

Group 10

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Team Member 2

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System used for our program:

Processor: 24 cores

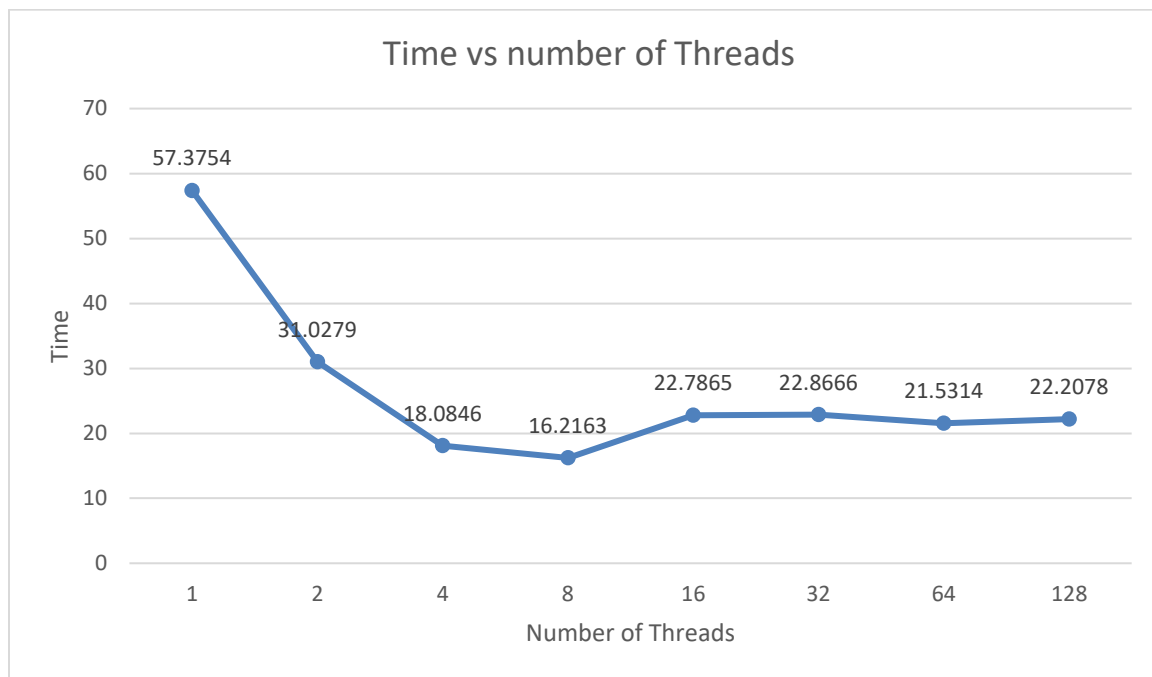
Ram: 96GB

Operating System: CentOS Linux release 7.7.1908

Comparision of various thread versions:

Single-thread version time: 56.8537s

Multi-Thread version:



Analysis:

The time required for our program to run without any threads is 56.8537 seconds. The time for our program to run on a single thread is 57.3754 seconds. The increase in time requirement can be attributed to the time overhead required for various thread operations like creation and destruction of thread, mutex locking unlocking operations etc.

We see a steady decrease in time requirement for our program until 8 threaded execution. After which the time tends to stabilize around 22s for increasing number of threads upto 128. Normally, we would expect that the execution time decreases as the number of threads used are increased and the job is more distributed. However, the behaviour of our system can be explained by the trade-off required between faster execution with increasing number of threads against the increase in overhead for handling multiple thread execution simultaneously. The increase in operations like mutex lock-unlock, creation-destruction of threads etc. increases the time overhead with increasing number of threads which cancels out any time gained by distributing the work across various threads.

We conclude that for various programs it is not always advisable to have the maximum number of threads running possible. Rather an optimal number of threads should be used which runs the specific program at its highest possible speedup.