CS-575 Parallel Programming

Project 1

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1Q. Correct probability:

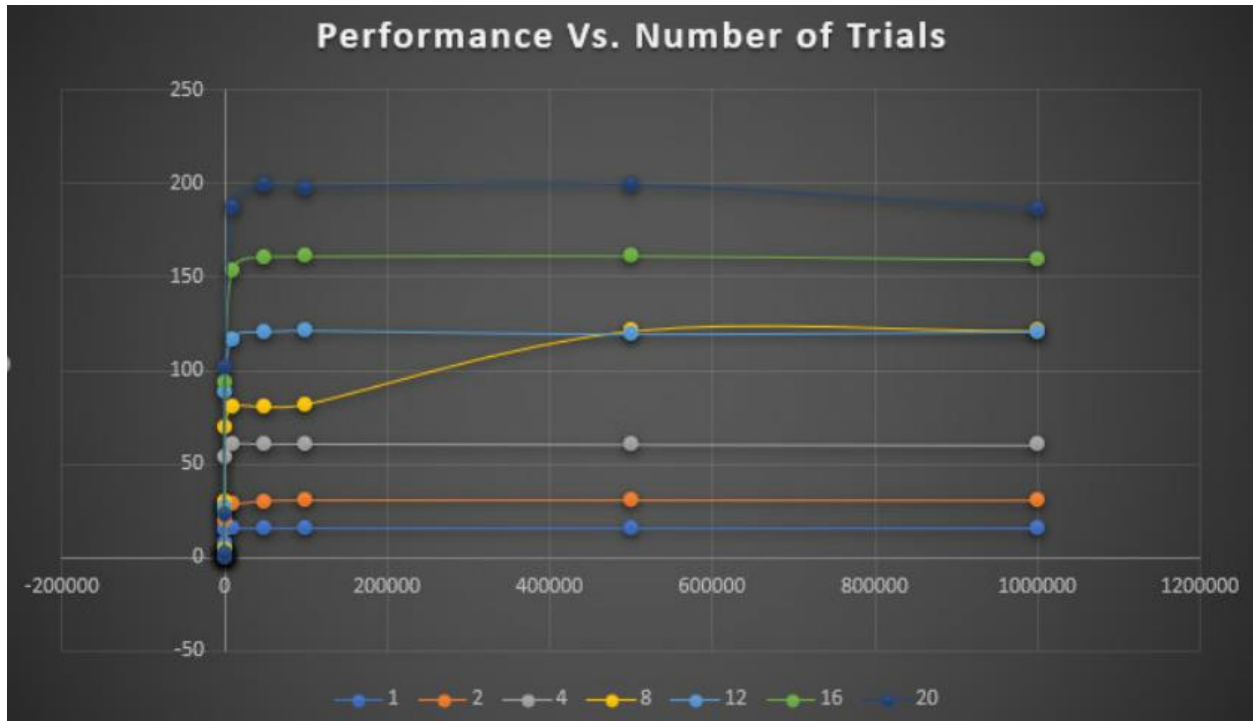Ans:

The probability of the 20 Threads with 1000000 trials is
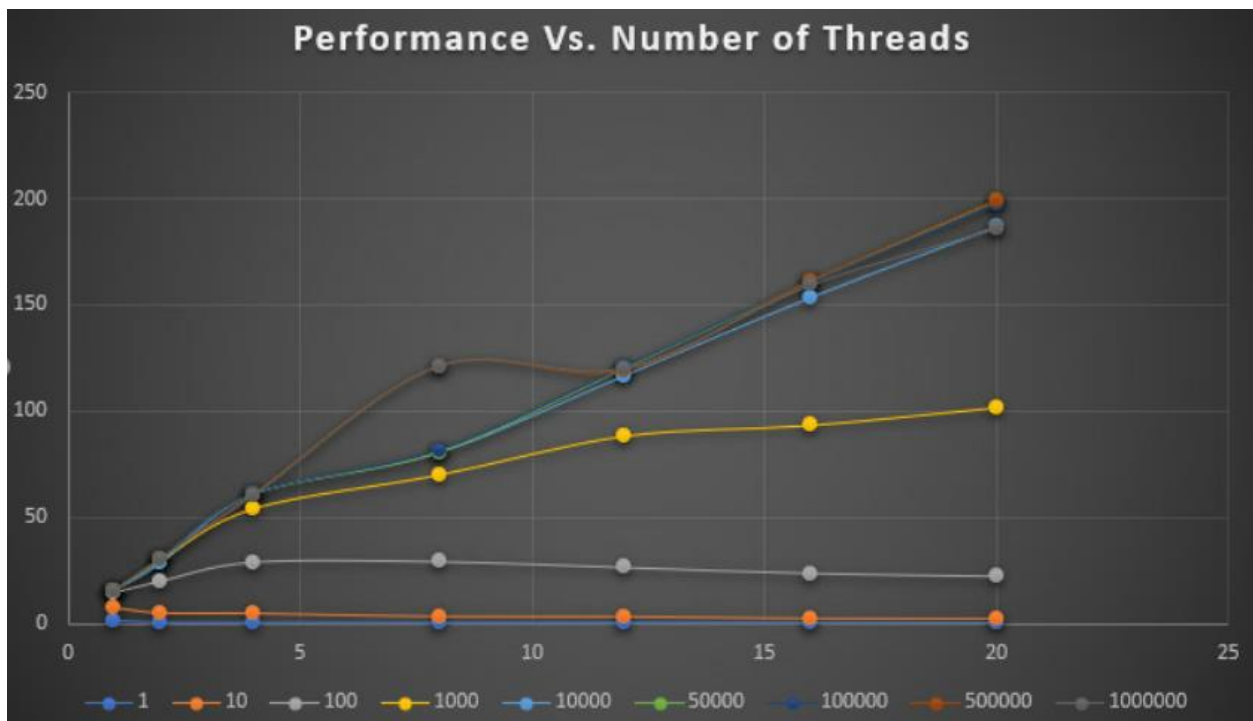
29.10

Number Of Threads	Number Of Tries	Probability
1	1000000	29.09%
2	1000000	29.13%
4	1000000	29.05%
8	1000000	29.07%
16	1000000	29.12
20	1000000	29.10

2Q. Good graph of performance vs. number of trials

3Q. Good graph of performance vs. number of threads

4Q. Compute Fp, the Parallel Fraction

```
Speed = (Execution time with one thread) / (Execution
time with Twenty threads) = (Performance with Twenty
            threads) / (Performance with one thread)

        float Fp = (20./19.)*( 1. - (1./S) )
```

Ans:

Speed = 120.29/15.27= 7.87753765553

Fp= (12/11) *(1-(1/(7.87753765553)))= 0.95242557758

Miscellaneous

Threads	Tries	Probability	Performance
1	1	100.00%	1.39
1	10	60.00%	7.71
1	100	36.00%	14.54
1	1000	28.20%	15.34
1	10000	28.56%	15.33
1	50000	28.89%	15.25
1	100000	29.03%	15.33
1	500000	29.10%	15.26
1	1000000	29.09%	15.27
2	1	0.00%	0.52
2	10	30.00%	5.07
2	100	30.00%	19.9
2	1000	30.20%	29.37
2	10000	29.25%	28.27
2	50000	29.36%	30.08
2	100000	29.19%	30.4
2	500000	29.16%	30.43
2	1000000	29.13%	30.28
4	1	0.00%	0.5
4	10	30.00%	4.79
4	100	32.00%	29.07
4	1000	28.80%	53.97
4	10000	28.74%	60.78
4	50000	29.27%	60.75
4	100000	29.05%	60.88
4	500000	29.09%	60.53
4	1000000	29.05%	60.18

8	1	0.00%	0.35
8	10	0.00%	3.29
8	100	30.00%	29.34
8	1000	27.80%	69.93
8	10000	28.89%	80.56
8	50000	29.10%	80.52
8	100000	29.18%	81.73
8	500000	29.16%	121.1
8	1000000	29.09%	121.11
12	1	100.00%	0.25
12	10	30.00%	3.19
12	100	23.00%	26.55
12	1000	29.50%	88.25
12	10000	28.58%	116.9
12	50000	29.17%	120.24
12	100000	29.22%	120.99
12	500000	29.08%	119.07
12	1000000	29.07%	120.29
16	1	0.00%	0.23
16	10	40.00%	2.25
16	100	33.00%	23.74
16	1000	30.80%	93.3
16	10000	29.52%	153.63
16	50000	29.06%	160.74
16	100000	29.07%	161.05
16	500000	29.17%	161.27
16	1000000	29.12%	159.26
20	1	0.00%	0.22
20	10	40.00%	2.19
20	100	36.00%	22.36
20	1000	30.20%	101.67
20	10000	29.78%	187.11
20	50000	29.21%	199.08
20	100000	29.02%	197.69
20	500000	29.09%	198.88
20	1000000	29.10%	186.02