Selection SORT	10.000 Data	40.000 Data	100.000 Data	150.000 Data	180.000 Data
1. Random Array	0,03	0,429	2,177	4,772	6,816
2.Random Array	0,032	0,37	2,156	4,732	6,815
3.Random Array	0,029	0,366	2,165	4,745	6,797
4.Random Array	0,03	0,35	2,099	4,846	7,256
5.Random Array	0,028	0,366	2,098	4,771	6,743
6.Random Array	0,029	0,373	2,099	4,684	6,73
7.Random Array	0,029	0,344	2,097	4,717	6,803
8.Random Array	0,028	0,346	2,135	4,764	6,774
9.Random Array	0,028	0,346	2,117	4,794	7,226
10.Random Array	0,028	0,342	2,122	4,683	6,732
11.Random Array	0,029	0,345	2,094	4,676	7,244
12.Random Array	0,029	0,347	2,083	4,676	6,722
13.Random Array	0,029	0,344	2,085	4,75	6,767
14.Random Array	0,029	0,346	2,084	4,746	6,782
15.Random Array	0,028	0,342	2,086	4,813	6,752
16.Random Array	0,029	0,345	2,082	4,677	7,222
17.Random Array	0,028	0,376	2,081	4,675	6,702
18.Random Array	0,029	0,356	2,088	4,668	6,703
19.Random Array	0,029	0,346	2,09	4,666	6,715
20.Random Array	0,029	0,347	2,088	4,674	6,71
1.Sorted Array	0,017	0,159	0,829	1,956	2,834
AVERAGE	10.000	40.000	100.000	150.000	180.000
Run Time	0,02895	0,3563	2,1063	4,72645	6,85
Expected Run Time(T *	0,001	0,016	1	2,25	3,24

Selection Sort Algorithm Run Time Graph
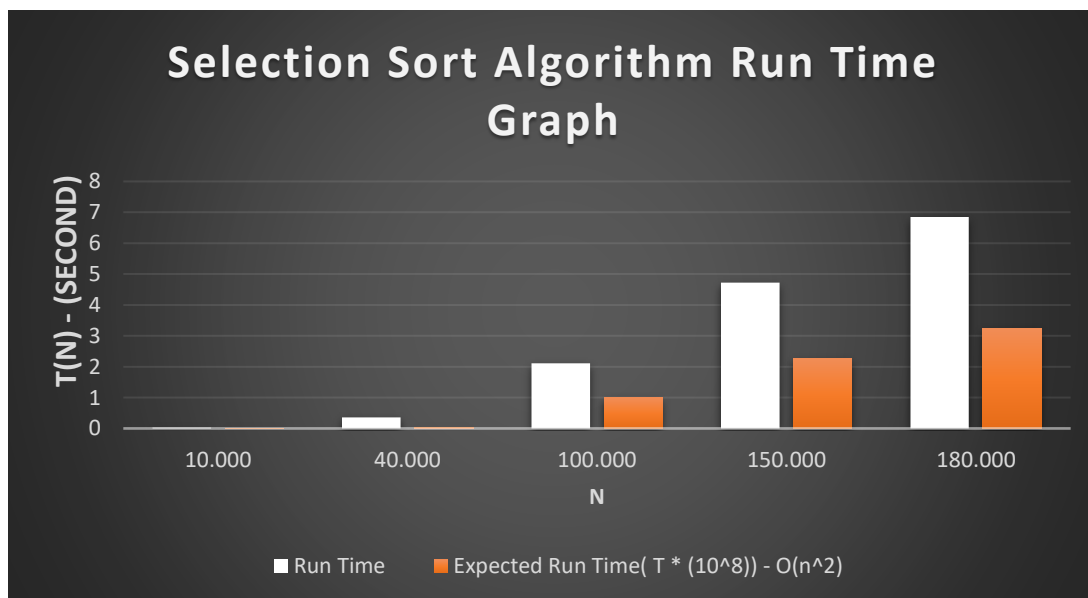
Bubble SORT	10.000 Data	40.000 Data	100.000 Data	150.000 Data	180.000 Data
1. Random Array	0.228	2.316	14.925	30,968	45,833
2.Random Array	0.197	2.177	13.680	24,993	45,727
3.Random Array	0.193	2.148	13.633	35,172	47,793
4.Random Array	0.174	2.188	13.444	30,502	45,725
5.Random Array	0.175	2.254	13.273	30,892	52,875
6.Random Array	0.177	2.338	14.298	30,824	45,917
7.Random Array	0.179	2.191	13.472	30,589	45,455
8.Random Array	0.176	2.217	13.039	29,964	45,686
9.Random Array	0.177	2.175	13.647	31,319	50,094
10.Random Array	0.182	2.152	13.015	29,077	44,446
11.Random Array	0.230	2.176	16.942	28,712	44,409
12.Random Array	0.178	2.152	15.502	29,898	45,267
13.Random Array	0.176	2.117	15.334	29,733	44,532
14.Random Array	0.177	2.170	15.304	29,734	42,527
15.Random Array	0.173	2.182	15.312	31,306	45,231
16.Random Array	0.178	2.221	15.377	30,957	45,389
17.Random Array	0.173	2.148	15.412	30,474	45,568
18.Random Array	0.174	2.165	15.105	34,627	45,137
19.Random Array	0.178	2.158	16.457	31,823	50,96
20.Random Array	0.174	2.187	14.328	30,956	45,407
1.Sorted Array	0.001	0.002	0.003	0,004	0,004
AVERAGE	10.000	40.000	100.000	150.000	180.000
Run Time	0,13845	2,194	14,575	30,626	46,198
Expected Run Time(T *	0,1	1,6	10	22,5	32,4
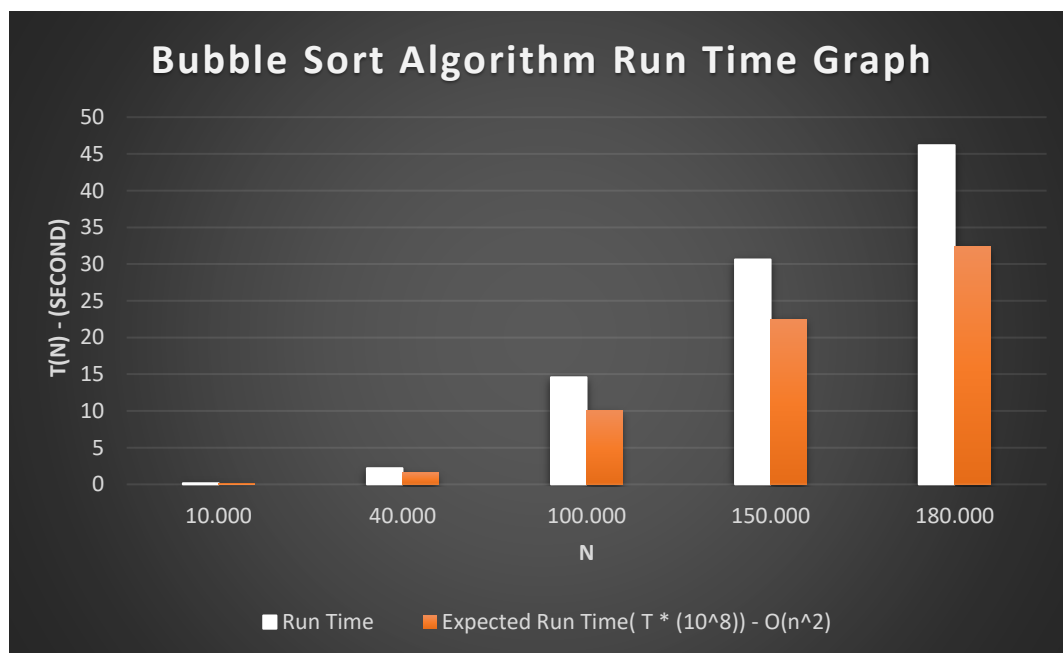
Bubble Sort Algorithm Run Time Graph

Insertion SORT	10.000 Data	40.000 Data	100.000 Data	150.000 Data	180.000 Data
Expected Run Time					
1. Random Array	0,021	0,197	1.225	2.716	3.720
2.Random Array	0,018	0,192	1.162	2.532	3.636
3.Random Array	0,018	0,190	1.210	2.540	3.660
4.Random Array	0,017	0,191	1.321	2.605	3.643
5.Random Array	0,018	0,194	1.176	2.566	3.656
6.Random Array	0,018	0,196	1.152	2.535	3.623
7.Random Array	0,017	0,193	1.186	2.551	3.663
8.Random Array	0,017	0,193	1.156	2.581	3.611
9.Random Array	0,016	0,192	1.175	2.580	3.640
10.Random Array	0,017	0,195	1.152	2.643	3.613
11.Random Array	0,023	0,193	1.163	2.540	3.595
12.Random Array	0,016	0,191	1.157	2.561	3.633
13.Random Array	0,018	0,193	1.167	2.560	3.656
14.Random Array	0,018	0,192	1.160	2.560	3.848
15.Random Array	0,017	0,197	1.147	2.534	3.568
16.Random Array	0,018	0,194	1.164	2.544	3.659
17.Random Array	0,018	0,194	1.167	2.531	3.683
18.Random Array	0,018	0,198	1.163	2.574	3.651
19.Random Array	0,017	0,194	1.150	2,565	3.568
20.Random Array	0,017	0,191	1.160	2,580	3.625
1.Sorted Array	0	0,001	0.002	0.001	0.001
AVERAGE	10.000	40.000	100.000	150.000	180.000
Run Time	0,018	0,194	1,176	2,569	3,648
Expected Run Time(T *	0,1	0,16	1	2,25	3,24

Insertion Sort Algorithm Run Time Graph
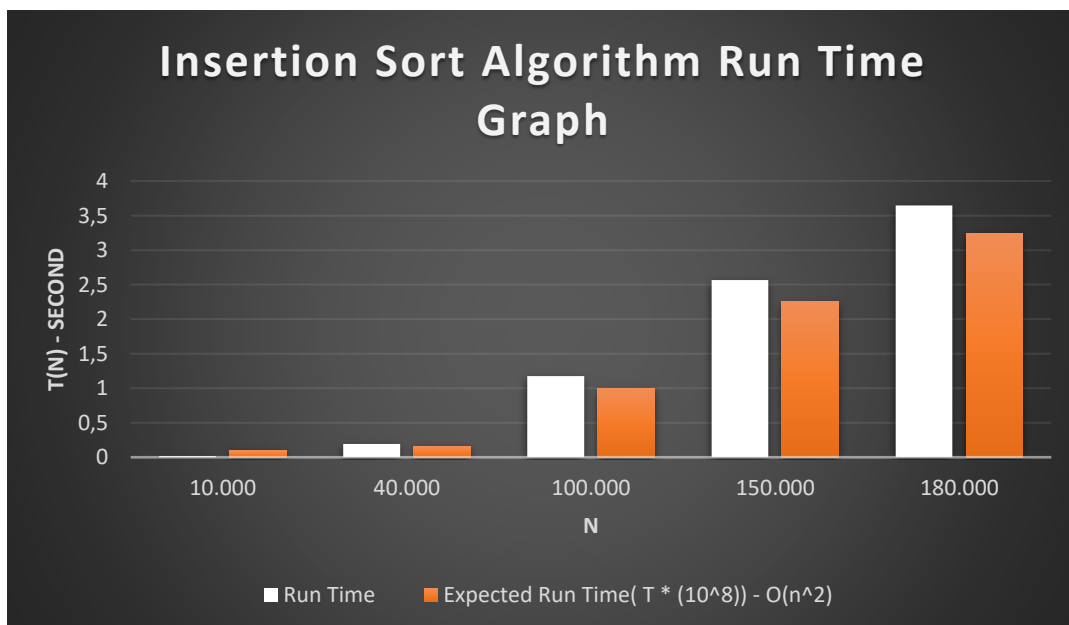
Shell SORT	10.000 Data	40.000 Data	100.000 Data	150.000 Data	180.000 Data
1. Random Array	0.004	0.009	0.020	0.026	0.032
2.Random Array	0.005	0.008	0.019	0.027	0.031
3.Random Array	0.003	0.008	0.019	0.027	0.031
4.Random Array	0.004	0.010	0.019	0.027	0.031
5.Random Array	0.004	0.009	0.018	0.027	0.031
6.Random Array	0.003	0.008	0.021	0.028	0.032
7.Random Array	0.004	0.008	0.021	0.027	0.031
8.Random Array	0.003	0.009	0.019	0.028	0.032
9.Random Array	0.004	0.009	0.020	0.027	0.030
10.Random Array	0.004	0.009	0.020	0.027	0.032
11.Random Array	0.004	0.008	0.020	0.027	0.030
12.Random Array	0.004	0.009	0.019	0.027	0.032
13.Random Array	0.004	0.008	0.019	0.027	0.031
14.Random Array	0.004	0.009	0.017	0.027	0.031
15.Random Array	0.005	0.009	0.019	0.026	0.032
16.Random Array	0.004	0.008	0.020	0.027	0.031
17.Random Array	0.003	0.009	0.019	0.028	0.030
18.Random Array	0.003	0.009	0.020	0.027	0.032
19.Random Array	0.003	0.009	0.019	0.027	0.031
20.Random Array	0.003	0.009	0.019	0.027	0.031
1.Sorted Array	0.001	0.005	0.013	0.008	0.008
AVERAGE	10.000	40.000	100.000	150.000	180.000
Run Time	0,003	0,008	0,019	0,027	0,031
Expected Run Time(T *	0,001	0,008	0,031	0,058	0,076
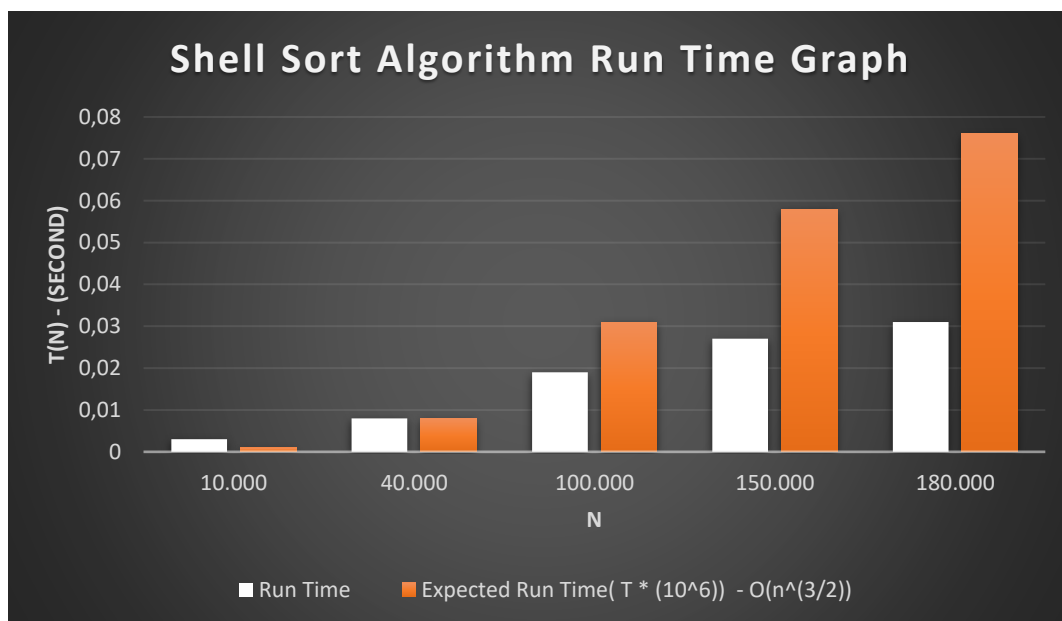
Merge SORT	10.000 Data	40.000 Data	100.000 Data	150.000 Data	180.000 Data
1. Random Array	0.004	0.011	0.029	0.034	0.043
2.Random Array	0.006	0.011	0.025	0.038	0.041
3.Random Array	0.004	0.013	0.025	0.036	0.043
4.Random Array	0.003	0.016	0.026	0.038	0.041
5.Random Array	0.004	0.012	0.025	0.040	0.041
6.Random Array	0.004	0.011	0.024	0.035	0.042
7.Random Array	0.004	0.011	0.025	0.038	0.041
8.Random Array	0.003	0.012	0.026	0.039	0.044
9.Random Array	0.004	0.011	0.024	0.037	0.043
10.Random Array	0.003	0.012	0.025	0.035	0.042
11.Random Array	0.005	0.013	0.028	0.036	0.041
12.Random Array	0.003	0.013	0.027	0.035	0.041
13.Random Array	0.003	0.012	0.025	0.037	0.040
14.Random Array	0.003	0.011	0.025	0.037	0.041
15.Random Array	0.004	0.014	0.025	0.035	0.041
16.Random Array	0.004	0.011	0.027	0.035	0.044
17.Random Array	0.003	0.011	0.025	0.036	0.043
18.Random Array	0.004	0.012	0.026	0.035	0.041
19.Random Array	0.003	0.012	0.026	0.036	0.040
20.Random Array	0.003	0.011	0.024	0.035	0.040
1.Sorted Array	0.002	0.007	0.013	0.021	0.022

AVERAGE	10.000	40.000	100.000	150.000	180.000
Run Time	0,003	0,012	0,025	0,036	0,041
Expected Run Time(T *	0,001	0,006	0,016	0,0255	0,06

Merge Sort Algorithm Run Time Graph
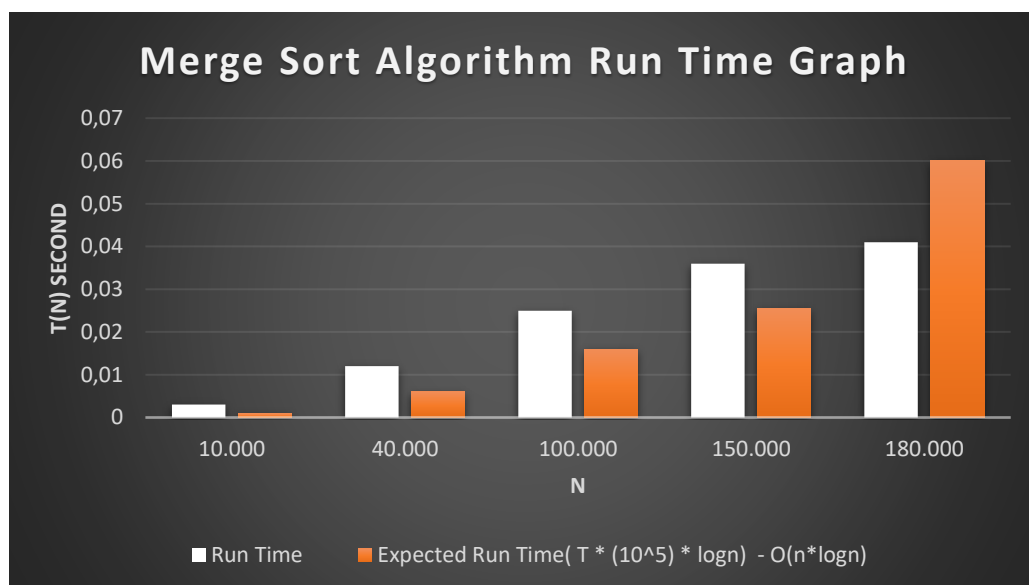
Heap SORT	10.000 Data	40.000 Data	100.000 Data	150.000 Data	180.000 Data
1. Random Array	0.016	0.039	0.049	0.061	0.076
2.Random Array	0.015	0.031	0.045	0.061	0.072
3.Random Array	0.015	0.031	0.050	0.064	0.069
4.Random Array	0.013	0.031	0.045	0.060	0.058
5.Random Array	0.014	0.033	0.048	0.060	0.068
6.Random Array	0.015	0.033	0.064	0.057	0.071
7.Random Array	0.013	0.031	0.045	0.062	0.066
8.Random Array	0.015	0.036	0.044	0.064	0.068
9.Random Array	0.014	0.039	0.046	0.059	0.069
10.Random Array	0.015	0.032	0.047	0.065	0.064
11.Random Array	0.014	0.028	0.047	0.058	0.066
12.Random Array	0.014	0.033	0.051	0.065	0.065
13.Random Array	0.015	0.028	0.048	0.060	0.070
14.Random Array	0.015	0.034	0.047	0.062	0.066
15.Random Array	0.015	0.036	0.049	0.060	0.071
16.Random Array	0.014	0.033	0.052	0.064	0.066
17.Random Array	0.016	0.038	0.049	0.061	0.065
18.Random Array	0.015	0.034	0.050	0.062	0.067
19.Random Array	0.014	0.036	0.054	0.063	0.065
20.Random Array	0.015	0.027	0.048	0.068	0.067
1.Sorted Array	0.010	0.017	0.018	0.023	0.027

AVERAGE	10.000	40.000	100.000	150.000	180.000
Run Time	0,014	0,033	0,048	0,061	0,067
Expected Run Time(T *	0,001	0,006	0,016	0,025	0,0306

Heap Sort Algorithm Run Time Graph
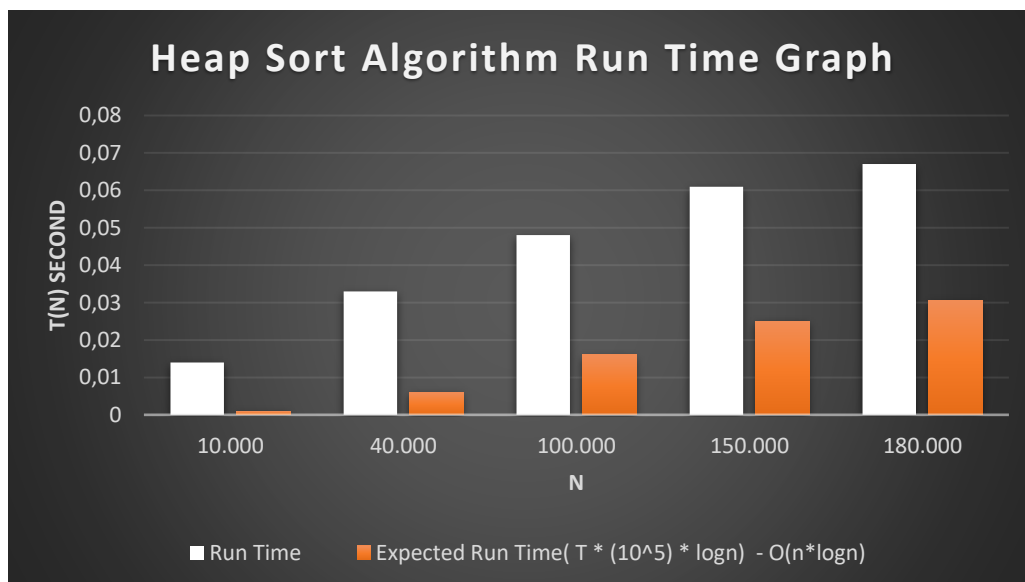
Quick SORT	10.000 Data	40.000 Data	100.000 Data	150.000 Data	180.000 Data
1. Random Array	0.008	0.017	0.063	0.068	0.119
2.Random Array	0.006	0.025	0.059	0.058	0.081
3.Random Array	0.006	0.023	0.083	0.067	0.108
4.Random Array	0.006	0.026	0.057	0.067	0.092
5.Random Array	0.006	0.017	0.065	0.062	0.063
6.Random Array	0.005	0.022	0.062	0.072	0.1
7.Random Array	0.005	0.024	0.058	0.072	0.162
8.Random Array	0.007	0.025	0.075	0.071	0.104
9.Random Array	0.006	0.018	0.058	0.087	0.044
10.Random Array	0.006	0.018	0.057	0.069	0.060
11.Random Array	0.005	0.017	0.055	0.084	0.041
12.Random Array	0.007	0.022	0.060	0.074	0.047
13.Random Array	0.007	0.023	0.061	0.067	0.067
14.Random Array	0.006	0.025	0.057	0.062	0.061
15.Random Array	0.007	0.026	0.054	0.057	0.056
16.Random Array	0.007	0.017	0.050	0.059	0.045
17.Random Array	0.007	0.018	0.067	0.074	0.061
18.Random Array	0.006	0.021	0.057	0.083	0.050
19.Random Array	0.006	0.027	0.067	0.052	0.049
20.Random Array	0.007	0.041	0.048	0.063	0.054
1.Sorted Array	0.020				
AVERAGE	10.000	40.000	100.000	150.000	180.000
Run Time	0,006	0,022	0,06	0,068	0,073
Expected Run Time(T *	0,001	0,016	0,1	0,225	0,324

Quick Sort Algorithm Run Time Graph
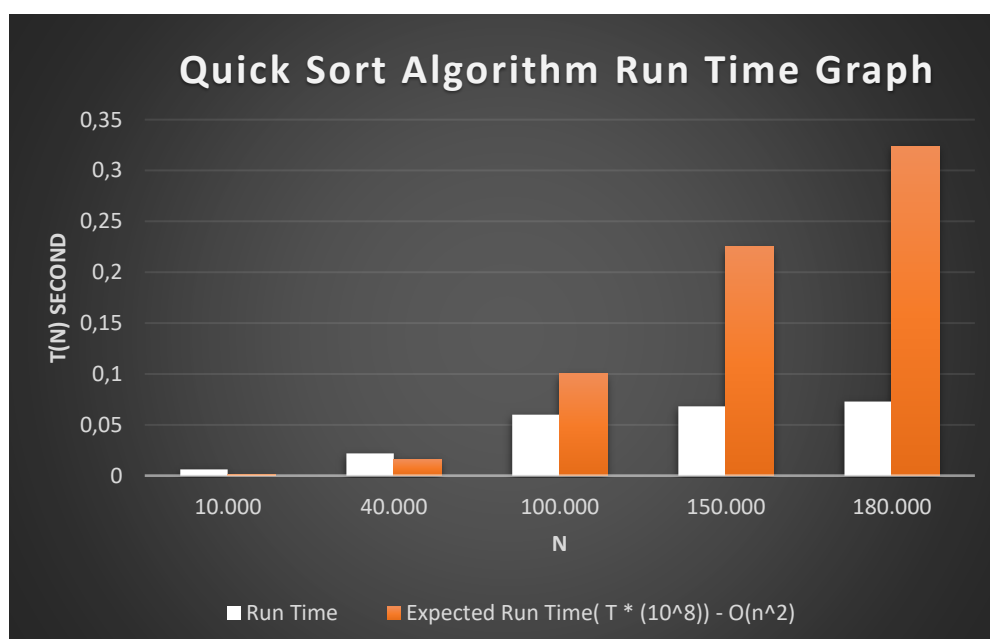
My Merge SORT	10.000 Data	40.000 Data	100.000 Data	150.000 Data	180.000 Data
1. Random Array	0.220	3,549	20,664	46,615	59,222
2.Random Array	0.227	4,345	20,346	66,529	64,413
3.Random Array	0.226	3,118	20,313	42,632	60,183
4.Random Array	0.228	3,117	20,404	40,708	60,492
5.Random Array	0.224	3,173	20,505	40,501	58,836
6.Random Array	0.221	3,153	20,336	40,777	62,772
7.Random Array	0.222	3,158	17,538	40,955	60,518
8.Random Array	0.226	3,098	20,11	46,923	61,058
9.Random Array	0.230	3,17	16,914	41,663	60,976
10.Random Array	0.238	3,064	21,824	43,197	59,508
11.Random Array	0.226	3,182	20,295	42,954	61,824
12.Random Array	0.228	3,35	20,815	44,237	63,351
13.Random Array	0.222	3,116	21,494	41,784	60,193
14.Random Array	0.225	3,12	17,546	40,685	60,982
15.Random Array	0.221	3,097	21,195	40,451	61,784
16.Random Array	0.225	3,149	20,217	41,485	59,739
17.Random Array	0.229	3,214	20,649	40,982	60,116
18.Random Array	0.225	3,072	17,24	42,369	58,448
19.Random Array	0.224	3,16	20,891	40,445	60,349
20.Random Array	0.221	3,231	20,341	41,762	61,075
1.Sorted Array	0,168	2,206	11,972	30,648	47,033
AVERAGE	10.000	40.000	100.000	150.000	180.000
Run Time	0,225	3,232	19,982	43,383	60,972
Expected Run Time(T *	1	6	16	25,5	30,6
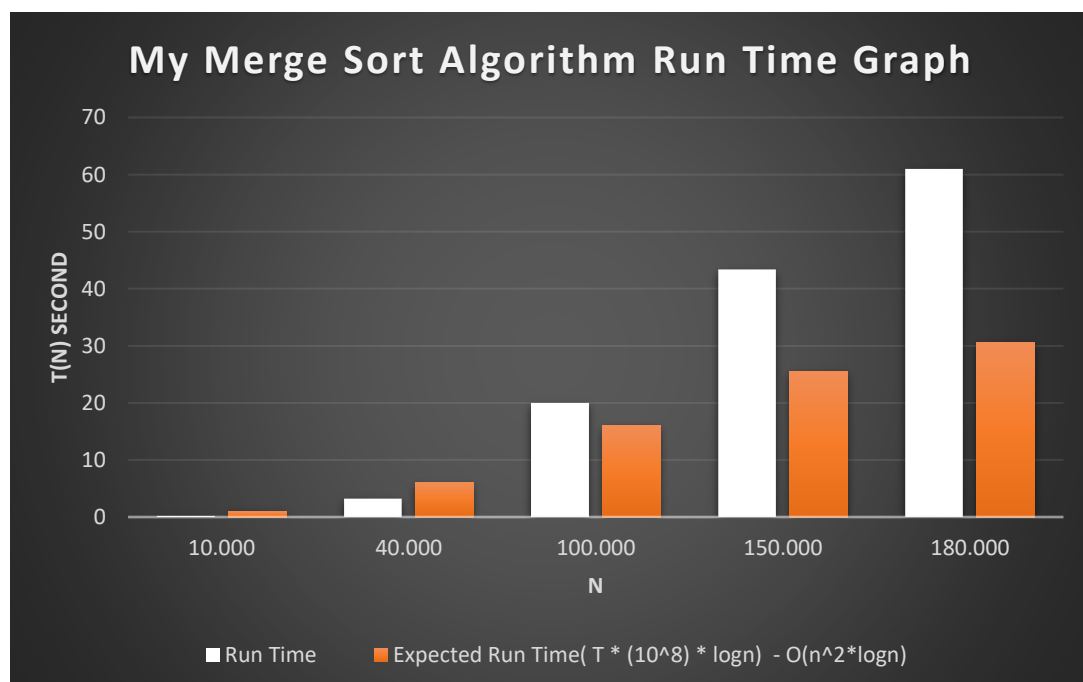
My Merge Sort Algorithm Run Time Graph

■ Run Time   ■ Expected Run Time(T * (10^8) * logn) - O(n^2*logn)

My Quick SORT	10.000 Data	40.000 Data	100.000 Data	150.000 Data	180.000 Data
Expected Run Time					
1. Random Array	0,989	19,757	140,242	321,106	548,903
2.Random Array	1,012	21,003	138,715	306,895	541,568
3.Random Array	1,008	19,67	141,697	308,712	543,674
4.Random Array	1,081	20,127	139,985	315,619	548,489
5.Random Array	0,964	20,3	139,431	317,901	552,473
6.Random Array	0,936	19,346	140,648	340,256	540,674
7.Random Array	0,957	24,664	145,679	307,245	538,791
8.Random Array	0,974	21,126	137,546	315,389	540,214
9.Random Array	0,954	19,761	141,851	316,581	537,913
10.Random Array	1,107	19,434	142,266	325,463	548,915
11.Random Array	0,971	20,653	138,271	327,163	547,299
12.Random Array	0,965	20,477	139,32	328,403	539,981
13.Random Array	0,956	19,581	140,158	317,281	547,345
14.Random Array	0,974	20,967	141,706	316,347	548,173
15.Random Array	1,107	21,609	135,46	327,198	539,647
16.Random Array	0,930	24,312	146,63	324,854	548,371
17.Random Array	1,038	20,196	140,738	321,672	547,614
18.Random Array	1,196	20,455	139,598	320,698	535,128
19.Random Array	1,038	20,345	146,875	327,273	551,735
20.Random Array	0,963	19,651	139,457	345,154	543,554
1.Sorted Array	143,324	Didn't Found - Infinite Loop (No Solution)			
AVERAGE	10.000	40.000	100.000	150.000	180.000
Run Time	1,006	20,671	140,813	321,506	529,523
Expected Run Time(T *	26	104	330,21	555,711	684,237
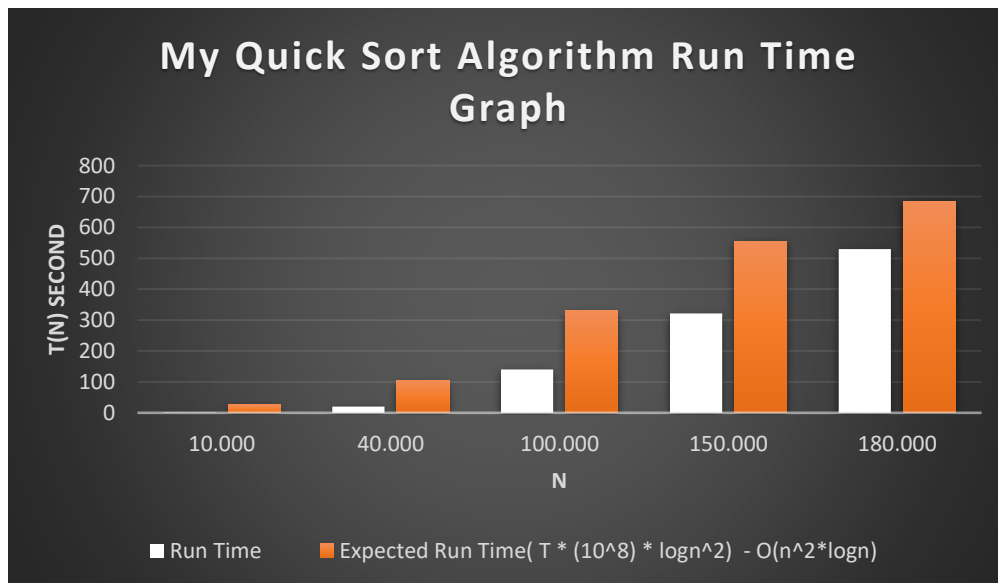
Compare : Theoretically; merge,heap and shell sort should be shorter than the others
In my run times, that is true. After those; selection,bubble,quick and insertion sort take n^2 time
In my experiments, the quick sort is shorter than others. Actually, it is closer to shell and merge.
My linked list implementations takes very very long time.
In quick time, it takes 529 seconds for 180.000 data.
Moreover, I have to test 20 times for each so really I deal with with this part for a day.
Because 529 seconds means approximately 10 minutes and 20 times which is almost 3.5 hours.
Finally, I really understand this sorting and I don't think that I forget these methods forever.