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Assignment 3

1. 2/3 time = 0.6667
    a. $1 - (0.6667^5) =$
    b. 1 – 0.1317 = 86.83% CPU utilization
2. See assignment
3. Tables

Test file: medium.txt			
# threads	Observed Timing	Observed speedup compared to original	Expected speedup
original program	19.01		1
1	19.094	0.993243951	1
2	9.728	1.954152961	2
3	6.56	2.897865854	3
4	5.002	3.800479808	4
8	3.698	5.140616549	8
16	3.792	5.013185654	16

Test file: hard.txt			
# threads	Observed Timing	Observed speedup compared to original	Expected speedup
original program	6.789		1
1	6.493		1
2	3.321	2.044263776	2
3	2.243	3.026749889	3
4	1.709	3.972498537	4
8	1.248	5.439903846	8
16	1.252	5.422523962	16

Test file: hard2.txt			
# threads	Observed Timing	Observed speedup compared to original	Expected speedup
original program	6.473		1
1	6.471	1.000309071	1
2	3.307	1.957363169	2
3	2.215	2.92234763	3
4	1.701	3.805408583	4
8	1.245	5.199196787	8
16	1.251	5.174260592	16

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The results of my program are what I had expected. As testing on the CPSC Linux servers you are allocated a limited number of cores and I expected to see diminishing returns after 4 threads. Now, since I allocated 4 threads to do work, and I run the main thread I am running a total of n + 1 threads in the entire program (note that the main thread is not operating on the prime). I expect to see slowdowns because of this when the thread count is surpassing the number of cores.

Also, I would like to note that my program creates and destroys threads on every large number. This will add to the time.