

random = [C, D, Y, X, A, Z, B]  
sorted = [A, B, C, D, X, Y, Z]  
reversed = [Z, Y, X, D, C, B, A]

Insertion sort – Random: (Red – current position, Black – unsorted list)

Iteration 0 [C, D, Y, X, A, Z, B]  
Iteration 1 [C, D, Y, X, A, Z, B]  
Iteration 2 [C, D, Y, X, A, Z, B]  
Iteration 3 [C, D, X, Y, A, Z, B]  
Iteration 4 [A, C, D, X, Y, Z, B]  
Iteration 5 [A, C, D, X, Y, Z, B]  
Iteration 6 [A, B, C, D, X, Y, Z]

Insertion sort – Sorted: (Red – current position, Black – unsorted list)

Iteration 0 [A, B, C, D, X, Y, Z]  
Iteration 1 [A, B, C, D, X, Y, Z]  
Iteration 2 [A, B, C, D, X, Y, Z]  
Iteration 3 [A, B, C, D, X, Y, Z]  
Iteration 4 [A, B, C, D, X, Y, Z]  
Iteration 5 [A, B, C, D, X, Y, Z]  
Iteration 6 [A, B, C, D, X, Y, Z]

Insertion sort – reversed: (Red – current position, Black – unsorted list)

Iteration 0 [Z, Y, X, D, C, B, A]  
Iteration 1 [Y, Z, X, D, C, B, A]  
Iteration 2 [X, Y, Z, D, C, B, A]  
Iteration 3 [D, X, Y, Z, C, B, A]  
Iteration 4 [C, D, X, Y, Z, B, A]  
Iteration 5 [B, C, D, X, Y, Z, A]  
Iteration 6 [A, B, C, D, X, Y, Z]

Quick sort – Random: (Red – pivot, Black – Unsorted List, Blue & Red – sorted)

Each iteration means one call to quick\_sort() (except call on empty list)

Iteration 0 [A, B, C, D, Y, X, Z]  
Iteration 1 [A, B, C, D, Y, X, Z]  
Iteration 2 [A, B, C, D, Y, X, Z]  
Iteration 3 [A, B, C, D, X, Y, Z]  
Iteration 4 [A, B, C, D, X, Y, Z]  
Iteration 6 [A, B, C, D, X, Y, Z]

Quick sort – Sorted: (Red – pivot, Black – Unsorted List, Blue & Red – sorted)

Each iteration means one call to quick\_sort() (except call on empty list)

Iteration 0 [A, B, C, D, X, Y, Z]  
Iteration 1 [A, B, C, D, X, Y, Z]  
Iteration 2 [A, B, C, D, X, Y, Z]  
Iteration 3 [A, B, C, D, X, Y, Z]  
Iteration 4 [A, B, C, D, X, Y, Z]  
Iteration 5 [A, B, C, D, X, Y, Z]  
Iteration 6 [A, B, C, D, X, Y, Z]

Quick sort – Reversed: (Red – pivot, Black – Unsorted List, Blue & Red – sorted)

Each iteration means one call to quick\_sort() (except call on empty list)

Iteration 0 [Y, X, D, C, B, A, Z]  
Iteration 1 [X, D, C, B, A, Y, Z]  
Iteration 2 [D, C, B, A, X, Y, Z]  
Iteration 3 [C, B, A, D, X, Y, Z]  
Iteration 4 [B, A, C, D, X, Y, Z]  
Iteration 5 [A, B, C, D, X, Y, Z]  
Iteration 6 [A, B, C, D, X, Y, Z]

Tim sort – Random:

Iteration 0 [C, D, Y, X, A, Z, B]  
Iteration 1 [C, D, X, Y, A, Z, B]  
Iteration 2 [C, D, X, Y, A, Z, B]  
Iteration 3 [A, C, D, X, Y, Z, B]  
Iteration 4 [A, B, C, D, X, Y, Z]

Tim sort – Sorted:

Iteration 0 [A, B, C, D, X, Y, Z]  
Iteration 1 [A, B, C, D, X, Y, Z]  
Iteration 2 [A, B, C, D, X, Y, Z]  
Iteration 3 [A, B, C, D, X, Y, Z]  
Iteration 4 [A, B, C, D, X, Y, Z]

Tim sort – Reversed:

Iteration 0 [Z, Y, X, D, C, B, A]  
Iteration 1 [Y, Z, D, X, B, C, A]  
Iteration 2 [D, X, Y, Z, B, C, A]  
Iteration 3 [B, C, D, X, Y, Z, A]  
Iteration 4 [A, B, C, D, X, Y, Z]