İhsan Doğramacı Bilkent University

Department of Computer Science

CS353 – OPERATING SYSTEMS

Project 1

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Section: 1

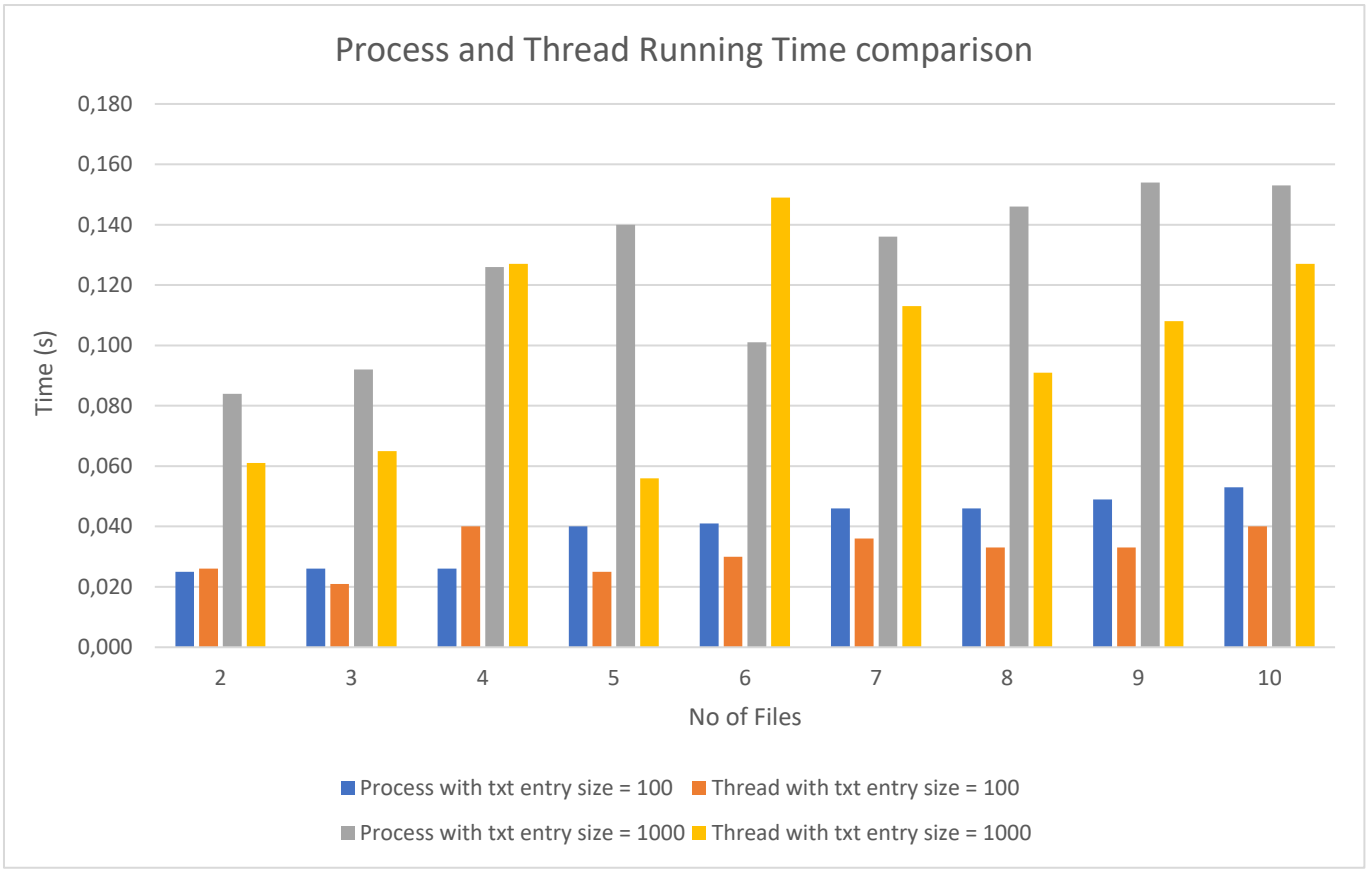
Part C – Experiments

In total, 4 different experiments are conducted. In one set of experiments (1st and 2nd experiments), we checked the running time of the process implementation by taking txt files that has 100 entries as input. We tested our code for number of files differing from 2 to 10 and noted down the results on table 1. Same experiment is conducted on threads, and results can be seen on table 1 as well. For the third and fourth experiment, we used txt files that has 1000 entries as our inputs. Third experiment is conducted on processors and fourth is on threads.

No of files	2	3	4	5	6	7	8	9	10
Process with txt entry size = 100	0,025	0,026	0,026	0,040	0,041	0,046	0,046	0,049	0,053
Thread with txt entry size = 100	0,026	0,021	0,040	0,025	0,030	0,036	0,033	0,033	0,040
Process with txt entry size = 1000	0,084	0,092	0,126	0,140	0,101	0,136	0,146	0,154	0,153
Thread with txt entry size = 1000	0,061	0,065	0,127	0,056	0,149	0,113	0,091	0,108	0,127

Table 1: Results of experiments on processes and threads with varying input sizes

Having obtained these results, to see the difference between the runtimes of our experiments, graph 1 is plotted.



Graph 1: Results of experiments on processes and threads with varying input sizes, Process and Thread Running Time comparison

As a result, if we consider the blue and orange columns in the graph, we can see that they are quite similar in terms of their runtime values, but overall, thread implementation (orange) seems to be faster than the process implementation (blue), excepts in some cases where systematic errors occur. Runtimes of thread implementation is expected to be less compared to the process implementation, and this was the case in this experiment, thus we have proven this claim.

Moreover, if we consider the grey and yellow columns in the graph, once again, we can see that they are quite similar in terms of their runtime values, but overall, thread implementation (yellow) seems to be faster than the process implementation (grey), excepts in some trials where systematic errors occur. This experiment is similar to the previous experiment of comparing the running times of threads and processes, but in here, the input txt file entries are 1000, instead of 100. As it is stated above, runtimes of thread implementation are expected to be less compared to the process implementation, and this was the case in this experiment, thus, once again we have proven this claim with different input sizes.