

Solution 1Solution 2

```
1 // Copyright © 2020 AlgoExpert, LLC. All rights reserved.
2
3 #include <vector>
4
5 using namespace std;
6
7 class LinkedList {
8 public:
9     int value;
10    LinkedList *next;
11
12    LinkedList(int value) {
13        this->value = value;
14        next = NULL;
15    }
16 };
17
18 void recursiveMerge(LinkedList *p1, LinkedList *p2, LinkedList *p1Prev);
19
20 // O(n + m) time | O(n + m) space - where n is the number of nodes in the first
21 // Linked List and m is the number of nodes in the second Linked List
22 LinkedList *mergeLinkedLists(LinkedList *headOne, LinkedList *headTwo) {
23     recursiveMerge(headOne, headTwo, NULL);
24     return headOne->value < headTwo->value ? headOne : headTwo;
25 }
26
27 void recursiveMerge(LinkedList *p1, LinkedList *p2, LinkedList *p1Prev) {
28     if (p1 == NULL) {
29         p1Prev->next = p2;
30         return;
31     }
32     if (p2 == NULL)
33         return;
34
35     if (p1->value < p2->value) {
36         recursiveMerge(p1->next, p2, p1);
37     } else {
38         if (p1Prev != NULL)
39             p1Prev->next = p2;
40         LinkedList *newP2 = p2->next;
41         p2->next = p1;
42         recursiveMerge(p1, newP2, p2);
43     }
44 }
45
```