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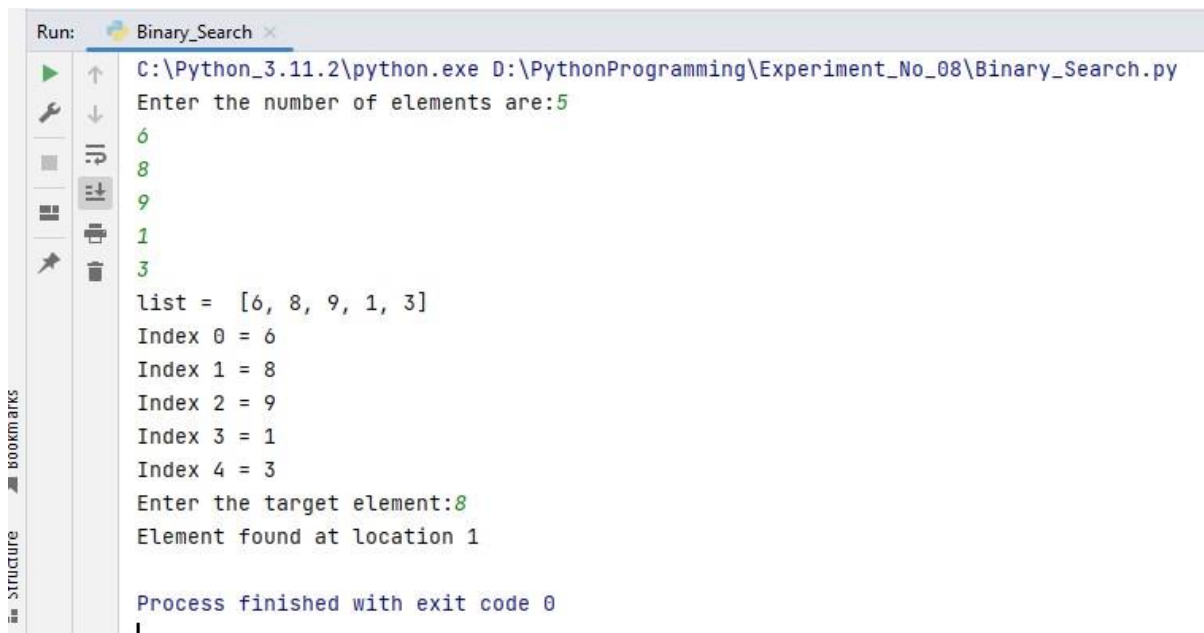
**Roll no :- 99 Batch :- B2 Div :- B**

**Write a program to implement various searching algorithms**

## **1] Binary Search :-**

```
PythonProgramming > Experiment_No_08 > Binary_Search.py
Linear_Search.py x Binary_Search.py x
Project
1 def binary_search(list,x):
2     low = 0
3     high = len(list) - 1
4     mid = 0
5
6     while low <= high:
7         mid = (high + low) // 2
8         if list[mid] < x:
9             low = mid + 1
10        elif list[mid] > x:
11            high = mid - 1
12        else:
13            return mid
14    return -1
15
16 list = []
17 n = int(input("Enter the number of elements are:"))
18 for i in range(n):
19     ele = int(input())
20     list.append(ele)
21 print("list = ",list)
22
23 for i in range(n):
24     print("Index",i,"=",list[i])
25
26 x = int(input("Enter the target element:"))
27 res = binary_search(list,x)
28
29 if res == -1:
30     print("Element not found")
31 else:
32     print("Element found at location",res)
```

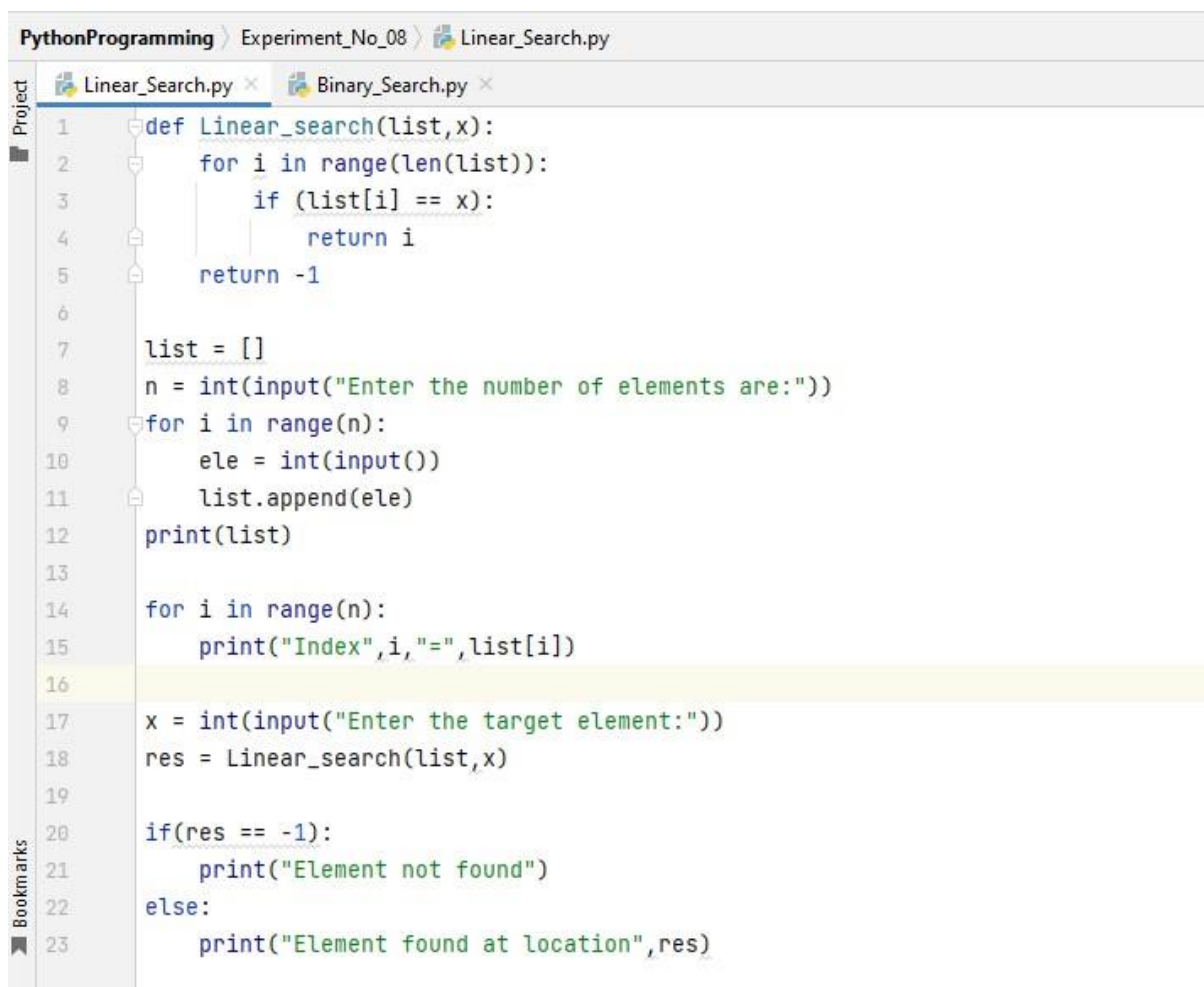
## OUTPUT :-



```
Run: Binary_Search x
C:\Python_3.11.2\python.exe D:\PythonProgramming\Experiment_No_08\Binary_Search.py
Enter the number of elements are:5
6
8
9
1
3
list = [6, 8, 9, 1, 3]
Index 0 = 6
Index 1 = 8
Index 2 = 9
Index 3 = 1
Index 4 = 3
Enter the target element:8
Element found at location 1

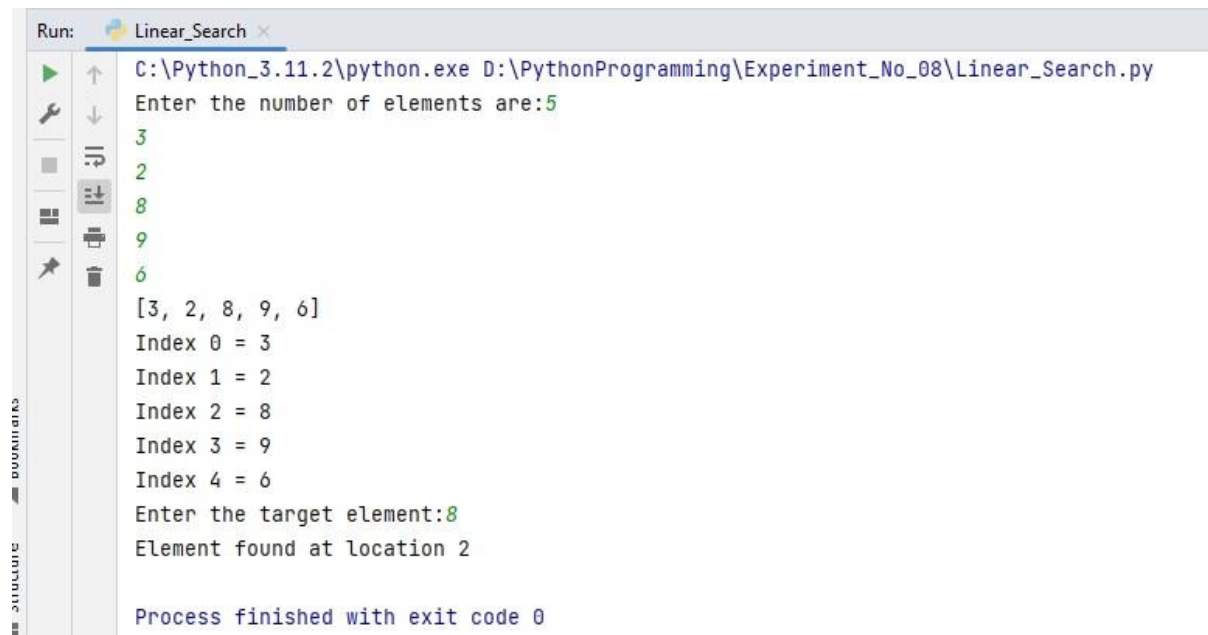
Process finished with exit code 0
```

## 2] Linear Search :-



```
PythonProgramming > Experiment_No_08 > Linear_Search.py
Linear_Search.py x Binary_Search.py x
1 def linear_search(list,x):
2     for i in range(len(list)):
3         if (list[i] == x):
4             return i
5     return -1
6
7 list = []
8 n = int(input("Enter the number of elements are:"))
9 for i in range(n):
10     ele = int(input())
11     list.append(ele)
12 print(list)
13
14 for i in range(n):
15     print("Index",i,"=",list[i])
16
17 x = int(input("Enter the target element:"))
18 res = linear_search(list,x)
19
20 if(res == -1):
21     print("Element not found")
22 else:
23     print("Element found at location",res)
```

## OUTPUT :-



The screenshot shows a console window titled "Run: Linear\_Search". The output of the program is as follows:

```
C:\Python_3.11.2\python.exe D:\PythonProgramming\Experiment_No_08\Linear_Search.py
Enter the number of elements are:5
3
2
8
9
6
[3, 2, 8, 9, 6]
Index 0 = 3
Index 1 = 2
Index 2 = 8
Index 3 = 9
Index 4 = 6
Enter the target element:8
Element found at location 2

Process finished with exit code 0
```

The program prompts the user to enter the number of elements (5), then the elements themselves (3, 2, 8, 9, 6). It then displays the array and its indices. Finally, it prompts for a target element (8) and reports that it was found at location 2.