CS 342 - Operating Systems

HW1

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Section 3

Part A)

ChildCount/MaxInt Test1	1000	5000	10000	25000	50000
1	0,167	2,374	12,359	116,111	N/A
5	0,154	1,394	4,933	23,379	187,018
10	0,115	1,558	4,114	20,936	129,146
20	0,114	1,294	3,759	17,08	71,952
30	0,123	1,159	3,632	17,176	60,313
40	0,147	1,165	3,43	14,47	59,897
50	0,15	0,984	3,418	14,769	53,773

Figure 1 : Values for test 1 in seconds

ChildCount/MaxInt Test2	1000	5000	10000	25000	50000
1	0,168	2,992	7,017	109,464	N/A
5	0,115	1,334	4,623	26,216	181,712
10	0,111	1,294	3,729	18,718	127,315
20	0,128	1,183	3,742	17,63	73,895
30	0,113	1,174	3,506	16,093	68,502
40	0,168	1,261	3,509	14,822	57,381
50	0,163	1,137	3,432	13,965	56,818

Figure 2 : Values for test 2 in seconds

ChildCount/MaxInt Test3	1000	5000	10000	25000	50000
1	0,145	3,378	10,648	113,713	N/A
5	0,123	1,704	5,302	22,893	187,018
10	0,118	1,706	3,713	22,873	124,718
20	0,103	1,391	3,783	18,715	73,617
30	0,116	1,264	3,517	17,957	59,871
40	0,172	1,52	3,422	15,674	62,063
50	0,154	1,253	3,054	15,072	55,792

Figure 3 : Values for test 3 in seconds

ChildCount/MaxInt Avarage	1000	5000	10000	25000	50000
1	0,16	2,914	9,967	113,569	N/A
5	0,13	1,501	5,114	24,654	184,502
10	0,114	1,538	3,925	20,817	126,584
20	0,115	1,242	3,764	17,862	74,658
30	0,116	1,195	3,589	17,361	63,562
40	0,117	1,343	3,496	15,142	60,149
50	0,155	1,117	3,238	14,769	55,429

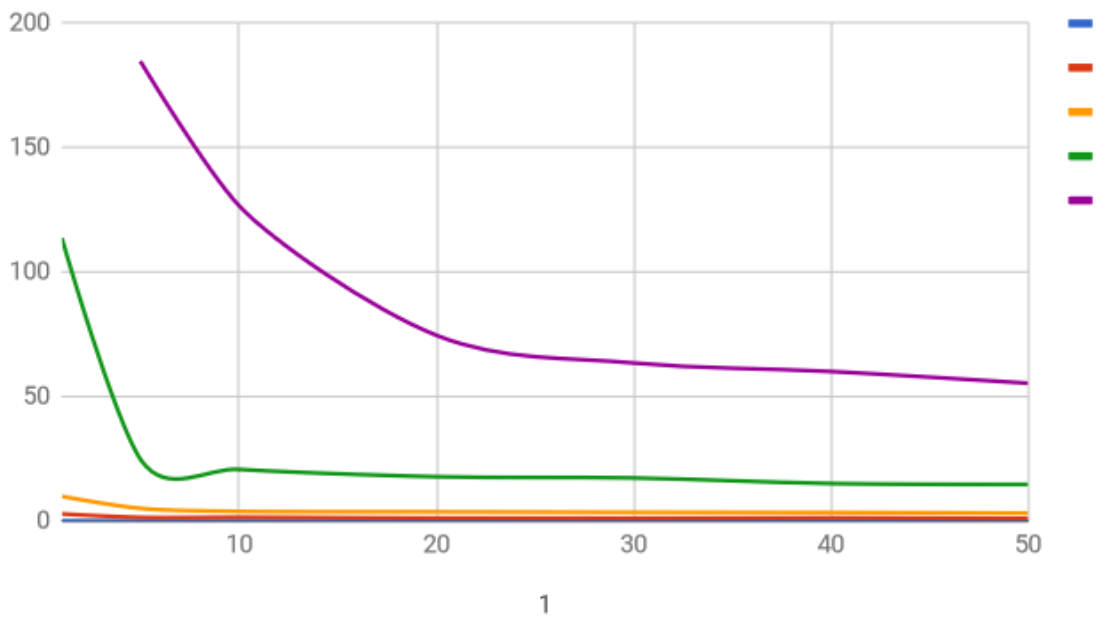**Figure 4: Avarage time values for tests in seconds**

Figute 5: Avarage time taken for tests in a graph, colors represents maxInts in increasing order

Conclusions:

As it can be seen on the graphs above, as the childCount increases, the time it takes to complete execution decreases in every case. This is expected since in the first sequence, it detects primes as many as the number of children and stops removing the multiple values of it, resulting in a faster execution. Also, since we are closing the pipes and stop writing anything until a prime is detected, the number increases rapidly till hitting a prime, fastening the process. This is the explanation behind the decrease of time as the childCount increases.

We can also observe an exponential decrease, which is expected also. This is expected because the time decreases as pipe number increases, which also increases as the childCount increases.

It can be seen that as that as the childCount increases for the same number of maxInt, the time it takes doesn't increase in linear order, which also can be explained as the number of childs.