

PromptScratchpadOur Solution(s)Video Explanation

Run Code

Solution 1Solution 2Solution 3

```
1 // Copyright © 2020 AlgoExpert, LLC. All rights reserved.
2
3 using System.Collections.Generic;
4
5 public class Program {
6     // O(ns + bs) time | O(ns) space
7     public static List<bool> MultistringSearch(string bigstring, string[] smallstrings) {
8         Trie trie = new Trie();
9         foreach (string smallstring in smallstrings) {
10             trie.insert(smallstring);
11         }
12         HashSet<string> containedstrings = new HashSet<string>();
13         for (int i = 0; i < bigstring.Length; i++) {
14             findSmallstringsIn(bigstring, i, trie, containedstrings);
15         }
16         List<bool> solution = new List<bool>();
17         foreach (string str in smallstrings) {
18             solution.Add(containedstrings.Contains(str));
19         }
20         return solution;
21     }
22
23     public static void findSmallstringsIn(string str, int startIdx, Trie trie,
24     HashSet<string> containedstrings) {
25         TrieNode currentNode = trie.root;
26         for (int i = startIdx; i < str.Length; i++) {
27             char currentChar = str[i];
28             if (!currentNode.children.ContainsKey(currentChar)) {
29                 break;
30             }
31             currentNode = currentNode.children[currentChar];
32             if (currentNode.children.ContainsKey(trie.endSymbol)) {
33                 containedstrings.Add(currentNode.word);
34             }
35         }
36     }
37
38     public class TrieNode {
39         public Dictionary<char, TrieNode> children = new Dictionary<char, TrieNode>();
40         public string word;
41     }
42
43     public class Trie {
44         public TrieNode root = new TrieNode();
45         public char endSymbol = '*';
46
47         public void insert(string str) {
48             TrieNode node = root;
49             for (int i = 0; i < str.Length; i++) {
50                 char letter = str[i];
51                 if (!node.children.ContainsKey(letter)) {
52                     TrieNode newNode = new TrieNode();
53                     node.children.Add(letter, newNode);
54                 }
55                 node = node.children[letter];
56             }
57             node.children[endSymbol] = null;
58             node.word = str;
59         }
60     }
61 }
62
```