41. Merge 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.

Example 1: Input: list1 = [1,2,4], list2 = [1,3,4] Output: [1,1,2,3,4,4]

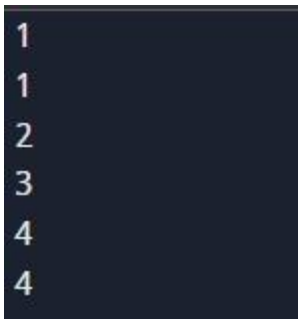
AIM: TO Merge two sorted lists

PROGRAM:

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


def mergeTwoLists(list1, list2):
    dummy = ListNode(-1)
    current = dummy


    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


    if list1:
        current.next = list1
    elif list2:
        current.next = list2


    return dummy.next


list1 = ListNode(1, ListNode(2, ListNode(4)))
```

```
list2 = ListNode(1, ListNode(3, ListNode(4)))
merged = mergeTwoLists(list1, list2)
while merged:
    print(merged.val)
    merged = merged.next
```

OUTPUT:



TIME COMPLEXITY: O(n+m)