2.7 FIRST OCCURRENCE OF SUBSTRING

Question:

Given two strings needle and haystack, return the index of the first occurrence of needle in haystack, or -1 if needle is not part of haystack.

AIM

To find the index of the first occurrence of the string needle in haystack.

ALGORITHM

1. Let n = len(haystack) and m = len(needle).
2. Traverse through each index i in haystack where a substring of length m can fit.
3. Compare haystack[i : i+m] with needle.
4. If match found, return i.
5. If no match found after loop, return -1.

PROGRAM

```
def str_str(haystack, needle):
    return haystack.find(needle)

def run_str_str():
    haystack = input("Enter haystack string: ")
    needle = input("Enter needle string: ")
    print("First occurrence index:", str_str(haystack, needle))
run_str_str()
```

Input:

haystack = "sadbutsad", needle = "sad"Output:

Output:

```
Enter haystack string: sadbutsad
Enter needle string: sad
First occurrence index: 0
>>>
```

RESULT:

Thus the program is successfully executed and the output is verified.

PERFORMANCE ANALYSIS:

- Time Complexity:
  - O((n-m+1) * m) ≈ O(n*m) in worst case.
- Space Complexity:
  - O(1)