Project 1 Report

The graph shows that as the number of processes increases, the execution time exponentially decreases from 1 to 16 processes; then it plateaus at 0.24 seconds. This is due to the system efficiently distributing the workload on all the available cores, that explains the decrease in the normalized time; also, during this experiment I was connected to the CS machines that have 16 available cores. So, adding more processes greater than 16 can lead to diminishing returns due to increased overhead. We can see that on the graph when the normalized execution time is 0.093239812 at 64 processes and we have an uptick to 0.094582655 at 128 processes and 0.096412998 at 256 processes. This increase can be explained by context switching (which is typically faster between threads than between processes p.162 of Operating System Concepts) where allocating memory and resources for each process creation is costly when all cores are not available.

Appendix

(Recorded times during execution on CS machines and cores available)

