

## Implement strStr()

### Approach 1: Brute Force ( $O(n*m)$ ):

- Iterate through haystack (length  $n$ )
- For each position  $i$ , check if substring haystack  $[i:i+m]$  equals needle.
- Return  $i$  if found; else return  $-1$ .

### Approach 2: KMP Algorithm ( $O(n+m)$ ):

- Preprocess needle to create LPS array (Longest Prefix Suffix).
- Use it to skip unnecessary comparisons when searching in haystack.
- Efficient for large inputs.

### Optimized Approach (KMP):

- Optimal  $O(n+m)$  solution:
  - Build LPS array for needle.
  - Use it to avoid rechecking characters.