

## Lab Assignment 04

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Batch: - A1

1. Write a python code to sort the elements using bubble sort.

```
In [1]: import time
start = time.time()
def bubbleSort(arr):
    n = len(arr)
    swapped = False
    for i in range(n-1):
        for j in range(0, n-i-1):
            if arr[j] > arr[j + 1]:
                swapped = True
                arr[j], arr[j + 1] = arr[j + 1], arr[j]
            if not swapped:
                return
arr = [64, 34, 25, 12, 22, 11, 90]
bubbleSort(arr)
print("Sorted array is:")
for i in range(len(arr)):
    print("% d" % arr[i], end=" ")
end = time.time()
print("\nExecution time is: ",end - start)
```

```
Sorted array is:
11 12 22 25 34 64 90
Execution time is: 0.0
```

2. Write a python code to sort the elements using Selection sort.

```
In [2]: start = time.time()
def selectionSort(array, size):
    for ind in range(size):
        min_index = ind
        for j in range(ind + 1, size):
            if array[j] < array[min_index]:
                min_index = j
            array[ind], array[min_index] = array[min_index], array[ind]
arr = [-2, 45, 0, 11, -9, 88, -97, -202, 747]
size = len(arr)
selectionSort(arr, size)
print('The Sorted array by selection sort method is:')
print(arr)
```

```
end = time.time()  
print("\nExecution time is: ",end - start)
```

The Sorted array by selection sort method is:  
[-202, -97, -9, -2, 11, 0, 45, 88, 747]

Execution time is: 0.0