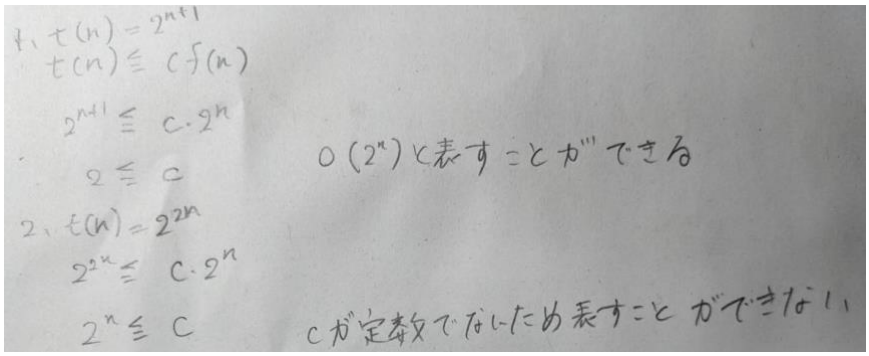
Q1

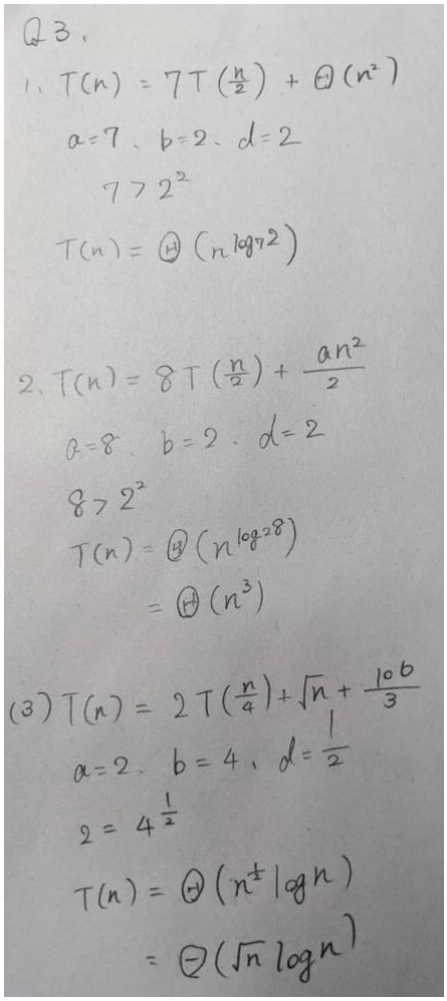
1.$\frac{1}{2}n(n+1)$

2.$O(n^2)$

Q2



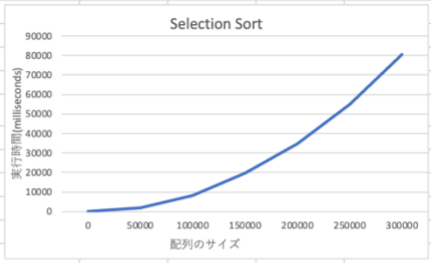
Q3



Q4

selection sort

	Elapsed time(milliseconds)					
Data size	Average	1	2	3	4	5
0	0	0	0	0	0	0
50000	2024.0638	1996.429	2055.061	2052.194	2012.93	2003.705
100000	8352.2248	8028.306	7996.637	8551.705	8543.085	8641.391
150000	19569.0092	19057.373	19682.657	19743.991	19453.009	19908.016
200000	34652.1594	34367.782	34472.151	34436.693	34948.124	35036.047
250000	54940.7742	55544.91	52929.189	54311.069	54476.49	57442.213
300000	80424.8256	80758.141	81207.285	79964.352	79630.736	80563.614



merge sort

	Elapsed time(milliseconds)					
Data size	Average	1	2	3	4	5
0	0	0	0	0	0	0
50000	9.9144	9.735	9.573	10.045	10.2	10.019
100000	17.9824	17.976	17.311	18.215	18.226	18.184
150000	26.047	26.334	25.193	25.363	27.012	26.333
200000	34.0744	35.716	34.017	34.977	32.831	32.831
250000	41.5088	41.313	40.763	42.796	41.129	41.543
300000	48.3498	41.543	52.489	49.492	49.734	48.491