

ACTIVITY 1.35

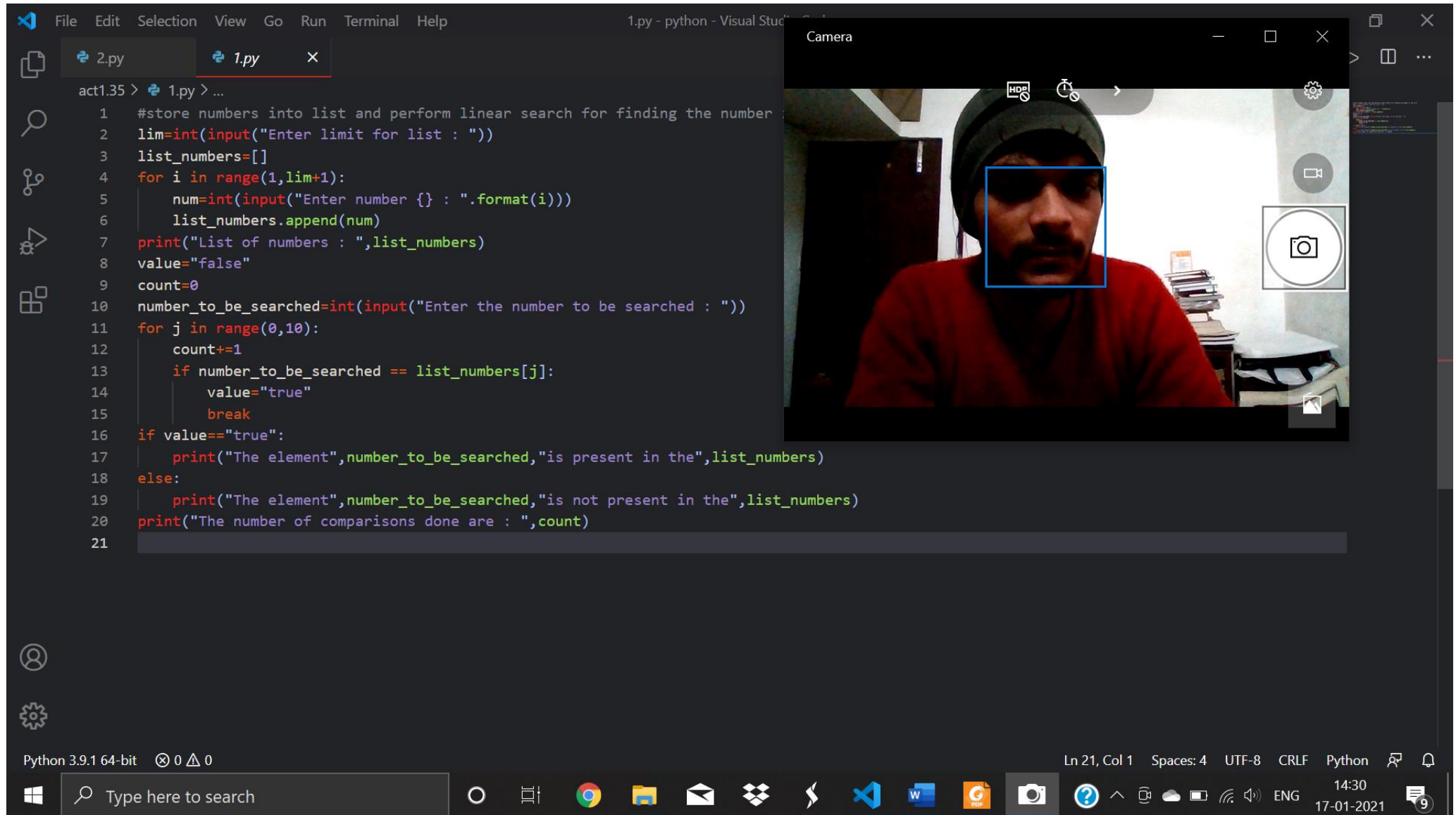
Q1. 1) Write a python program to solve the following requirements.

- a. Read unsorted 'n' integers using input () and store them in a list (say list_numbers). Minimum size of the list_numbers should be 10.*
- b. Print the list_numbers on the screen.*
- c. Read a number (say number_to_be_searched) using input().*
- d. Perform 'linear search' to find whether the number_to_be_searched is present or not in list_numbers.*
- e. Print the suitable result*
 - i. The searched element (print the actual value) is PRESENT in list_number.*
 - (or)*
 - ii. The searched element (print the actual value) is NOT PRESENT in list_number.*
- f. Count the number of comparisons and print it.*
- g. Run the same program for different number_to_be_searched and record the outputs.*

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20MIS0183

#code screenshot



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#code

```
#store numbers into list and perform linear search for finding the number in the list
lim=int(input("Enter limit for list : "))
list_numbers=[]
for i in range(1,lim+1):
    num=int(input("Enter number {} : ".format(i)))
    list_numbers.append(num)
print("List of numbers : ",list_numbers)
value="false"
count=0
number_to_be_searched=int(input("Enter the number to be searched : "))
for j in range(0,10):
    count+=1
    if number_to_be_searched == list_numbers[j]:
        value="true"
        break
if value=="true":
    print("The element",number_to_be_searched,"is present in the",list_numbers)
else:
    print("The element",number_to_be_searched,"is not present in the",list_numbers)
print("The number of comparisons done are : ",count)
```

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#output screenshot 1

The screenshot displays a Windows desktop environment. On the left, the Visual Studio Code (VS Code) editor is open, showing a Python file named `1.py`. The code implements a linear search algorithm. Below the editor, the terminal window shows the execution of the script, where a limit of 10 is entered, followed by 10 numbers. The script outputs the list of numbers and confirms the presence of the searched number (0).

```
1.py
1 #store numbers into list and perform linear search for finding
2 lim=int(input("Enter limit for list : "))
3 list_numbers=[]
4 for i in range(1,lim+1):
5     num=int(input("Enter number {} : ".format(i)))
6     list_numbers.append(num)
7 print("List of numbers : ", list_numbers)

Windows PowerShell
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Try the new cross-platform PowerShell https://aka.ms/pscore6

PS C:\Users\AKSHAT\Desktop\python> & C:/Users/AKSHAT/AppData/Local/Programs/Python/Python39/python.exe c:/Users/AKSHAT/Desktop/python/act1.35/1.py
Enter limit for list : 10
Enter number 1 : -2
Enter number 2 : -45
Enter number 3 : -550
Enter number 4 : 58
Enter number 5 : 922
Enter number 6 : -3
Enter number 7 : 282
Enter number 8 : 83
Enter number 9 : 0
Enter number 10 : -4
List of numbers : [-2, -45, -550, 58, 922, -3, 282, 83, 0, -4]
Enter the number to be searched : 0
The element 0 is present in the [-2, -45, -550, 58, 922, -3, 282, 83, 0, -4]
The number of comparisons done are : 9
PS C:\Users\AKSHAT\Desktop\python>
```

On the right side of the screen, a camera application is open, showing a live feed of a person wearing a cap. The camera interface includes various controls like zoom, pan, and a camera icon. The taskbar at the bottom shows the Windows Start button, a search bar, and several open applications including Chrome, File Explorer, and VS Code. The system tray on the right indicates the date and time as 17-01-2021, 14:32.

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#output screenshot 2

The screenshot displays a Windows desktop environment. On the left, the Visual Studio Code (VS Code) editor is open, showing a Python file named `1.py`. The code implements a linear search algorithm. Below the editor, the Windows PowerShell terminal is active, showing the execution of the script. The script prompts the user to enter a limit for the list (10) and then ten numbers. It then prompts for a number to be searched (7) and outputs that the number is not present in the list, along with the total number of comparisons (10).

On the right side of the screen, a camera application is open, showing a live video feed of a person wearing a red shirt and a black beanie. A blue bounding box is drawn around the person's face in the video feed. The camera application has a standard interface with a play button, a settings gear, and a camera icon.

The Windows taskbar at the bottom shows the Start button, a search bar, and several pinned applications including Chrome, File Explorer, Mail, and VS Code. The system tray on the right indicates the date and time as 14:34 on 17-01-2021.

```
File Edit Selection View Go Run Terminal Help
1.py - py
2.py 1.py x
act1.35 > 1.py > ...
1 #store numbers into list and perform linear search for finding
2 lim=int(input("Enter limit for list : "))
3 list_numbers=[]
4 for i in range(1,lim+1):
5     num=int(input("Enter number {} : ".format(i)))
6     list_numbers.append(num)
7 print("List of numbers : ", list_numbers)

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL
Windows PowerShell
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Try the new cross-platform PowerShell https://aka.ms/pscore6

PS C:\Users\AKSHAT\Desktop\python> & C:/Users/AKSHAT/AppData/Local/Programs/Python/Python39/python.exe c:/Users/AKSHAT/Desktop/python/act1.35/1.py
Enter limit for list : 10
Enter number 1 : 0
Enter number 2 : 664
Enter number 3 : 77
Enter number 4 : -22
Enter number 5 : -493
Enter number 6 : -28
Enter number 7 : -2
Enter number 8 : -48393
Enter number 9 : 8727
Enter number 10 : 3
List of numbers : [0, 664, 77, -22, -493, -28, -2, -48393, 8727, 3]
Enter the number to be searched : 7
The element 7 is not present in the [0, 664, 77, -22, -493, -28, -2, -48393, 8727, 3]
The number of comparisons done are : 10
PS C:\Users\AKSHAT\Desktop\python> []

Python 3.9.1 64-bit 0 0 0
Type here to search
Ln 21, Col 1 Spaces: 4 UTF-8 CRLF Python 14:34 17-01-2021
```

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Q2. Write a python program to solve the following requirements.

- a. Read sorted 'n' integers using input () and store them in a list (say list_numbers). Minimum size of the list_numbers should be 10.*
- b. Print the list_numbers on the screen.*
- c. Read a number (say number_to_be_searched) using input().*
- d. Perform 'binary search' to find whether the number_to_be_searched is present or not in list_numbers.*
- e. Print the suitable result*

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#code screenshot

The image shows a screenshot of the Visual Studio Code editor interface. The main editor window displays a Python script named `2.py` implementing a binary search algorithm. The script prompts the user to enter a limit for the list, then iteratively prompts for numbers to be added to the list. After sorting the list, it prompts for a number to be searched and performs a binary search, printing the result and the number of comparisons.

```
1 #store numbers into list and perform binary search for finding the number in the list
2 lim=int(input("Enter limit for list : "))
3 list_numbers=[]
4 for i in range(1,lim+1):
5     num=int(input("Enter number {} : ".format(i)))
6     list_numbers.append(num)
7 list_numbers.sort()
8 print("List of sorted numbers : ",list_numbers)
9 number_to_be_searched=int(input("Enter a number to search in the list : "))
10 min=0
11 max=len(list_numbers)-1
12 mid=0
13 count=0
14 value="False"
15 while min<=max:
16     count+=1
17     mid=(min+max)//2
18     if list_numbers[mid]<number_to_be_searched:
19         min=mid+1
20     elif list_numbers[mid]>number_to_be_searched:
21         max=mid-1
22     else:
23         mid=mid
24         value="True"
25         break
26 if value=="True":
27     print("The element",number_to_be_searched,"is present in the",list_numbers)
28 else:
29     print("The element",number_to_be_searched,"is not present in the",list_numbers)
30 print("The number of comparisons done are : ",count)
```

Overlaid on the right side of the editor is a window titled "Camera". It shows a live video feed of a person wearing a red shirt and a black cap. A blue rectangular bounding box is drawn around the person's face, indicating face detection. The camera window has standard Windows-style controls (minimize, maximize, close) and a toolbar with icons for settings, a camera toggle, and a photo capture button.

At the bottom of the Visual Studio Code window, the "TERMINAL" panel is active, showing the output of the program: "The number of comparisons done are : 4". The terminal prompt is `PS C:\Users\AKSHAT\Desktop\python>`. The status bar at the very bottom indicates the file is at line 30, column 53, with 4 spaces, UTF-8 encoding, CRLF line endings, and the Python interpreter is set to the default.

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#code

```
#store numbers into list and perform binary search for finding the number in the list
lim=int(input("Enter limit for list : "))
list_numbers=[]
for i in range(1,lim+1):
    num=int(input("Enter number {} : ".format(i)))
    list_numbers.append(num)
list_numbers.sort()
print("List of sorted numbers : ",list_numbers)
number_to_be_searched=int(input("Enter a number to search in the list : "))
min=0
max=len(list_numbers)-1
mid=0
count=0
value="False"
while min<=max:
    count+=1
    mid=(min+max)//2
    if list_numbers[mid]<number_to_be_searched:
        min=mid+1
    elif list_numbers[mid]>number_to_be_searched:
        max=mid-1
    else:
        mid=mid
        value="True"
        break
if value=="True":
    print("The element",number_to_be_searched,"is present in the",list_numbers)
else:
    print("The element",number_to_be_searched,"is not present in the",list_numbers)
print("The number of comparisons done are : ",count)
```


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#output screenshot

