

Project 1 | INSERTION SORT PROJECT

[22,27,16,2,18,6] -> Insertion Sort

1) Insertion Sort Steps

27 < 22 ? [22, 27, 16, 2, 18, 6]

16 < 27 ? [22, 16, 27, 2, 18, 6]

16 < 22 ? [16, 22, 27, 2, 18, 6]

2 < 27 ? [16, 22, 2, 27, 18, 6]

2 < 22 ? [16, 2, 22, 27, 18, 6]

2 < 16 ? [2, 16, 22, 27, 18, 6]

18 < 27 ? [2, 16, 22, 18, 27, 6]

18 < 22 ? [2, 16, 18, 22, 27, 6]

18 < 16 ? [2, 16, 18, 22, 27, 6]

18 < 2 ? [2, 16, 18, 22, 27, 6]

6 < 27 ? [2, 16, 18, 22, 6, 27]

6 < 22 ? [2, 16, 18, 6, 22, 27]

6 < 18 ? [2, 16, 6, 18, 22, 27]

6 < 16 ? [2, 6, 16, 18, 22, 27]

6 < 2 ? [2, 6, 16, 18, 22, 27]

2) Big-O Notation

$O(n^2)$

3) Time Complexity

Average Case: n^2

Worst Case: n^2

Best Case: n

4) Which case for 18?

18 is in the scope of the average case because it is in the middle of the array.

5) First 4 Insertion Sort steps of the [7, 3, 5, 8, 2, 9, 4, 15, 6]

7 < 3 ? [7, 3, 5, 8, 2, 9, 4, 15, 6]

3 < 7 ? [3, 7, 5, 8, 2, 9, 4, 15, 6]

3 < 7 ? [3, 7, 5, 8, 2, 9, 4, 15, 6]

5 < 7 ? [3, 5, 7, 8, 2, 9, 4, 15, 6]

5 < 3 ? [3, 5, 7, 8, 2, 9, 4, 15, 6] . . .