

PromptScratchpadOur Solution(s)Video Explanation

Run Code

Solution 1Solution 2Solution 3

```
1 // Copyright © 2020 AlgoExpert, LLC. All rights reserved.
2
3 #include <vector>
4 #include <unordered_map>
5 using namespace std;
6
7 class TrieNode {
8 public:
9     unordered_map<char, TrieNode *> children;
10    string word;
11 };
12
13 class Trie {
14 public:
15     TrieNode *root;
16     char endSymbol;
17
18     Trie() {
19         this->root = new TrieNode();
20         this->endSymbol = '*';
21     }
22
23     void insert(string str) {
24         TrieNode *current = this->root;
25         for (int i = 0; i < str.length(); i++) {
26             char letter = str[i];
27             if (current->children.find(letter) == current->children.end()) {
28                 TrieNode *newNode = new TrieNode();
29                 current->children.insert({letter, newNode});
30             }
31             current = current->children[letter];
32         }
33         current->children.insert({this->endSymbol, NULL});
34         current->word = str;
35     }
36 };
37
38 void findSmallStringsIn(string str, int startIdx, Trie *trie,
39                         unordered_map<string, bool> *containedStrings);
40
41 // O(ns + bs) time | O(ns) space
42 vector<bool> multiStringSearch(string bigString, vector<string> smallStrings) {
43     Trie *trie = new Trie();
44     for (string smallString : smallStrings) {
45         trie->insert(smallString);
46     }
47     unordered_map<string, bool> containedStrings;
48     for (int i = 0; i < bigString.length(); i++) {
49         findSmallStringsIn(bigString, i, trie, &containedStrings);
50     }
51     vector<bool> solution;
52     for (string smallString : smallStrings) {
53         solution.push_back(containedStrings.find(smallString) !=
54                             containedStrings.end());
55     }
56     return solution;
57 }
58
59 void findSmallStringsIn(string str, int startIdx, Trie *trie,
60                         unordered_map<string, bool> *containedStrings) {
61     TrieNode *currentNode = trie->root;
62     for (int i = startIdx; i < str.length(); i++) {
63         if (currentNode->children.find(str[i]) == currentNode->children.end()) {
64             break;
65         }
66         currentNode = currentNode->children[str[i]];
67         if (currentNode->children.find(trie->endSymbol) !=
68             currentNode->children.end()) {
69             containedStrings->insert({currentNode->word, true});
70         }
71     }
72 }
73 }
```