

## 2.1.5

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**2.1.5** For each of the two conditions in the inner for loop in insertion sort (ALGORITHM 2.2), describe an array of  $N$  items where that condition is always false when the loop terminates.

### ALGORITHM 2.2 Insertion sort

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```
public class Insertion
{
    public static void sort(Comparable[] a)
    { // Sort a[] into increasing order.
        int N = a.length;
        for (int i = 1; i < N; i++)
        { // Insert a[i] among a[i-1], a[i-2], a[i-3]... ..
            for (int j = i; j > 0 && less(a[j], a[j-1]); j--)
                exch(a, j, j-1);
        }
        // See page 245 for less(), exch(), isSorted(), and main().
    }
}
```

For condition " $j > 0$ " to be false whenever the inner loop terminates, the array should be in complete reversed order:

5 4 3 2 1

For condition " $\text{less}(a[j], a[j-1])$ " to be false whenever the inner loop terminates, the array should be completely sorted:

1 2 3 4 5