TUGAS 4
PRAKTIKUM ANALISIS ALGORITMA

Disusun oleh :

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PROGRAM STUDI S-1 TEKNIK INFORMATIKA

FAKULTAS MATEMATIKA DAN ILMU PENGETAHUAN ALAM
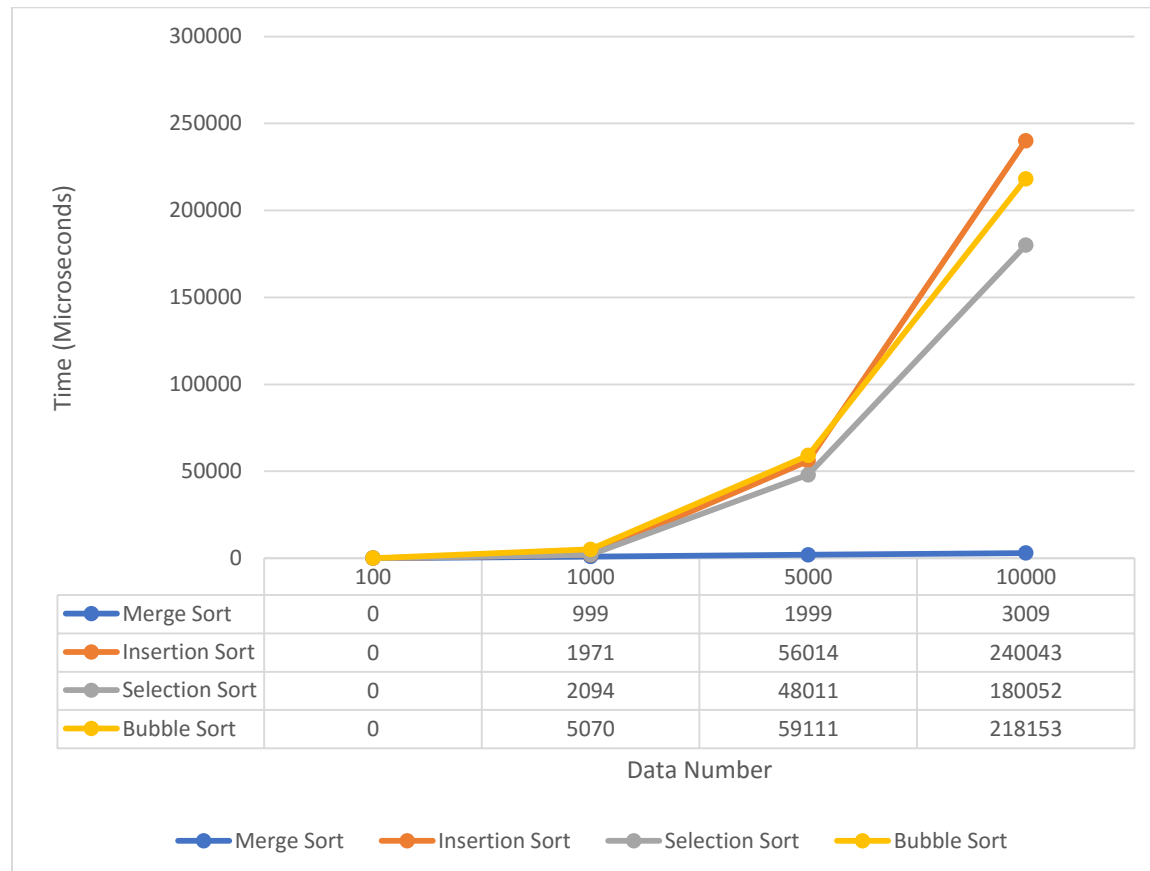
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SUMEDANG

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Rules

Initial array are sorted DESCENDING. While all algorithms are sorting these array ASCENDING.

So the execution time would take the worst-case scenario.

All code uses C++11 language.

Execution Time

Data Number	100	1000	5000	10000
Merge Sort	0	999	1999	3009
Insertion Sort	0	1971	56014	240043
Selection Sort	0	2094	48011	180052
Bubble Sort	0	5070	59111	218153

Complexity Analysis

1. **Merge Sort**

$$Big - O = n^2$$

$$Big - \Omega = n$$

$$Big - \Theta = n^2$$

2. **Insertion Sort**

$$Big - O = n^2$$

$$Big - \Omega = n$$

$$Big - \Theta = n^2$$

3. Selection Sort
$$Big - O = n^2$$

$$Big - \Omega = n^2$$

$$Big - \Theta = n^2$$

4. Bubble Sort
$$Big - O = n * \log n$$

$$Big - \Omega = n * \log n$$

$$Big - \Theta = n * \log n$$