

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 lcs = [[(String, Int, Int, Int)]]()
7
8         for _ in stride(from: 0, to: firstString.count + 1, by: 1) {
9             var row = [(String, Int, Int, Int)]()
10
11             for _ in stride(from: 0, to: secondString.count + 1, by: 1) {
12                 let tuple = ("", 0, 0, 0)
13                 row.append(tuple)
14             }
15
16             lcs.append(row)
17         }
18
19         for i in stride(from: 1, to: firstString.count + 1, by: 1) {
20             for j in stride(from: 1, to: secondString.count + 1, by: 1) {
21                 let firstIndex = firstString.index(firstString.startIndex, offsetBy: i - 1)
22                 let secondIndex = secondString.index(secondString.startIndex, offsetBy: j - 1)
23
24                 if firstString[firstIndex] == secondString[secondIndex] {
25                     let char = String(firstString[firstIndex])
26                     lcs[i][j] = (char, lcs[i - 1][j - 1].1 + 1, i - 1, j - 1)
27                 } else {
28                     if lcs[i - 1][j].1 > lcs[i][j - 1].1 {
29                         lcs[i][j] = ("", lcs[i - 1][j].1, i - 1, j)
30                     } else {
31                         lcs[i][j] = ("", lcs[i][j - 1].1, i, j - 1)
32                     }
33                 }
34             }
35         }
36
37         return buildSequence(lcs: lcs)
38     }
39
40     func buildSequence(lcs: [[(String, Int, Int, Int)]] -> [String] {
41         var sequence = [String]()
42
43         var i = lcs.count - 1
44         var j = lcs[0].count - 1
45
46         while i != 0, j != 0 {
47             let currentEntry = lcs[i][j]
48
49             if currentEntry.0 != "" {
50                 sequence.insert(currentEntry.0, at: 0)
51             }
52
53             i = currentEntry.2
54             j = currentEntry.3
55         }
56
57         return sequence
58     }
59 }
60
```