**2.7 FIRST OCCURRENCE OF SUBSTRING**

**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**

A screenshot of a computer program

AI-generated content may be incorrect.

Input:

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

Output:

Index: 0

A screenshot of a computer

AI-generated content may be incorrect.

**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)