

Merge Sort Algorithm – part 1

1. As part of the *merge sort* algorithm, two lists that have already been sorted are merged together into a larger, sorted list. Study the Python code and the example diagram of two lists being merged, then complete the remaining diagrams to demonstrate your understanding. Consider:

- If both arrays have the same value, which one is taken?

```

1 def merge(left, right):
2     """Merge two sorted lists into one sorted list."""
3     i, j = 0, 0
4     result = []
5     # Compare elements from both lists and add the smaller one
6     while i < len(left) and j < len(right):
7         if left[i] < right[j]:
8             result.append(left[i])
9             i += 1
10        else:
11            result.append(right[j])
12            j += 1
13
14        # Add any remaining elements from the left list
15        while i < len(left):
16            result.append(left[i])
17            i += 1
18
19        # Add any remaining elements from the right list
20        while j < len(right):
21            result.append(right[j])
22            j += 1
23
24        return result

```

