

Kathmandu University
Department of Computer Science and Engineering
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Lab Report 1

[Code No: COMP 314]

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Group: Computer Engineering

Level: III year/II sem

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Description

In this lab we learnt about the time complexities of selection and insertion sort using different test cases and making their graphs. Initially, we learnt about testing the program using different test cases. After that we write code for insertion and selection sort and use test cases to test the correctness of the code.

We then generate random numbers and store them in an array and then we plot the graph of those data vs the time required to sort those data using both selection and insertion sort. That was all we did in this lab.

Output

```
hm/algo lab/sum/test.py"
```

```
.
```

```
-----  
Ran 1 test in 0.000s
```

```
OK
```

Image 1: Testing sum function using unittest

```
hm/algo lab/insertion/test.py"
```

```
12.043306589126587
```

```
.
```

```
-----  
Ran 1 test in 0.000s
```

```
OK
```

Image 2: Testing insertion sort and selection sort using unittest

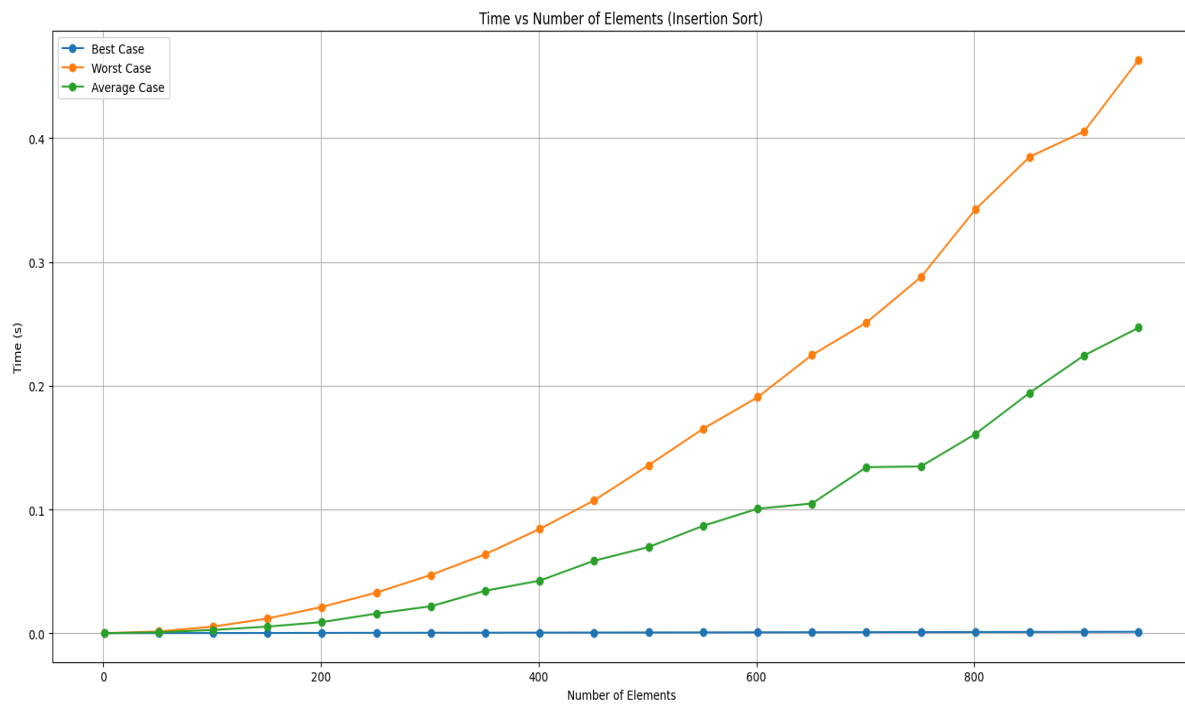


Image 1: Insertion sort cases

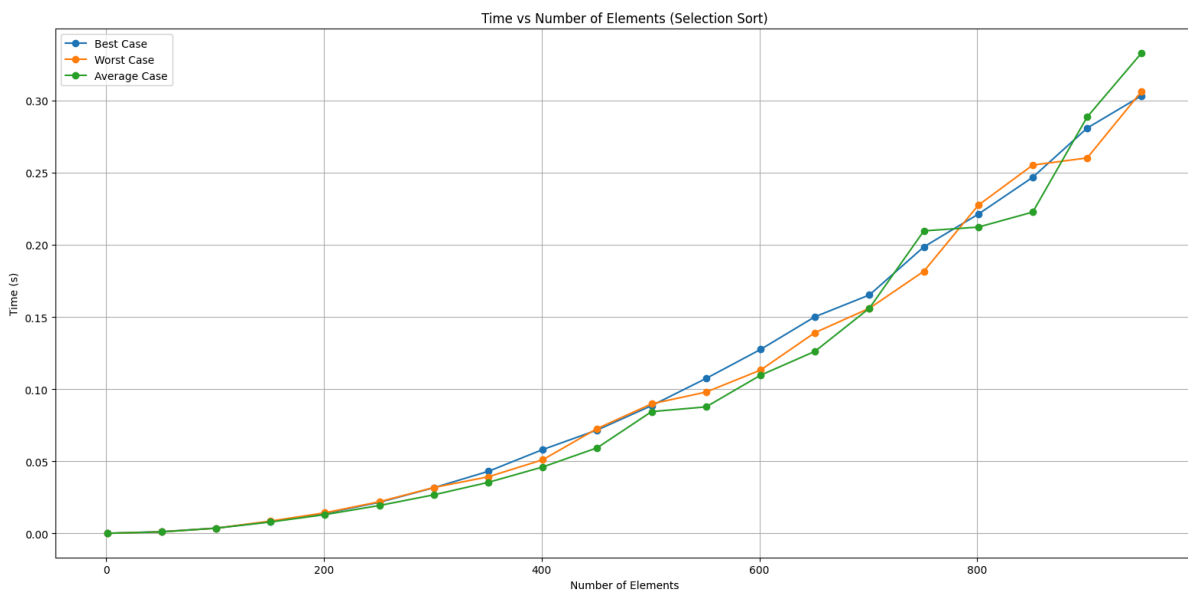


Image 1: Selection sort cases

Output

It is seen clearly that the best case average case and worst case for insertion sort is $O(n)$, $O(n^2)$, $O(n^2)$ respectively. Similarly for selection sort all three cases are same i.e. $O(n^2)$.