HACETTEPE UNIVERSITY
SOFTWARE LABORATORY II
ASSIGNMENT 1

ONUR TOLGA KESEMEN
21228511

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1 PART 1: RUNNING TIME ANALYSIS

1.1 Total Cost of Algorithm

I found costs for all units in the algorithm given below. Then calculated total cost as c1 + (n+1)c2 + n*c3 + n*(n+1)*c4 + n*n*c5+n*n*c6 + n*c7. The tilde notation for that algorithm is n*n

	Unit Cost	Times
j:=n	c1	1
while j >=1 **do**	c2	n+1
begin		
i:=j	c3	n
while i>=1 **do**	c4	n(n+1)
begin		
x:=x + 1	c5	n*n
i:= **floor** (i/2)	c6	n*n
end		
j:= **floor** (j/2)	c7	n
end		

1.2 Measurement Of Runtime

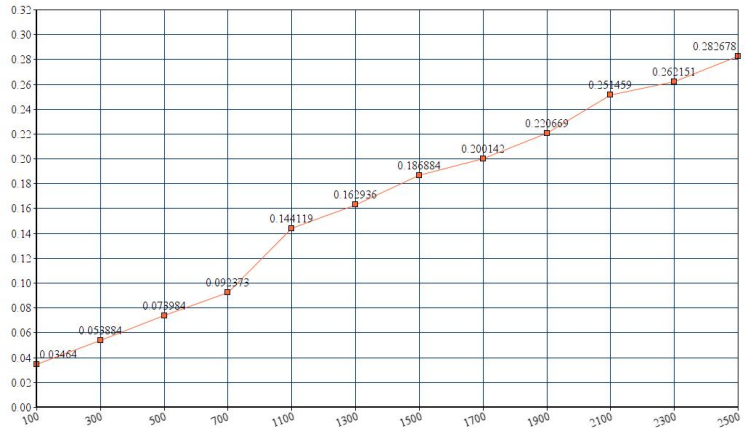
Algorithms/n	100	300	500	700	1100	1300	1500	1700	1900	2100	2300	2500
Finding second largest element	0,03464	0,053884	0,073984	0,092373	0,144119	0,162936	0,186884	0,200142	0,220669	0,251459	0,262151	0,282678
Stooge sort algorithm	8,209653	29,995146	198,776485	199,512048	1701,556015	1547,838321	1729,484742	4008,901595	4328,165861	3963,396762	4031,804546	13776,243882
Radix algorithm	0,117605	0,35709	0,936988	1,282104	1,568203	1,794004	2,081387	2,791291	2,636907	2,884519	3,234339	3,416091
Shaker sort algorithm	0,146257	1,201705	2,80241	3,312599	4,929555	5,94523	7,153349	8,510293	8,851132	9,814206	9,395106	10,131097
Maximum subarray algorithm	0,111618	0,523447	0,827081	1,229502	2,31403	2,74938	3,468693	5,469253	6,39897	7,067392	7,456556	6,570886

*Time measurement is in milisecond

1.2.1 Finding Second Largest Element In An Array

Algorithms /n	100	300	500	700	1100	1300	1500	1700	1900	2100	2300	2500
Finding second largest element	0,03464	0,053884	0,073984	0,092373	0,144119	0,162936	0,186884	0,200142	0,220669	0,251459	0,262151	0,282678

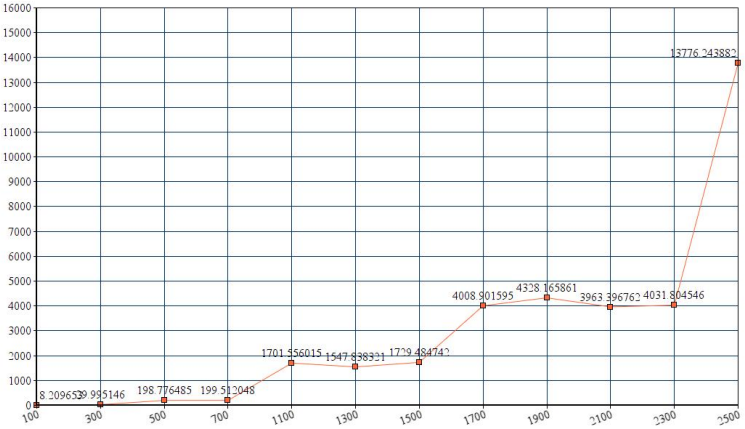
*Time measurement is in milisecond



1.2.2 Stooge Sort Algorithm

Algorithms /n	100	300	500	700	1100	1300	1500	1700	1900	2100	2300	2500
Stooge sort algorithm	8,209653	29,995146	198,776485	199,512048	1701,556015	1547,838321	1729,484742	4008,901595	4328,165861	3963,396762	4031,804546	13776,243882

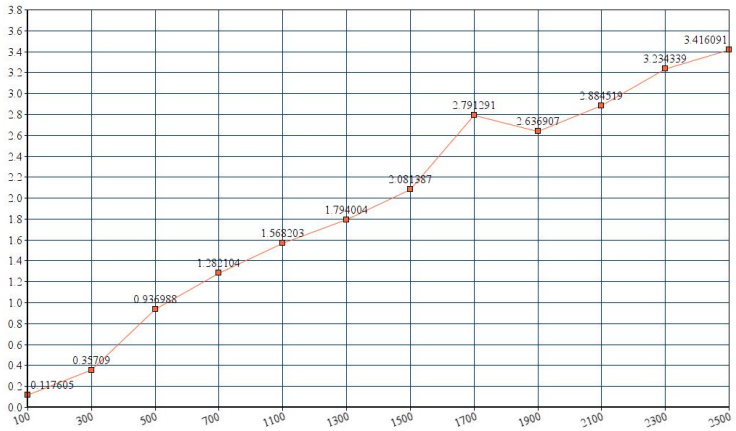
*Time measurement is in milisecond



1.2.3 Radix Sort Algorithm

Algorithms/n	100	300	500	700	1100	1300	1500	1700	1900	2100	2300	2500
Radix algorithm	0,117605	0,35709	0,936988	1,282104	1,568203	1,794004	2,081387	2,791291	2,636907	2,884519	3,234339	3,416091

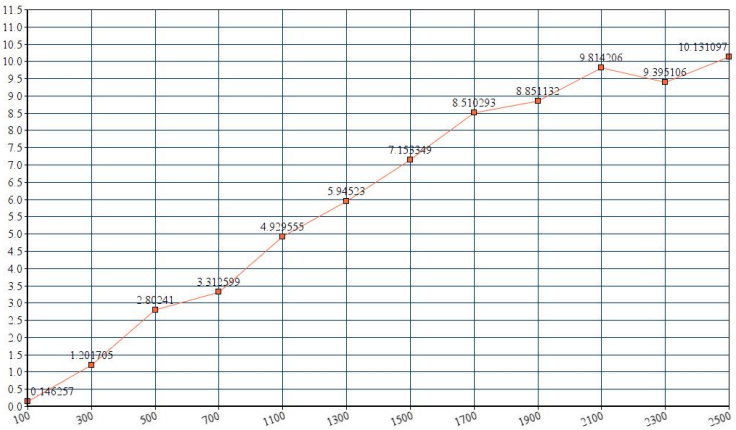
*Time measurement is in milisecond



1.2.4 Shaker Sort Algorithm

Algorithm s/n	100	300	500	700	1100	1300	1500	1700	1900	2100	2300	2500
Shaker sort algorithm	0,146257	1,201705	2,80241	3,312599	4,929555	5,94523	7,153349	8,510293	8,851132	9,814206	9,395106	10,131097

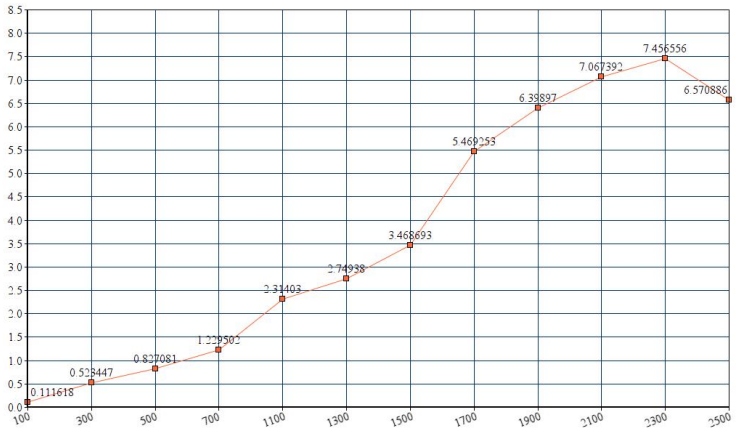
*Time measurement is in milisecond



1.2.5 Maximum Subarray Algorithm

Algorithm s/n	100	300	500	700	1100	1300	1500	1700	1900	2100	2300	2500
Maximum subarray algorithm	0,111618	0,523447	0,827081	1,229502	2,31403	2,74938	3,468693	5,469253	6,39897	7,067392	7,456556	6,570886

*Time measurement is in milisecond



2 REFERENCES

http://web.cs.hacettepe.edu.tr/ bbm202/slides/06-heaps.pdf