

148. 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.

Program:-

```
def build_lps(needle):
    lps = [0] * len(needle)
    length = 0
    i = 1

    while i < len(needle):
        if needle[i] == needle[length]:
            length += 1
            lps[i] = length
            i += 1
        else:
            if length != 0:
                length = lps[length - 1]
            else:
                lps[i] = 0
                i += 1

    return lps
```

```
def strStr(haystack, needle):
```

```
    if not needle:
        return 0
```

```
    lps = build_lps(needle)
```

```
    i, j = 0, 0
```

```
    while i < len(haystack):
        if haystack[i] == needle[j]:
            i += 1
            j += 1
```

```
        if j == len(needle):
            return i - j
```

```
    else:
        if j != 0:
            j = lps[j - 1]
        else:
            i += 1
```

```
    return -1
```

input:-

```
haystack1 = "sadbutsad"
```

```
needle1 = "sad"
```

output:-

Output

0

-1

=== Code Execution Successful ===

Time complexity:- $O(m+n)$