

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 * min(n, m)) time | O(min(n, m)^2) space
5     func longestCommonSubsequence(firstString: String, secondString: String) -> [String] {
6         let smallestString = firstString.count < secondString.count ? firstString : secondString
7         let biggestString = firstString.count >= secondString.count ? firstString : secondString
8
9         var evenLCS = Array(repeating: [String](), count: smallestString.count + 1)
10        var oddLCS = Array(repeating: [String](), count: smallestString.count + 1)
11
12        for i in stride(from: 1, to: biggestString.count + 1, by: 1) {
13            if i % 2 == 0 {
14                secondSolutionHelper(i, biggestString, smallestString, currentLCS: &evenLCS, previousLCS: &oddLCS)
15            } else {
16                secondSolutionHelper(i, biggestString, smallestString, currentLCS: &oddLCS, previousLCS: &evenLCS)
17            }
18        }
19
20        return biggestString.count % 2 == 0 ? evenLCS[smallestString.count] : oddLCS[smallestString.count]
21    }
22
23    func secondSolutionHelper(_ i: Int, _ biggestString: String, _ smallestString: String, currentLCS: inout [[String]], previousLCS: inout [[String]]) {
24        for j in stride(from: 1, to: smallestString.count + 1, by: 1) {
25            let firstIndex = biggestString.index(biggestString.startIndex, offsetBy: i - 1)
26            let secondIndex = smallestString.index(smallestString.startIndex, offsetBy: j - 1)
27
28            if biggestString[firstIndex] == smallestString[secondIndex] {
29                var diagonal = previousLCS[j - 1]
30                let char = String(smallestString[secondIndex])
31                diagonal.append(char)
32
33                currentLCS[j] = diagonal
34            } else {
35                let top = previousLCS[j]
36                let left = currentLCS[j - 1]
37
38                if top.count > left.count {
39                    currentLCS[j] = top
40                } else {
41                    currentLCS[j] = left
42                }
43            }
44        }
45    }
46 }
47
```