PRMP Assignment-1

The implementation of quill runtime involved the execution of the following operations:-

1) Init_runtime: To initialize the thread pool, initialize the worker deques, and the local locks
2) Start_finish: To initialize the finish counter which keeps the count of the total number of tasks within the finish pool
3) Async: To allow the asynchronous, parallel implementation of tasks by pushing the tasks to a random thread deque
4) End_Finish: Ensures that the main thread is not idle and is responsible for executing all the tasks within its pool
5) Finish_Runtime: Ensures all the threads have implemented their tasks within the deque and the thread_join function is called for all the threads

The results for N=12 and different thread sizes(T) are as follows:-

1) T=1 -> 2.66s
2) T=2 -> 1.83s
3) T=3 -> 1.52s
4) T=4 -> 1.31s
5) T=5 -> 1.23s
6) T=6 -> 1.18s
7) T=7 -> 1.12s
8) T=8 -> 1.09s

Thread vs Execution time graphs

Thread vs. Execution Time