Merge Sort Algorithm – part 1

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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     # Add any remaining elements from the left list
14     while i < len(left):
15         result.append(left[i])
16         i += 1
17     # Add any remaining elements from the right list
18     while j < len(right):
19         result.append(right[j])
20         j += 1
21     return result
```