Class work: Insertion-sort

Insertion-sort works similarly with sorting a deck of cards. The algorithm is described below. As usual, we denote the size of A by n.

```
INSERTION-SORT(A)
1  For k = 1 to n − 1
2        key = A[k]
3        i = k − 1
4        while i ≥ 0 and A[i] > key
5              A[i + 1] = A[i]
6              i = i − 1
7        A[i + 1] = key
```

1. Show how this works on $A = (3, 1, 5, 7, 4, 6, 2)$.
2. For a given value of k, describe in a brief sentence what does the inner while loop do. Be as concise as you can.
3. For a given value of k, how many times does the while loop run, in the best case?
4. What about the worst-case?
5. Give a best-case and worst-case input for insertion-sort (you can assume $n = 7$).