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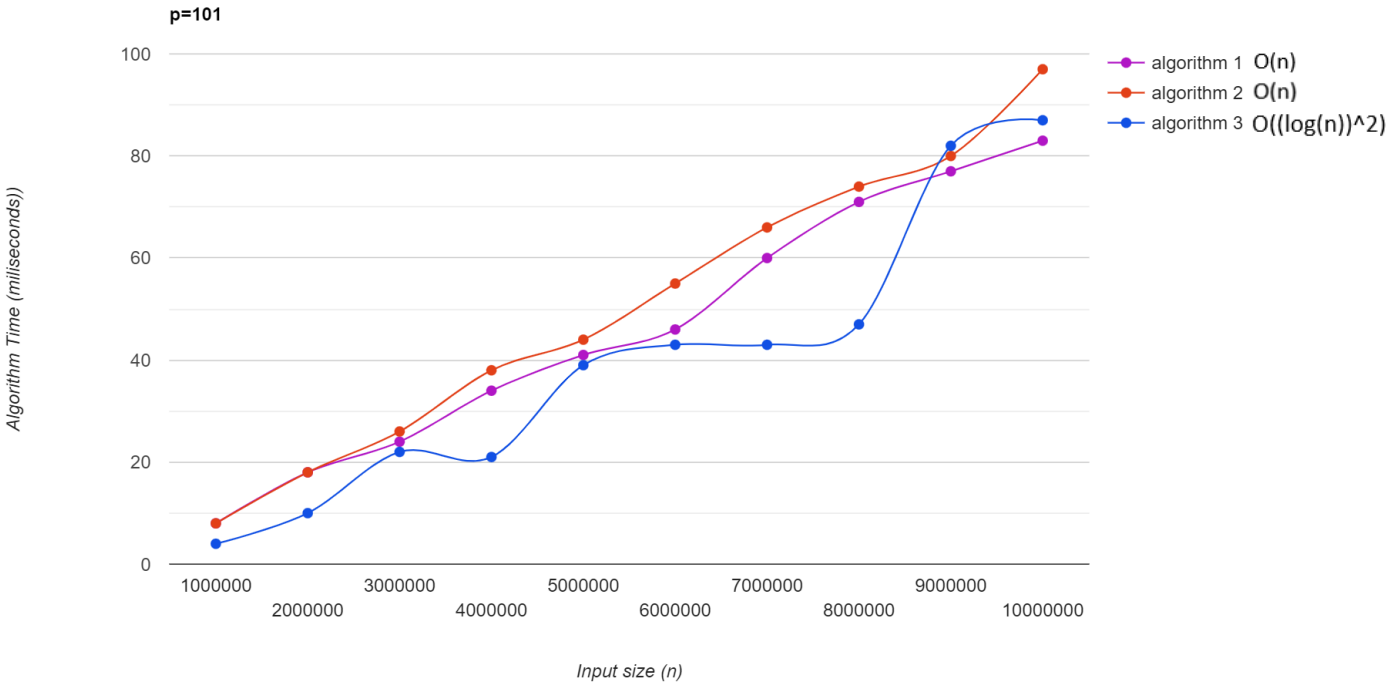
Course: Cs201-02

Table for algorithms:

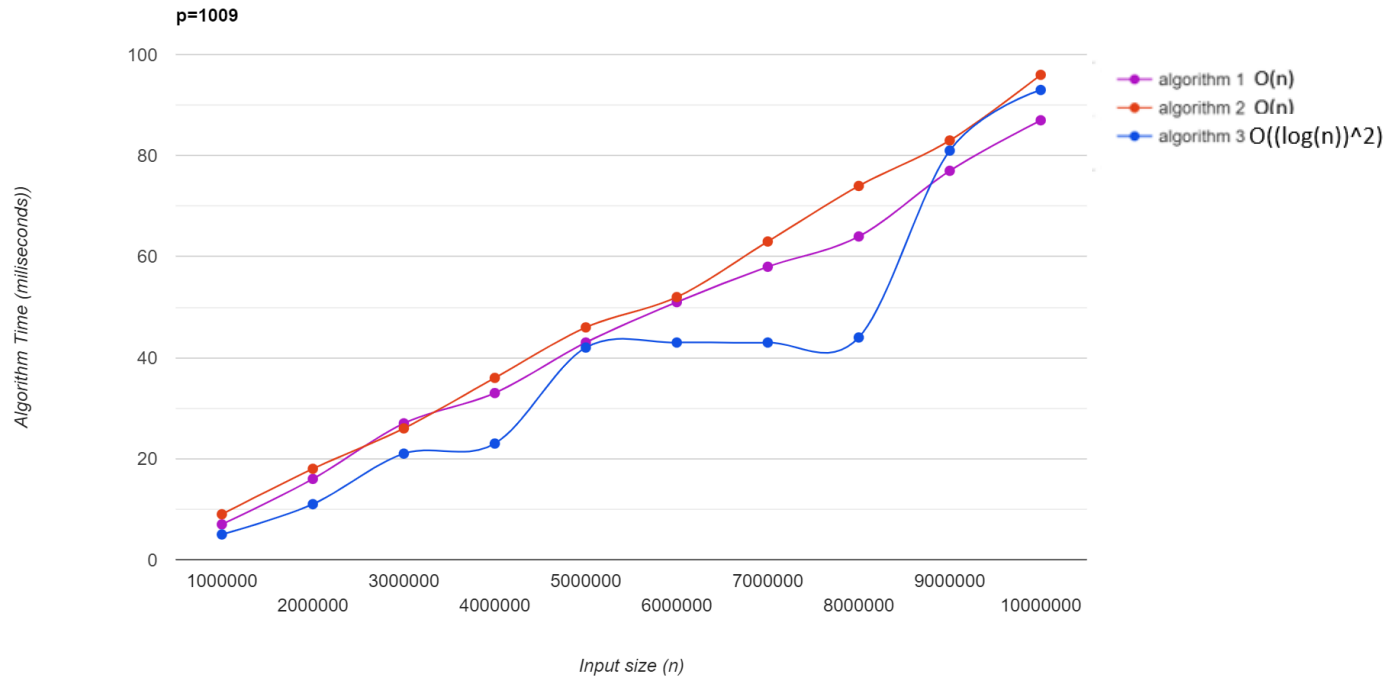
PS: 10^10 is not in the graphics. It is only here to show the value of over 1 minute.

n	Algorithm 1			Algorithm 2			Algorithm 3		
	101	1009	10007	101	1009	10007	101	1009	10007
10^3	8	7	9	8	9	9	4	5	5
2*10^3	18	16	17	18	18	19	10	11	10
3*10^3	24	27	25	26	26	28	22	21	22
4*10^3	34	33	35	38	36	37	21	23	22
5*10^3	41	43	43	44	46	45	39	42	42
6*10^3	46	51	48	55	52	54	43	43	41
7*10^3	60	58	60	66	63	62	43	43	43
8*10^3	71	64	67	74	74	77	47	44	41
9*10^3	77	77	78	80	83	117	82	81	81
10^4	83	87	86	97	96	93	87	83	83
10^10	7903	7488	7545	43778	53574	63574	159497	159404	161166

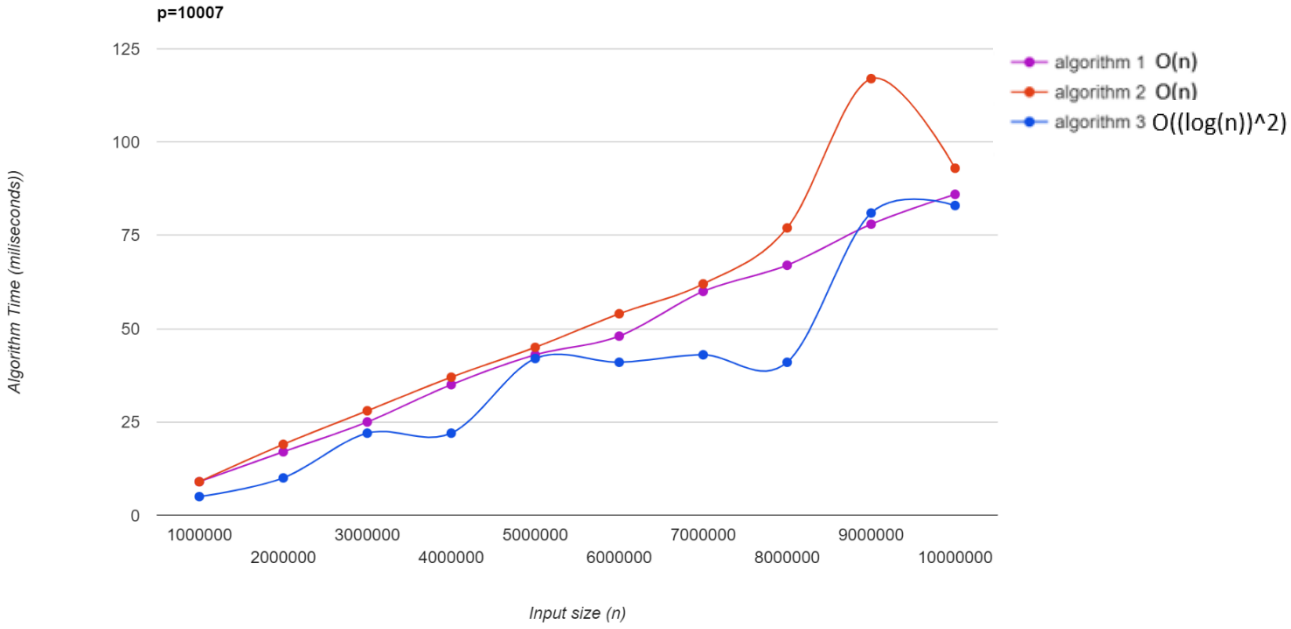
Graph for p=101:



Graph for p =1009



Graph for p = 10007



Discussion on Algorithm Analysis

I gave n multiples of 10^6 with 3 different p values that were already given. I found milliseconds for each value and put it in the table. The results for first two algorithms are similar to each other with little differences but all three algorithms have varying time complexities. The results of varying input size are showed in terms of milliseconds on y-axis. You can see in algorithm 3's graphs that it goes as logarithmic graph and then it increases and it continues as logarithmic again. As n got larger we can observe algorithm 1 is the most efficient and algorithm 3 is the least efficient when we compare time complexities. I did not put the n value where time complexity is over 1 minute because it disrupts the whole graph and all the other values does not show clearly.

Computer Spesifications:

Model:	VivoBook_ASUSLaptop X432FLC_S432FL
Processor:	Intel(R) Core(TM) i7-10510U CPU @ 1.80GHz 2.30 GHz
RAM:	16,0 GB (kullanılabilir: 15,8 GB)
Sistem türü	64 bit işletim sistemi, x64 tabanlı işlemci
Graphics:	Intel(R) UHD Graphics