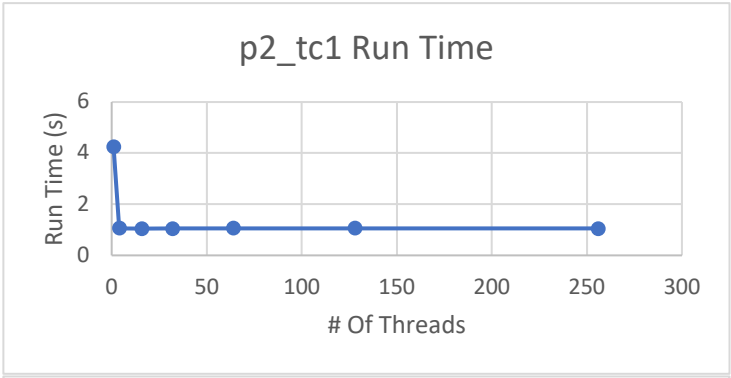
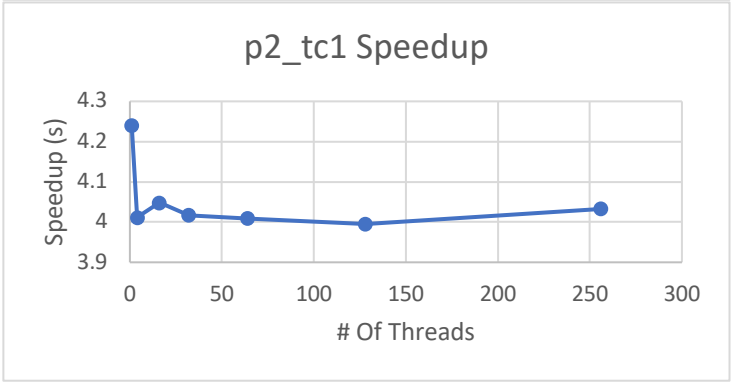
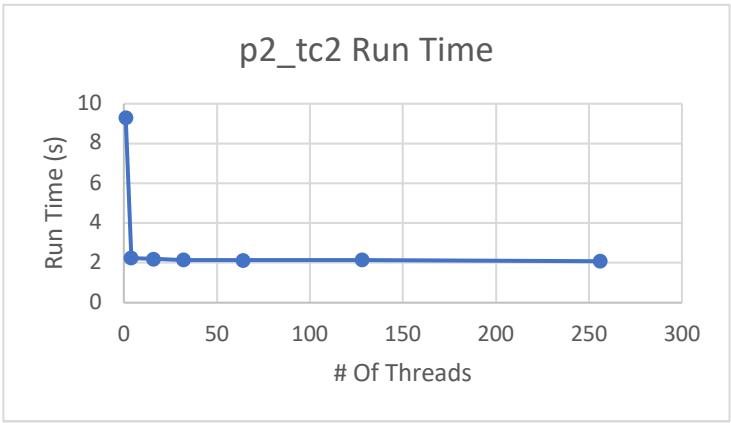
```
Architecture:        x86_64
CPU op-mode(s):      32-bit, 64-bit
Byte Order:          Little Endian
CPU(s):              48
On-line CPU(s) list: 0-47
Thread(s) per core:  2
Core(s) per socket:  12
Socket(s):           2
NUMA node(s):        2
Vendor ID:           GenuineIntel
CPU family:          6
Model:               62
Model name:          Intel(R) Xeon(R) CPU E5-2695 v2 @ 2.40GHz
```

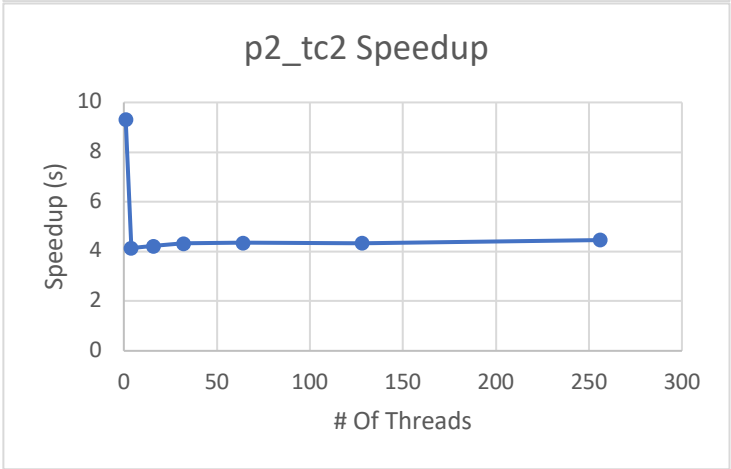
The experimental setup consists of a Linux server (cs3.utdallas.edu) with 48 CPUs. Based on observations from the included graphs, it can be generally expected that the time taken to compute the hash value decreases when the number of threads increases. There are exceptions when this does not happen, which can likely be attributed to a normal deviation in CPU performance, possibly due to the number of users connected to the server or other outside factors. Yet in almost every case, the run time decreases as the number of threads increased. However, the speedup achieved increased as the number of threads also increased. The speedup is not directly proportional to the number of threads. The biggest difference is seen in the run time for 1 thread vs the run time for 4 threads. Going from 1 to 4 makes a large difference, but every incremental addition to the number of threads after that only results in a marginal decrease in runtime.

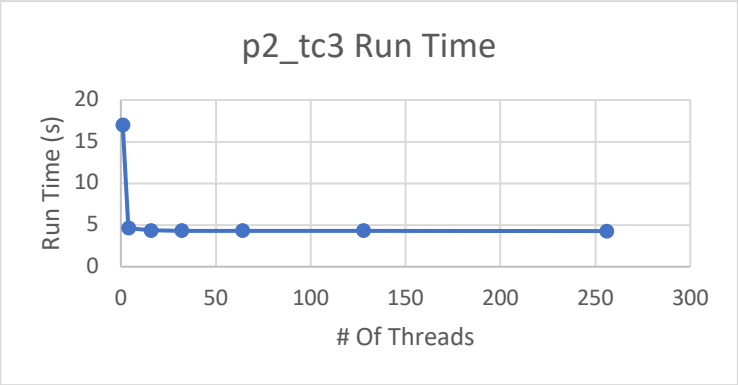
Graphs of Run Time vs # Of Threads, and Speedup vs # Of Threads are included below. After the initial drop with the introduction of more than 1 thread, the graph of Run Time vs # Of Threads gradually slopes downwards, and the graph of Speedup vs # Of Threads gradually slopes upwards.

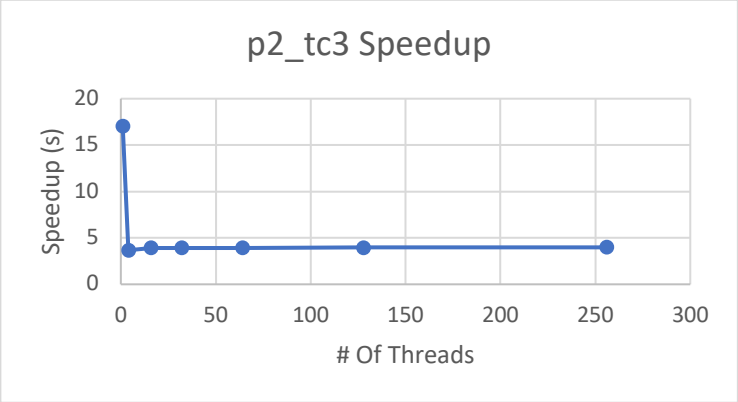

p2_tc1 Run Time
Run Time (s)
6
4
2
0
0
50
100
150
200
250
300
Of Threads

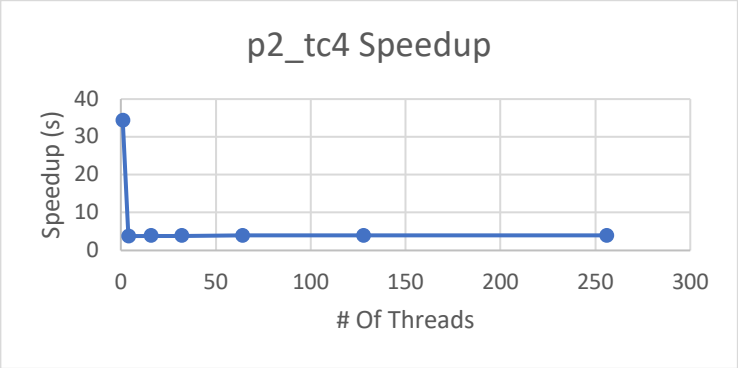

p2_tc1 Speedup
Speedup (s)
4.3
4.2
4.1
4
3.9
0
50
100
150
200
250
300
Of Threads

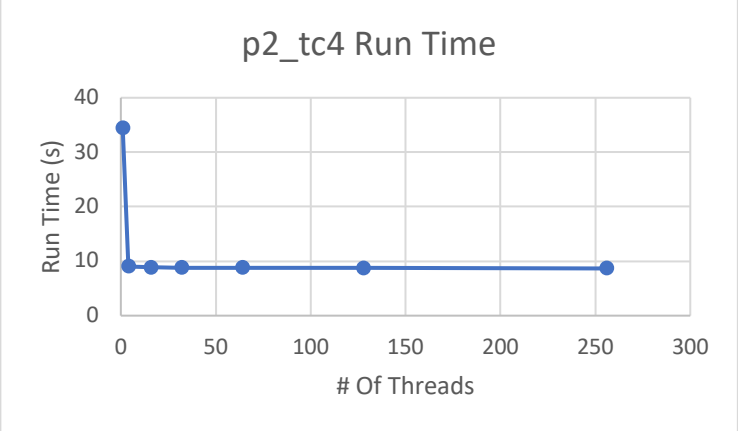

p2_tc2 Run Time
Run Time (s)
10
8
6
4
2
0
0
50
100
150
200
250
300
Of Threads


p2_tc2 Speedup
Speedup (s)
10
8
6
4
2
0
0
50
100
150
200
250
300
Of Threads


p2_tc3 Run Time
Run Time (s)
20
15
10
5
0
0
50
100
150
200
250
300
Of Threads


p2_tc3 Speedup
Speedup (s)
20
15
10
5
0
0
50
100
150
200
250
300
Of Threads


p2_tc4 Speedup
Speedup (s)
40
30
20
10
0
0
50
100
150
200
250
300
Of Threads


p2_tc4 Run Time
Run Time (s)
40
30
20
10
0
0
50
100
150
200
250
300
Of Threads