```
INSERTION-SORT(A)
1.      for j = 2 to A.length()
2.          key = A[j]
3.          i = j - 1
4.          while i > 0 and A[i] > key
5.              A[i+1] = A[i]
6.              i = i - 1
7.          A[i+1] = key
```

# Analysis —

Insertion sort has O(n^2) running time in the worst case and in the average case. The worst case is when the input array is reverse sorted and in the average case we consider half of the elements in A[1..j-1] is less than A[j] and half the elements are greater. This consideration gives us O(n^2) for the average case as well.

In the best case, when the input array is already sorted, the running time is O(n).