

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 };
11
12 class ModifiedSuffixTrie {
13 public:
14     TrieNode *root;
15
16     ModifiedSuffixTrie(string str) {
17         this->root = new TrieNode();
18         this->populateModifiedSuffixTrieFrom(str);
19     }
20
21     void populateModifiedSuffixTrieFrom(string str) {
22         for (int i = 0; i < str.length(); i++) {
23             this->insertSubstringStartingAt(i, str);
24         }
25     }
26
27     void insertSubstringStartingAt(int i, string str) {
28         TrieNode *node = this->root;
29         for (int j = i; j < str.length(); j++) {
30             char letter = str[j];
31             if (node->children.find(letter) == node->children.end()) {
32                 TrieNode *newNode = new TrieNode();
33                 node->children.insert({letter, newNode});
34             }
35             node = node->children[letter];
36         }
37     }
38
39     bool contains(string str) {
40         TrieNode *node = this->root;
41         for (char letter : str) {
42             if (node->children.find(letter) == node->children.end()) {
43                 return false;
44             }
45             node = node->children[letter];
46         }
47         return true;
48     }
49 };
50
51 // O(b^2 + ns) time | O(b^2 + n) space
52 vector<bool> multiStringSearch(string bigString, vector<string> smallStrings) {
53     ModifiedSuffixTrie modifiedSuffixTrie(bigString);
54     vector<bool> solution;
55     for (string smallString : smallStrings) {
56         solution.push_back(modifiedSuffixTrie.contains(smallString));
57     }
58     return solution;
59 }
60
```