Exercise 1

No, they do not have the same worst case time complexity.
First O(n*n), O(n+n). Therefore the nested for loop case has quadratic time complexity whereas the second snippet has a linear time complexity.

Exercise 2

In this code, f(n) calls n(n-1) twice and f(n-1) calls f(n-2) twice until we get down to f(1). The resulting structure has a depth of N and thus each level will have twice as many calls as the one above it. The complexity is thus O(2^N).

Exercise 3

Here the number of elements in the problem gets halved each time, which results in O(log N ) runtime complexity.