PA1 Report

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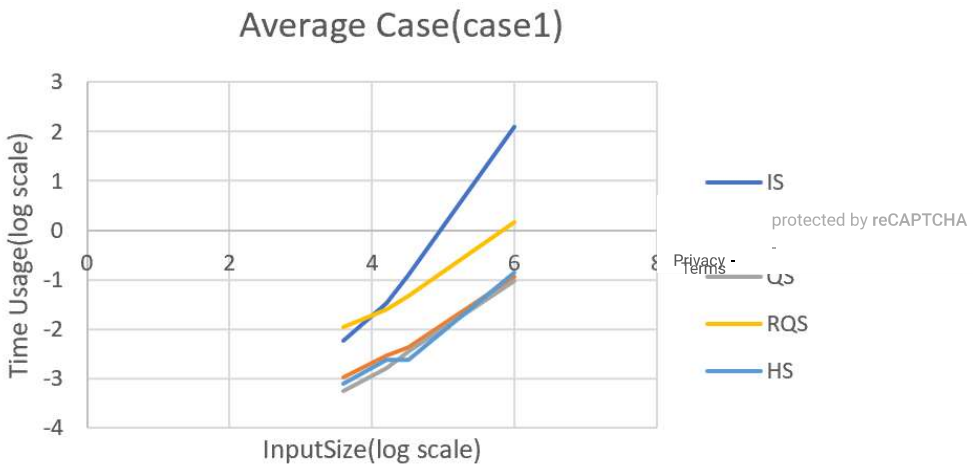
- **Running Time and Memory Usage**
  - Run on EDA union lab machine (PORT = 40061)
    - In 1000000.case3.1, using **“ulimit -s 16384”** to fix segmentation fault
  - Result as below

Input size	IS		MS		QS		RQS		HS	
	CPU time(s)	Memory(KB)	CPU time(s)	Memory(KB)	CPU time(s)	Memory(KB)	CPU time(s)	Memory(KB)	CPU time(s)	Memory(KB)
4000.case2	0.000067	6068	0.000502	6068	0.010365	6068	0.011398	6068	0.000636	6068
4000.case3	0.00789	6068	0.000498	6068	0.008827	6068	0.010761	6068	0.000664	6068
4000.case1	0.005769	6068	0.001066	6068	0.000561	6068	0.01105	6068	0.000774	6068
16000.case2	0.000154	6220	0.000797	6220	0.084891	6220	0.025262	6220	0.002035	6220
16000.case3	0.066924	6220	0.001052	6220	0.064927	6468	0.024834	6220	0.00244	6220
16000.case1	0.03315	6220	0.002925	6220	0.001648	6220	0.025258	6220	0.002383	6220
32000.case2	0.000196	6352	0.001709	6352	0.325151	6352	0.044907	6352	0.002898	6352
32000.case3	0.24625	6352	0.00208	6352	0.246447	6904	0.044706	6352	0.00295	6352
32000.case1	0.12369	6352	0.004323	6352	0.003454	6352	0.046353	6352	0.002417	6352
1000000.case2	0.002473	12308	0.039766	14036	292.221	12308	1.3898	12308	0.080887	12308
1000000.case3	257.144	12308	0.045091	14044	197.015	24160	1.39048	12308	0.077119	12308
1000000.case1	125.081	12308	0.114923	14036	0.092282	12308	1.44422	12308	0.141812	12308

- **Plotting**
  - Average Case(case1)



- Best Case(case2)

- Worst Case(case3)

- Plot observation
  - In every case, RQS requires almost the same time in every case since it randomize the order for every sequence of inputs.
  - In the worst case, IS consumes almost the same time as QS, since the both two algorithm require to traverse the whole sequence of inputs.
  - In every case, MS and HS usually don't require too much time, since the both algorithm apply the devide and conquer method, which doesn't need to traverse the whole sequence.