**Datastructures Lab WEEK – 1 II/IV B.Tech**

**Task - 1**

We have discussed linear search algorithm in the class. Implement the same algorithm using any of the languages like C/Python. Write all the possible testcases. Write down your observations.

Sample input

Enter number of elements 8

Enter 8 elements

44,16,18,164,47,10,0,-68

Enter element to search 10

Sample output

10 is present at location 5

**Program:**

*'''  
linear search using python  
'''*n = int(input("enter the no.of elements: "))  
a = []  
found = 0  
  
for i in range(0,n):  
 p = int(input("enter a number: "))  
 a.append(p)  
  
key = int(input("enter a search element: "))  
for i in range(0,n):  
 if a[i] == key:  
 print("element is present at location: ",i)  
 found += 1  
 break  
  
if found == 0:  
 print("element is not found")  
  
print("end of the program")

**Task-2**

Suppose you are implementing Linear search algorithm using any of the languages like C/Python. In the given array if there is a possibility of multiple occurances of some elements. In such case how to identify the location of the element. Design and implement the solution for the same.

Sample input

Enter number of elements 6

Enter 6 elements

44,16,18,16,47,16

Enter element to search 16

Sample output

16 is present at location 1

16 is present at location 3

16 is present at location 5

**Program:**

*'''  
searching multiple numbers using linear search  
'''*n = int(input("enter the no.of elements: "))  
a = []  
found = 0  
  
for i in range(0,n):  
 p = int(input("enter a number: "))  
 a.append(p)  
  
key = int(input("enter a search element: "))  
for i in range(0,n):  
 if a[i] == key:  
 print(key,"element is present at location: ",i)  
 found += 1  
  
if found == 0:  
 print("element is not found")  
  
print("end of the program")

**Task-3**

Rithick gets a lottery ticket and checks each number in the list to see whether he has won the lottery or not. Since there are many numbers,he finds it tedious to check each ticket number manually. So he decides to write a code to check whether he has won the lottery or not. Help Rithick write a code to find his lottery ticket number from the given ticket numbers.

**Input Format:**

First line of the input consists of n, that corresponds to total number of lottery tickets.

Next n lines consists of Integers, that corresponds to the given lottery ticket numbers.

Last line consists of an Integer 'l', which corresponds to Rithick's lottery ticket number.

**Output Format:**

Output consists of string "Congratulations! You have won the lottery" or "Sorry your ticket number is not there. Better luck next time", according to the search result.

**Sample Input and Output:**  
**[All text in bold corresponds to input and the rest corresponds to output]**  
Enter the total number of tickets:  
**5**  
Enter the ticket number 1:  
**4521**  
Enter the ticket number 2:  
**3589**  
Enter the ticket number 3:  
**147852**  
Enter the ticket number 4:  
**2365**  
Enter the ticket number 5:  
**8965**  
The ticket numbers are:  
4521 3589 147852 2365 8965  
Enter the ticket number to be searched:  
**8965**  
The ticket number 8965 is found at position 5  
Congratulations!You have won the lottery

**Program:**

*'''  
lottery ticket using linear search  
'''*a = []  
n = int(input("enter no of tickets: "))  
found = 0  
for i in range(1, n + 1):  
 p = int(input(f"enter the ticket number{i}: "))  
 a.append(p)  
  
print("the ticket numbers are: ", \*a)  
key = int(input("enter the ticket number to be search: "))  
for i in range(1, n + 1):  
 if a[i] == key:  
 print(f"the ticket {a[i]} is found at position: ", i)  
 found = 1  
 break  
  
 if found >= 1:  
 print("congratulations you have won the lottery")  
 else:  
 print("ticket number is not found")  
print("end of the program")