WORKSHEET 3.1

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Semester: 4th
Subject Name: Python

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Section/Group: 801-A
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Subject Code: 21CSP-259

1. **Aim**:
   - To implement the concept of linear search with the help of list.
   - To implement the concept of binary search with the help of list/array.
   - To implement the concept of insertion sort.
   - To implement the concept of selection sort.
   - Codechef Problem

2. **Source Code:**

a) To implement Linear Search

```
print("Name - SABHYA MAHAJAN, UID - 21BCS9200")
def LinearSearch(List, n):
    for i in range(len(List)):
        if List[i] == n:
            print("Element found at ", i)
            return True
    return False
List = [1, 2, "a", 4, 6, "sabhya", "$"]
n = 3
m = LinearSearch(List, n)
if m:
    print("Element found")
else:
    print("Not found")
```

b) To implement binary search

```
print("Name - SABHYA MAHAJAN, UID - 21BCS9200")

def binarySearch(arr, target):
    low = 0
    high = len(arr) - 1

    while low <= high:
        mid = (low + high) // 2
```

```
        key = arr[mid]

        if key == target:
            return mid
        elif key < target:
            low = mid + 1
        else:
            high = mid - 1

    return -1


myList = [1, 3, 5, 7, 9]
targetNumber = 7

result = binarySearch(myList, targetNumber)

if result != -1:
    print(f"Element {targetNumber} is present at index {result}")
else:
    print("Element not found")
```

c) To implement Insertion sort

```
def insertionSort(arr):
    for i in range(1, len(arr)):
        key = arr[i]
        j = i - 1

        while j >= 0 and arr[j] > key:
            arr[j + 1] = arr[j]
            j -= 1

        arr[j + 1] = key

    return arr


arr = [64, 25, 12, 22, 11]
sortedArr = insertionSort(arr)
print("Sorted array:", sortedArr)
```

d) To implement Selection sort

```
def selectionSort(arr):
    for i in range(len(arr)):
        min_idx = i

        for j in range(i + 1, len(arr)):
            if arr[j] < arr[min_idx]:
                min_idx = j

        arr[i], arr[min_idx] = arr[min_idx], arr[i]

    return arr


arr = [64, 55, 6, 32, 22, 11]
sortedArr = selectionSort(arr)
print("Sorted array:", sortedArr)
```

e) Codechef Problem

```
n = int(input())
arr = list(map(int,input().split()))
x,y=0,0
for i in arr:
    if i==0:
        x=0
    else:
        x=x+1
    if y<x:
        y=x
print(y)
```

3. Output:

a)

```
PS& C:/Users/lenovo/AppData/Local/Programs/Python/Python311/python.exe c:/Users/lenovo/OneDrive/Desktop/PRO/Python/f
irst.py
Name - SABHYA MAHAJAN, UID - 21BCS9200
Element found at  5
```

b)

```
PS C:\Users\lenovo\OneDrive\Desktop\PRO\Python> & C:/Users/
lenovo/AppData/Local/Programs/Python/Python311/python.exe c
:/Users/lenovo/OneDrive/Desktop/PRO/Python/first.py
Name - SABHYA MAHAJAN, UID - 21BCS9200
Element 7 is present at index 3
PS C:\Users\lenovo\OneDrive\Desktop\PRO\Python>
```

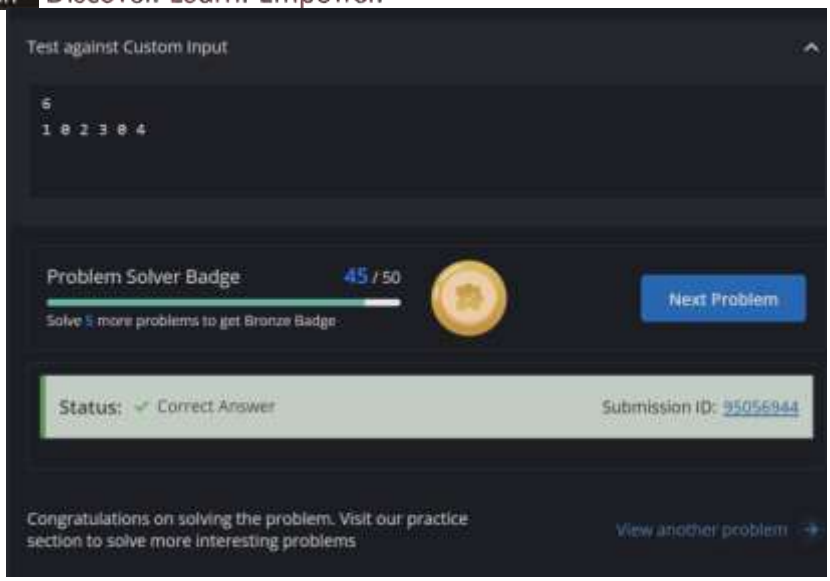
c)

```
Name - SABHYA MAHAJAN, UID - 21BCS9200
Sorted array: [11, 12, 22, 25, 64]
```

d)

```
Name - SABHYA MAHAJAN, UID - 21BCS9200
Sorted array: [6, 11, 22, 32, 55, 64]
```

e)


Test against Custom Input
6
1 0 2 3 0 4
Problem Solver Badge
45 / 50
Solve 5 more problems to get Bronze Badge
Next Problem
Status: Correct Answer
Submission ID: 95056944
Congratulations on solving the problem. Visit our practice section to solve more interesting problems
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