

Exercise-41: Two Sorted Lists

You are given the heads of two sorted linked lists **list1** and **list2**.

Merge the two lists in a one sorted list. The list should be made by splicing together the nodes of the first two lists.

Return *the head of the merged linked list*.

Program:

```
class ListNode:
    def __init__(self, val=0, next=None):
        self.val = val
        self.next = next

def mergeTwoLists(list1, list2):
    dummy = ListNode()
    current = dummy
    # Iterate through both lists
    while list1 and list2:
        if list1.val < list2.val:
            current.next = list1
            list1 = list1.next
        else:
            current.next = list2
            list2 = list2.next
        current = current.next
    current.next = list1 if list1 else list2
    return dummy.next
list1 = ListNode(1, ListNode(2, ListNode(4)))
list2 = ListNode(1, ListNode(3, ListNode(4)))
merged_list = mergeTwoLists(list1, list2)
def printList(head):
    current = head
    while current:
        print(current.val, end=" ")
        current = current.next
printList(merged_list)
```

output-

===== RESTA

1 1 2 3 4 4

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Time complexity: $O(n + m)$