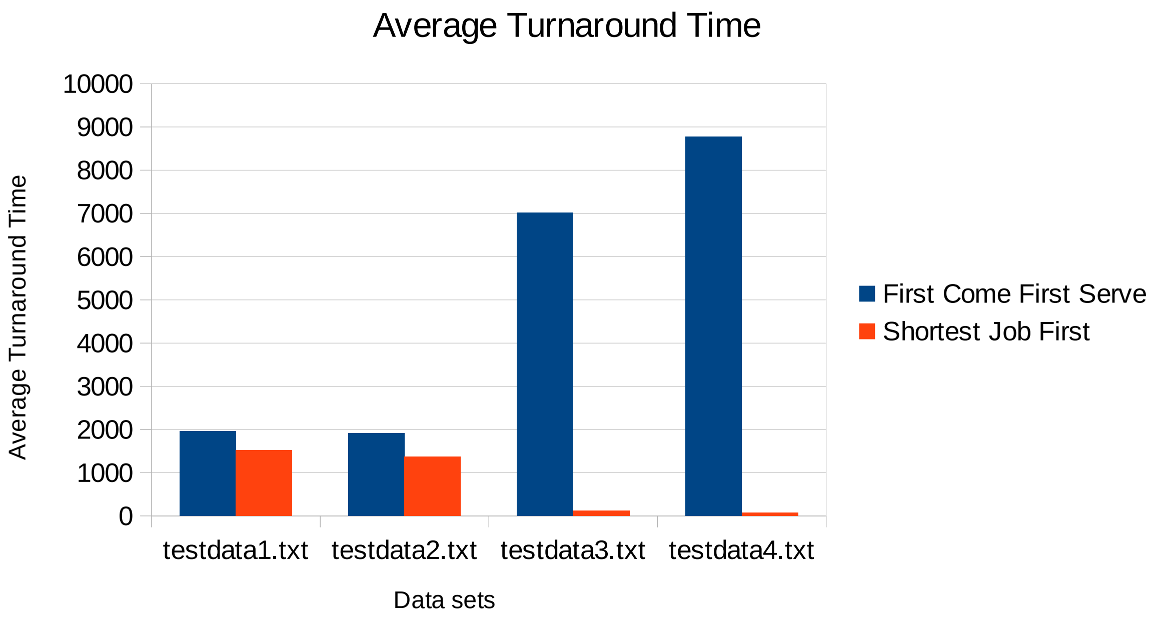
The purpose of this project was to compare the average turnaround time for 4 different processes scheduling methods:

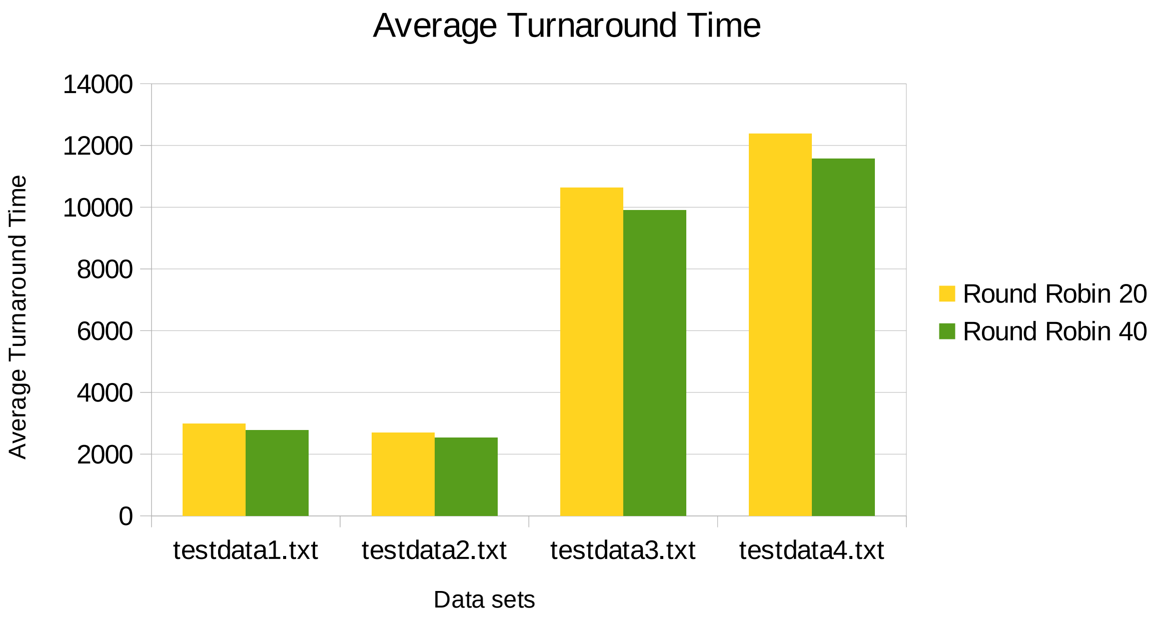
- First come first serve – run the processes in the same order they arrived to the processor, for the duration of the processes run time.
- Shortest process first – sort the processes by non-decreasing run time, and run them to completion in this order.
- Round robin (with both 20 and 40 time quanta burst duration) - let a processor run for a specified time quanta, then swap to the next process and repeat.
- Lottery – Randomly choose a process (with priority bias) and run that process for the specified time quanta, then repeat.

	testdata1.txt	testdata2.txt	testdata3.txt	testdata4.txt
First Come First Serve	1963.11	1913.89	7013	8770.52
Shortest Job First	1518.67	1370.44	127.11	72.67
Round Robin 20	2989.89	2704.33	10634.11	12381.26
Round Robin 40	2785	2532.11	9908.47	11583.37
Lottery	2779.78	2133	9496.94	11143.51

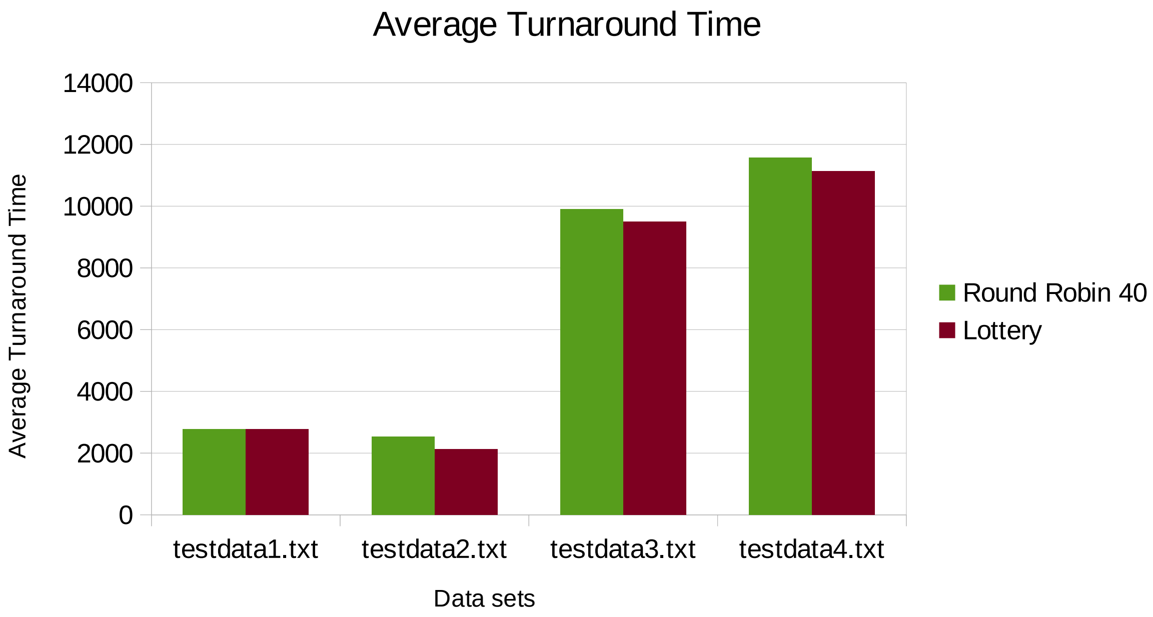




Shortest Job First will always run better or equal to First Come First serve, as it optimizes the average completion time.



Using a larger time quanta will reduce the average time as there less context switching delays.



With the testing files provided, the Lottery method always ran a little better than Round Robin, but this isn't always the case.

In conclusion, if there doesn't need to be fairness Shortest Job First is the best option. If you are looking to run all processes with some fairness then Round Robin or Lottery would be a better option. Running Round Robin with a higher time quanta will be more efficient than a lower one. In modern day computing there using Shortest Job First wouldn't work out well, so an option closer to Round Robin or Lottery should be used.