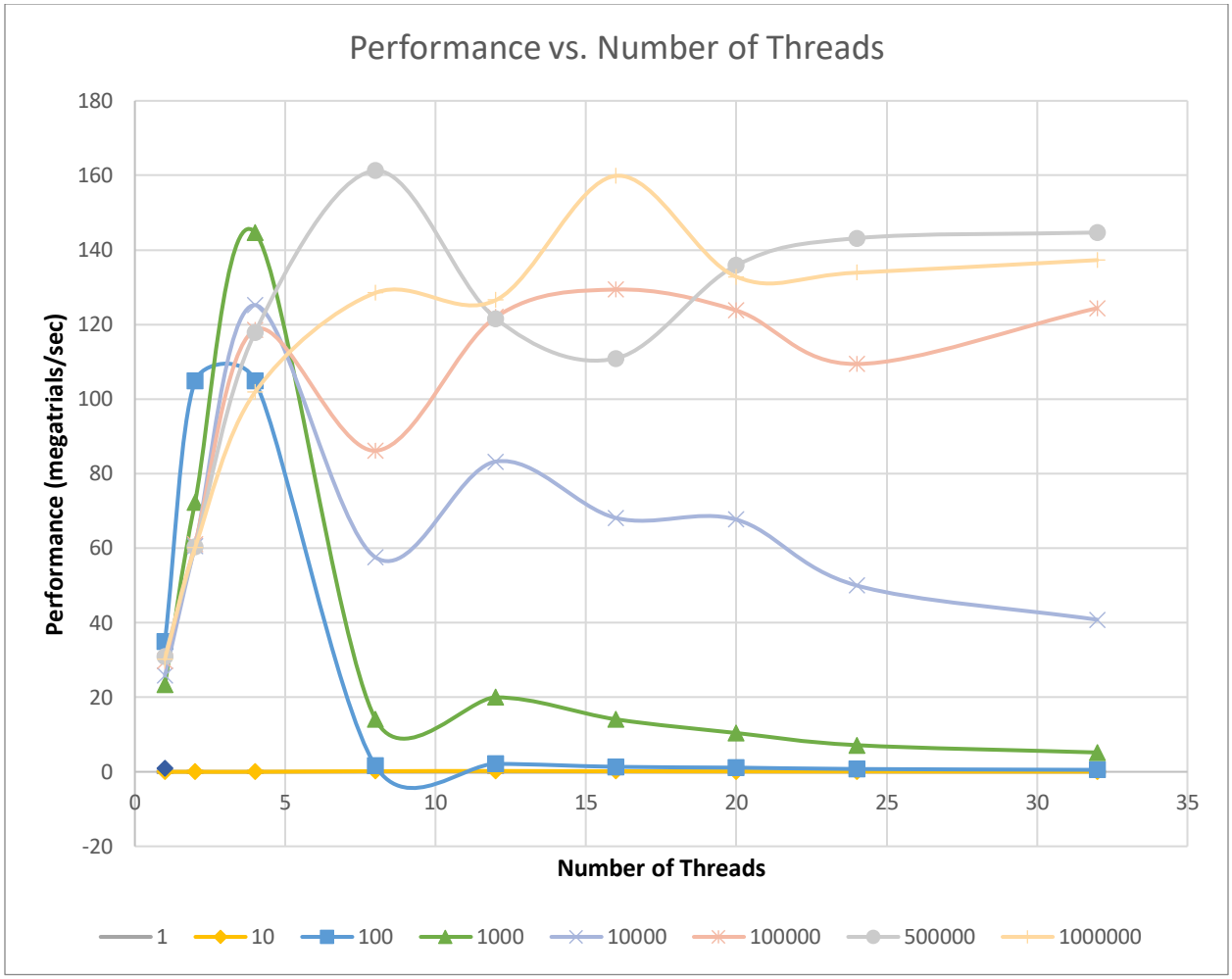
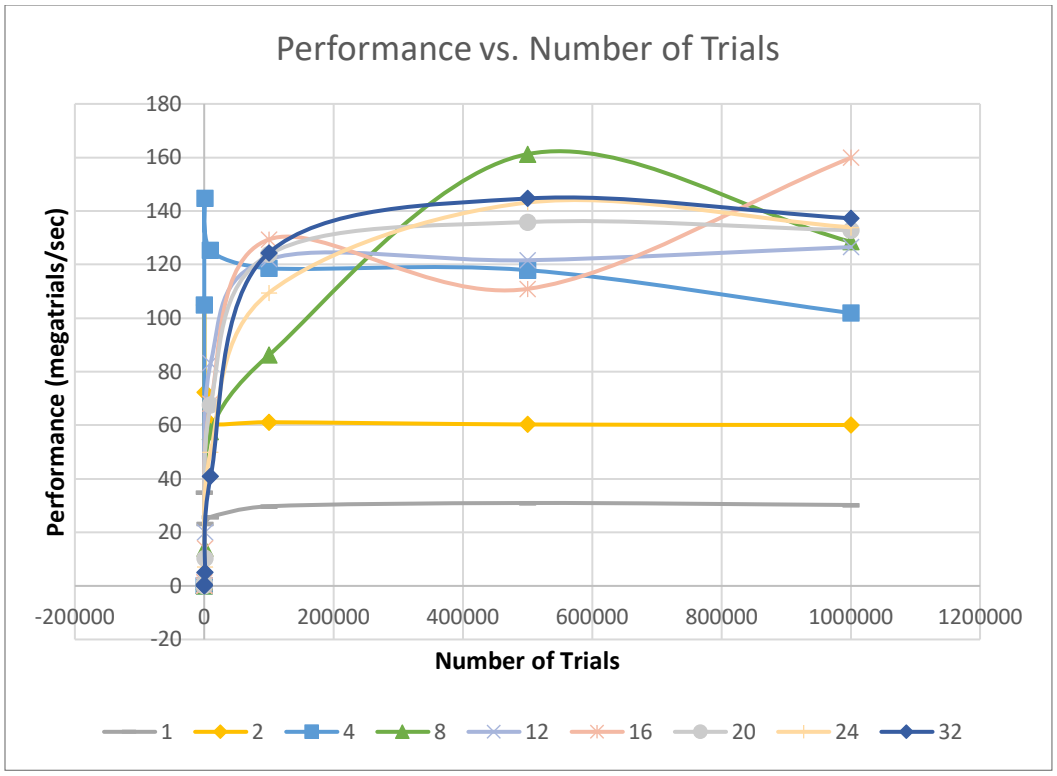
Bennett Hamilton
hamibenn@oregonstate.edu

Project 1 Report

	1	10	100	1000	10000	100000	500000	1000000
1	0	0	34.95	23.3	25.76	29.73	30.96	30.21
2	0	0	104.86	72.32	60.61	61.12	60.29	60.09
4	0	0	104.86	144.63	125.2	118.62	117.92	101.89
8	0.02	0.16	1.57	14.12	57.54	86.14	161.24	128.49
12	0.02	0.22	2.13	19.97	83.22	121.96	121.6	126.52
16	0.01	0.15	1.33	14.07	68.09	129.37	110.91	159.87
20	0.01	0.11	1.12	10.41	67.65	123.76	135.87	132.8
24	0.01	0.08	0.75	7.15	49.99	109.4	143.14	133.9
32	0.01	0.05	0.52	5.18	40.8	124.39	144.67	137.27





To estimate the probability I averaged all the probability outputs using excel (ie. = AVERAGE("probability cells")) and got approx. 25.83% success rate

For calculating the parallel fraction I used the formula Fp = (n/(n-1))(1 – 1/performance) at 1,000,000 trials. (used excell)

Fp when n = 2 = (2/(2-1))(1 – 1/60.09) = 1.96671659

Fp when n = 4 = (4/(4-1))(1 – 1/ 101.89) = 1.32024733

Fp when n = 6 = (n/(n-1))(1 – 1/performance) = 1.13396262

Fp when n = 8 = (n/(n-1))(1 – 1/performance) = 1.08228667

Fp when n = 12 = (n/(n-1))(1 – 1/performance) = 1.05999458

Fp when n = 16 = (n/(n-1))(1 – 1/performance) = 1.04470514

Fp when n = 20 = (n/(n-1))(1 – 1/performance) = 1.03568529

Fp when n = 24 = (n/(n-1))(1 – 1/performance) = 1.02473815

Fp average = 1.20854205

I’m not sure why my graphs/data is not as consistent. It may have something to do with my computer or some errors in my code. When looking at performance vs. number of threads we can see that there is a number of threads where performance drops dramatically. This may have to do with my computer only being able to run a specific number of threads at a time before performance no longer increases or may be caused by a low number of trials so the data is skewed. As the number of trials increased we can see a more stable performance increase until it plateaus. Most performances peak around 4-8 threads. When looking at the inverse we can see a greater plateau. This gives us a better indication of the peak performance based on thread count. For example, 2 threads reach a peak performance of 60 megatrials/sec and the peak performance tends to improve as the number of threads increase. With one outlier however, it appears that 8 threads have a greater overall performance rate which is unexpected. I’m not sure what is contributing to this.