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CS27

## 1. Question

Source Code

```
#!/bin/python
#
#   Linear Search
#
number_of_elements = int(input("Enter the number of elements : "))

numbers = []

for i in range(number_of_elements) :
    num=int(input("Enter the element"+str(i+1)+" : "))
    numbers.append(num)

print(numbers)

element = int(input("Enter the number to search for : "))

for i in range(number_of_elements) :
    if numbers[i] == element :
        print("Element found at position",i)
```

Output



```
Sem_3/Python/3 on master [!?] via v3.9.6 took 17s
$ ./1.py
Enter the number of elements : 5
Enter the element1 : 0
Enter the element2 : 1
Enter the element3 : 7
Enter the element4 : 2
Enter the element5 : 9
[0, 1, 7, 2, 9]
Enter the number to search for : 2
Element found at position 3
Sem_3/Python/3 on master [!?] via v3.9.6 took 8s
```

## 2. Question

Source Code

```
#!/bin/python
#
#   Bubble Sort
#
number_of_elements = int(input("Enter the number of elements : "))

numbers = []

for i in range(number_of_elements) :
```

```

        numbers.append(num)

print("\nThe List\n")
print(numbers)

for i in range(number_of_elements) :
    for j in range(number_of_elements-i-1) :
        if numbers[j] > numbers[j+1] :
            numbers[j],numbers[j+1] = numbers[j+1],numbers[j]

print("The Sorted List")
print(numbers)

```

## Output

```

Sem_3/Python/3 on / master [!?] via v3.9.6 took 8s
$ ./2.py
Enter the number of elements : 10
Enter the element1 : 0
Enter the element2 : 1
Enter the element3 : 6
Enter the element4 : 1
Enter the element5 : 9
Enter the element6 : 9
Enter the element7 : 3
Enter the element8 : 8
Enter the element9 : 1
Enter the element10 : 5

The List
[0, 1, 6, 1, 9, 9, 3, 8, 1, 5]
The Sorted List
[0, 1, 1, 1, 3, 5, 6, 8, 9, 9]
Sem_3/Python/3 on / master [!?] via v3.9.6 took 13s

```

## 3. Question

### Source Code

```

#!/bin/python
#
#  Binary Search
#

number_of_elements = int(input("Enter the number of elements : "))

numbers = []

for i in range(number_of_elements) :
    num=int(input("Enter the element"+str(i+1)+" : "))
    numbers.append(num)

print("\nThe List\n")
print(numbers)

for i in range(number_of_elements) :
    for j in range(number_of_elements-i-1) :
        if numbers[j] > numbers[j+1] :
            numbers[j],numbers[j+1] = numbers[j+1],numbers[j]

```

```

print("The Sorted List")
print(numbers)

element = int(input("Enter the number to search for : "))

lower = 0
upper = number_of_elements-1

while lower < upper :
    mid = (lower+upper)//2
    if numbers[mid] == element :
        print("The number found at position",mid+1)
        break
    elif element < numbers[mid] :
        upper=mid-1
    else :
        lower=mid+1

if not (lower < upper) :
    print("Number not found.")

```

## Output



```

Sem_3/Python/3 on master [!?] via v3.9.6 took 14s
> ./3.py
Enter the number of elements : 10
Enter the element1 : 1
Enter the element2 : 0
Enter the element3 : 2
Enter the element4 : 9
Enter the element5 : 3
Enter the element6 : 8
Enter the element7 : 4
Enter the element8 : 7
Enter the element9 : 4
Enter the element10 : 6

The List

[1, 0, 2, 9, 3, 8, 4, 7, 4, 6]
The Sorted List
[0, 1, 2, 3, 4, 4, 6, 7, 8, 9]
Enter the number to search for : 8
The number found at position 9
Sem_3/Python/3 on master [!?] via v3.9.6 took 13s

```