

2.

1. If there are zero or one item in the unprocessed list: If zero then the function returns (nil, nil), which we check for in the functions that call the partition function to denote a termination condition. If one item, we form a list with the single item being the head and rest being the tail

2. Each half is sorted recursively and subsequently merged when both sides are sorted, recursively

3. The end conditions are –

- i. first and second lists are empty
- ii. first list is empty
- iii. second list empty
- iv. first element of first list is smaller than first element of the second list
- v. first element of the first list is greater than or equal to first element of first list

3. *This answers to these are each function in the source code*

4.

- a. These two linked are a sorted and an unsorted list. The unsorted list will be full and the unsorted list will be empty. When the unsorted list is empty, the sort is complete.
- b. When the unsorted list is empty, the sort is complete. The insertion sort function is called with the head of the unsorted list as the element to be inserted, and the sorted list as the list param, in order to insert the unsorted element into the sorted list.
- c. The two ways that the process can terminate are:
  - a. The unsorted list is empty – the sorted list contains all elements in ascending order
  - b. The element is inserted into the correct position of the sorted list