

## **Exp-2.7**

### **Title:**

Find the first occurrence index of a substring in a string or return -1 if not found.

### **Aim:**

To design and implement a Python program to find the first occurrence index of the string needle in haystack, or return -1 if needle is not part of haystack.

### **Procedure:**

1. Read the two input strings: haystack and needle.
2. Check if needle is an empty string; if yes, return 0 (by definition).
3. Use Python's built-in string find() method or manually check for the first occurrence of needle in haystack.
4. Return or print the index of the first occurrence; if not found, return -1.

### **Algorithm:**

1. Start
2. Input strings haystack and needle.
3. If needle is empty, return 0.
4. Use haystack.find(needle) to get first index of needle.
5. If found, return index; otherwise, return -1.
6. End.

### **Input:**

sadbutsad

sad

leetcode

leeto

**Output:**

0

-1

**Program:**

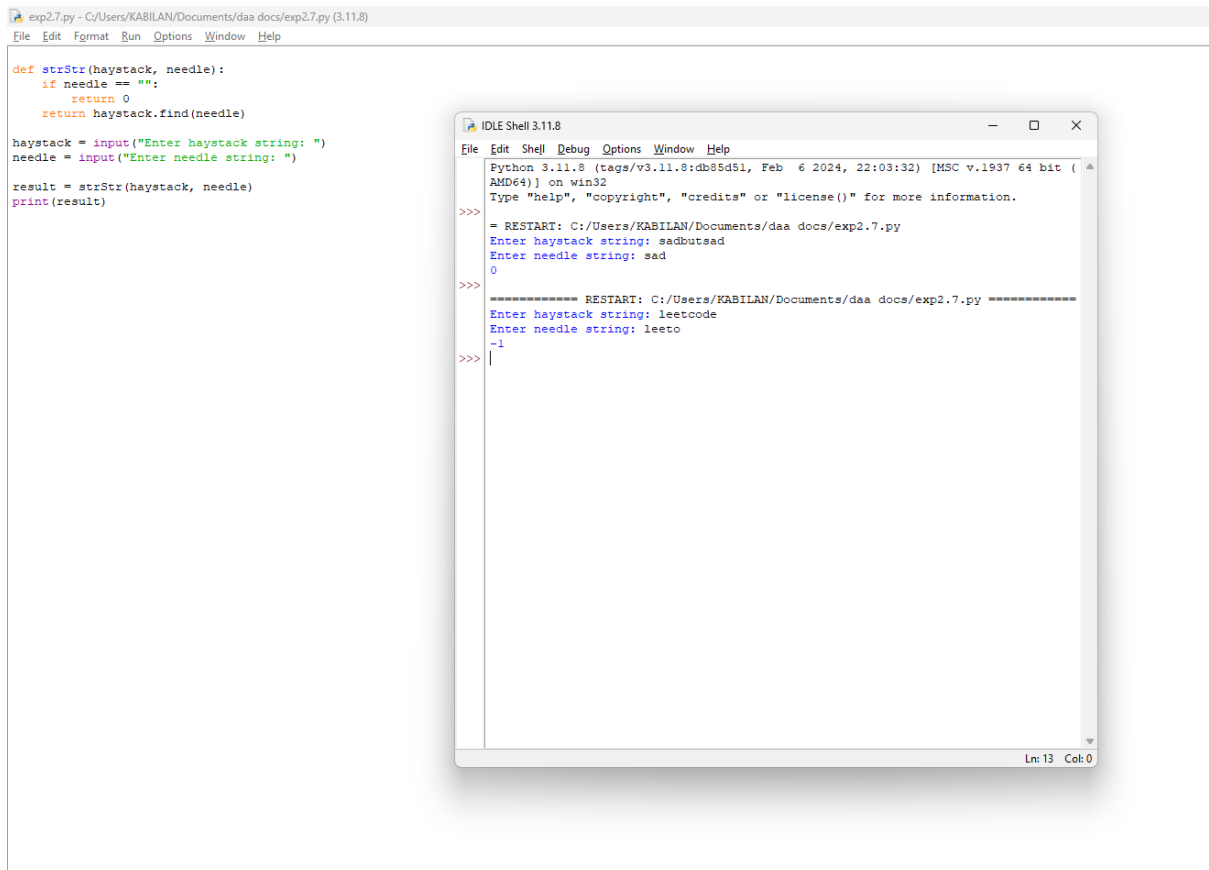
```
def strStr(haystack, needle):  
    if needle == "":  
        return 0  
    return haystack.find(needle)  
haystack = input("Enter haystack string: ")  
needle = input("Enter needle string: ")  
  
result = strStr(haystack, needle)  
print(result)
```

## Performance Analysis:

**Time Complexity:** :  $O(m * n)$

**Space Complexity:**  $O(1)$

## Program Output:



The image shows a Python IDE window titled 'exp2.7.py - C:/Users/KABILAN/Documents/daa docs/exp2.7.py (3.11.8)'. The code defines a function `strStr` that searches for a needle in a haystack. It uses `haystack.find(needle)` to find the index of the needle. If the needle is an empty string, it returns 0. Otherwise, it returns the index found. The main program prompts the user to enter a haystack string and a needle string, then calls `strStr` and prints the result.

```
def strStr(haystack, needle):  
    if needle == "":  
        return 0  
    return haystack.find(needle)  
  
haystack = input("Enter haystack string: ")  
needle = input("Enter needle string: ")  
  
result = strStr(haystack, needle)  
print(result)
```

The IDE Shell window shows the execution of the program. It prompts for the haystack string 'sadbutsad' and the needle string 'sad', returning 0. It then prompts for the haystack string 'leetcode' and the needle string 'leeto', returning -1.

```
IDLE Shell 3.11.8  
Python 3.11.8 (tags/v3.11.8:db85d51, Feb 6 2024, 22:03:32) [MSC v.1937 64 bit (AMD64)] on win32  
Type "help", "copyright", "credits" or "license()" for more information.  
>>>  
= RESTART: C:/Users/KABILAN/Documents/daa docs/exp2.7.py  
Enter haystack string: sadbutsad  
Enter needle string: sad  
0  
>>>  
===== RESTART: C:/Users/KABILAN/Documents/daa docs/exp2.7.py =====  
Enter haystack string: leetcode  
Enter needle string: leeto  
-1  
>>>
```

## Result:

Thus the given program Substring Search is executed and got output successfully.