Prompt   Scratchpad   Our Solution(s)   Video Explanation   Run Code

Solution 1

```swift
1    // Copyright © 2020 AlgoExpert, LLC. All rights reserved.
2
3  ▾ class Program {
4  ▾   class LinkedList {
5        var value: Int
6        var next: LinkedList?
7
8  ▾     init(value: Int) {
9          self.value = value
10         next = nil
11       }
12     }
13
14     // O(n) time | O(1) space - where n is the number of nodes in the Linked List
15  ▾   static func rearrangeLinkedList(_ head: LinkedList, _ k: Int) -> LinkedList? {
16       var smallerListHead: LinkedList?
17       var smallerListTail: LinkedList?
18       var equalListHead: LinkedList?
19       var equalListTail: LinkedList?
20       var greaterListHead: LinkedList?
21       var greaterListTail: LinkedList?
22
23       var node: LinkedList? = head
24  ▾     while let n = node {
25  ▾       if n.value < k {
26           (smallerListHead, smallerListTail) = growLinkedList(smallerListHead, smallerListTail, node)
27  ▾       } else if n.value > k {
28           (greaterListHead, greaterListTail) = growLinkedList(greaterListHead, greaterListTail, node)
29  ▾       } else {
30           (equalListHead, equalListTail) = growLinkedList(equalListHead, equalListTail, node)
31         }
32
33         var prevNode = n
34         node = n.next
35         prevNode.next = nil
36       }
37       var (firstHead, firstTail) = connectLinkedLists(smallerListHead, smallerListTail, equalListHead, equalListTail)
38       var (finalHead, _) = connectLinkedLists(firstHead, firstTail, greaterListHead, greaterListTail)
39       return finalHead
40     }
41
42  ▾   static func growLinkedList(_ head: LinkedList?, _ tail: LinkedList?, _ node: LinkedList?) -> (LinkedList?, LinkedList?) {
43       var newHead = head
44       var newTail = node
45  ▾     if newHead == nil {
46         newHead = node
47       }
48  ▾     if let t = tail {
49         t.next = node
50       }
51       return (newHead, newTail)
52     }
53
54     static func connectLinkedLists(_ headOne: LinkedList?, _ tailOne: LinkedList?,
55  ▾                                 _ headTwo: LinkedList?, _ tailTwo: LinkedList?) -> (LinkedList?, LinkedList?) {
56       var newHead = headOne
57       var newTail = tailTwo
58  ▾     if newHead == nil {
59         newHead = headTwo
60       }
61  ▾     if newTail == nil {
62         newTail = tailOne
63       }
64
65  ▾     if let t = tailOne {
66         t.next = headTwo
67       }
68       return (newHead, newTail)
69     }
70   }
71
```