### **8.)Merge Two Sorted Lists**

def merge\_sorted\_lists(list1, list2):

merged = []

i = j = 0

# Merge until one list is exhausted

while i < len(list1) and j < len(list2):

if list1[i] < list2[j]:

merged.append(list1[i])

i += 1

else:

merged.append(list2[j])

j += 1

# Append remaining elements

merged.extend(list1[i:])

merged.extend(list2[j:])

return merged

# Example usage

list1 = [1, 3, 5, 7]

list2 = [2, 4, 6, 8]

result = merge\_sorted\_lists(list1, list2)

print("Merged sorted list:", result)

**Output:**

Merged sorted list: [1, 2, 3, 4, 5, 6, 7, 8]