

PromptScratchpadOur Solution(s)Video Explanation

Run Code

Solution 1Solution 2Solution 3Solution 4

```
1 // Copyright © 2020 AlgoExpert, LLC. All rights reserved.
2
3 class Program {
4     // O(nm) time | O(nm) space
5     func longestCommonSubsequence(firstString: String, secondString: String) -> [String] {
6         var lengths = [[Int]]()
7
8         for _ in stride(from: 0, to: firstString.count + 1, by: 1) {
9             let row = Array(repeating: 0, count: secondString.count + 1)
10             lengths.append(row)
11         }
12
13         for i in stride(from: 1, to: firstString.count + 1, by: 1) {
14             for j in stride(from: 1, to: secondString.count + 1, by: 1) {
15                 let firstIndex = firstString.index(firstString.startIndex, offsetBy: i - 1)
16                 let secondIndex = secondString.index(secondString.startIndex, offsetBy: j - 1)
17
18                 if firstString[firstIndex] == secondString[secondIndex] {
19                     lengths[i][j] = lengths[i - 1][j - 1] + 1
20                 } else {
21                     lengths[i][j] = max(lengths[i - 1][j], lengths[i][j - 1])
22                 }
23             }
24         }
25
26         return buildSequence(lengths: lengths, string: secondString)
27     }
28
29     // Build lcs from lengths array and initial string
30     func buildSequence(lengths: [[Int]], string: String) -> [String] {
31         var sequence = [String]()
32
33         var i = lengths.count - 1
34         var j = lengths[0].count - 1
35
36         while i != 0, j != 0 {
37             if lengths[i][j] == lengths[i - 1][j] {
38                 i -= 1
39             } else if lengths[i][j] == lengths[i][j - 1] {
40                 j -= 1
41             } else {
42                 let index = string.index(string.startIndex, offsetBy: j - 1)
43                 let char = String(string[index])
44
45                 sequence.insert(char, at: 0)
46                 i -= 1
47                 j -= 1
48             }
49         }
50
51         return sequence
52     }
53 }
54
```