EXPERIMENT 3.1

Name –

UID –

Class & Group –

Semester – 4th

Subject name & Code – PROGRAMMING IN PYTHON LAB & 22E-20CSP-259

Question 1: Python program to implement linear search.

CODE:

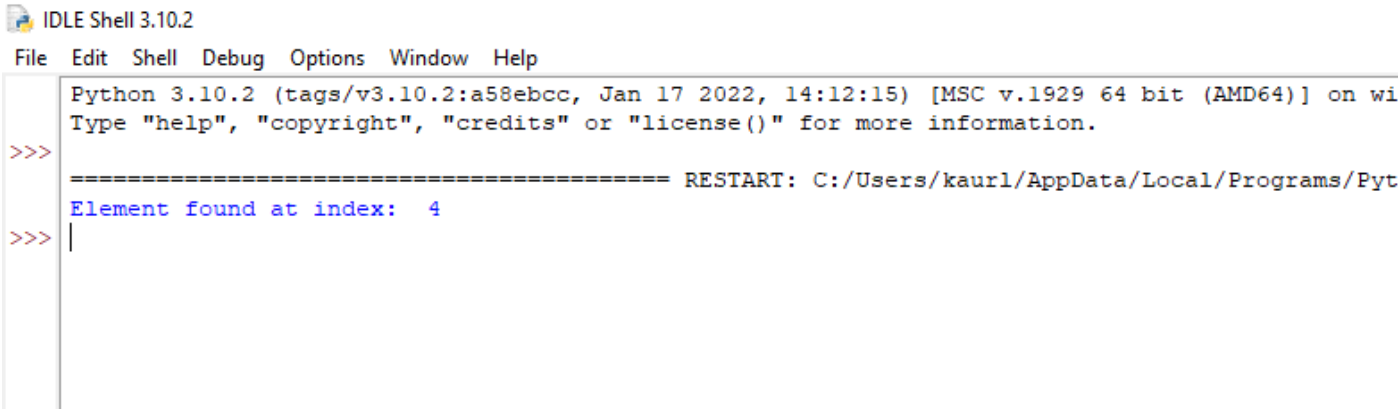
```
def linear_Search(list1, n, key):

    for i in range(0, n):
        if (list1[i] == key):
            return i
    return -1

list1 = [1 ,3, 5, 4, 7, 9]
key = 7

n = len(list1)
res = linear_Search(list1, n, key)
if(res == -1):
    print("Element not found")
else:
    print("Element found at index: ", res)
```

OUTPUT:



<u>Question 2:</u> Python program to implement bubble sort.

<u>CODE:</u>

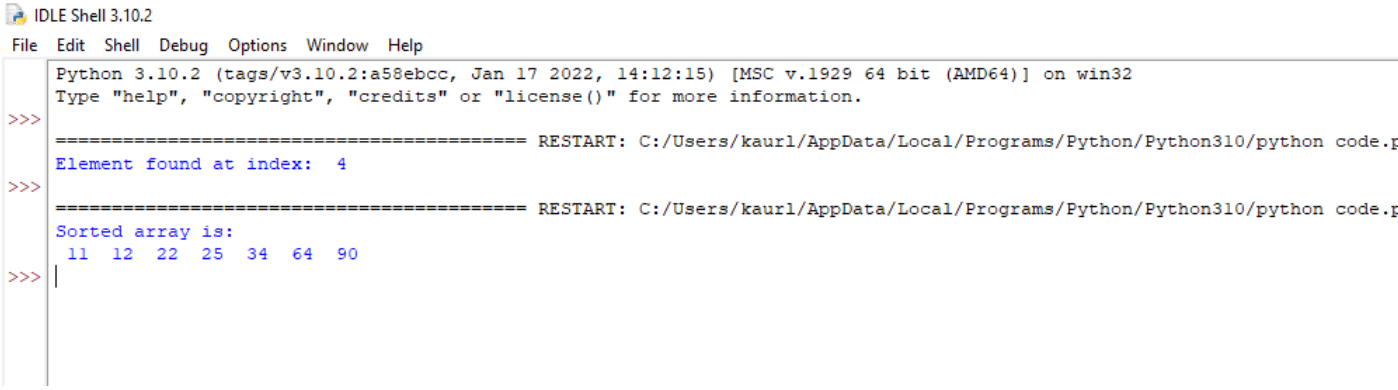
```
def bubbleSort(arr):
    n = len(arr)
    for i in range(n-1):
        for j in range(0, n-i-1):
            if arr[j] > arr[j + 1] :
                arr[j], arr[j + 1] = arr[j + 1], arr[j]

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=" ")
```

<u>OUTPUT:</u>



<u>Question 3:</u> Python program to implement binary search without recursion.

<u>CODE:</u>

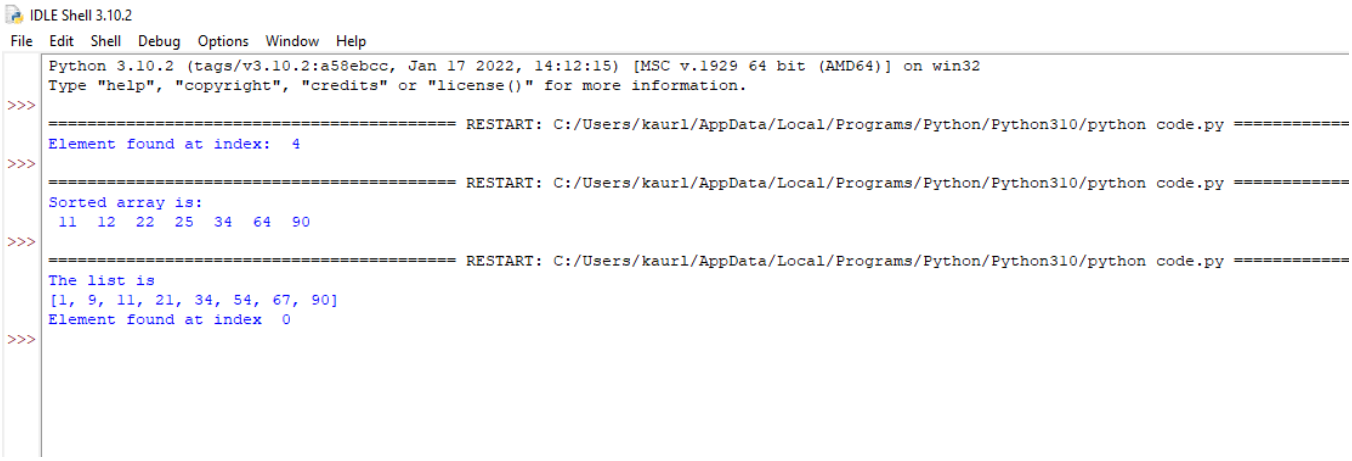
```
def binary_search(my_list, elem):
  low = 0
  high = len(my_list) - 1
  mid = 0
  while low <= high:
    mid = (high + low) // 2
    if my_list[mid] < elem:
      low = mid + 1
    elif my_list[mid] > elem:
      high = mid - 1
    else:
      return mid
  return -1


my_list = [ 1, 9, 11, 21, 34, 54, 67, 90 ]
elem_to_search = 1
print("The list is")
print(my_list)


my_result = binary_search(my_list, elem_to_search)
```

```
if my_result != -1:
  print("Element found at index ", str(my_result))
else:
  print("Element not found!")
```

OUTPUT:



Question 4: Python program to implement selection sort.

CODE:

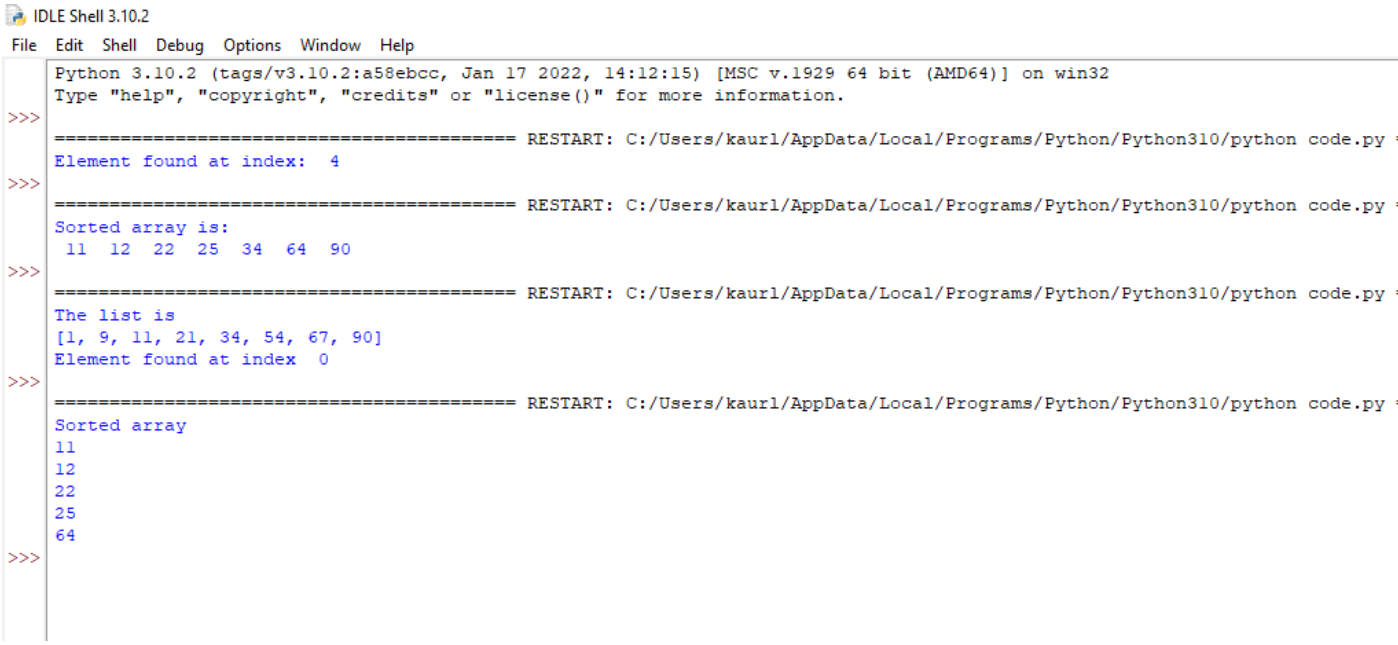
```
import sys
A = [64, 25, 12, 22, 11]

for i in range(len(A)):

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

print ("Sorted array")
for i in range(len(A)):
        print("%d" %A[i]),
```

OUTPUT:


IDLE Shell 3.10.2
File Edit Shell Debug Options Window Help
Python 3.10.2 (tags/v3.10.2:a58ebcc, Jan 17 2022, 14:12:15) [MSC v.1929 64 bit (AMD64)] on win32
Type "help", "copyright", "credits" or "license()" for more information.
>>>
========== RESTART: C:/Users/kaurl/AppData/Local/Programs/Python/Python310/python code.py
Element found at index: 4
>>>
========== RESTART: C:/Users/kaurl/AppData/Local/Programs/Python/Python310/python code.py
Sorted array is:
11 12 22 25 34 64 90
>>>
========== RESTART: C:/Users/kaurl/AppData/Local/Programs/Python/Python310/python code.py
The list is
[1, 9, 11, 21, 34, 54, 67, 90]
Element found at index 0
>>>
========== RESTART: C:/Users/kaurl/AppData/Local/Programs/Python/Python310/python code.py
Sorted array
11
12
22
25
64
>>>