Read: Sections 3.1-3.2.
Definition: Write down the definitions for the following terms. (5 points)
algorithm,
greedy algorithm,
f(x) is \( O(g(x)) \),
f(x) is \( \Omega(g(x)) \),
f(x) is big-Theta of \( g(x) \)

Problems to be graded: (10 points)
§3.1: 8, 9,
§3.2: 6, 16, 18, 26, 36, 44.

Describe an algorithm for each of the following problems. You can either write in pseudocode or use plain English, but you need to make the steps clear. Please do not use any specific language, as the grader may not be familiar with that language.

1. The algorithm for bubble sort. You cannot copy the algorithm on page 197. Instead, please describe in your own words the operations in a list, (e.g., step 1, step 2, etc.)

2. Given a list of integers \( a_1, a_2, \ldots, a_n, \) \( (n \geq 100) \), which may not be sorted, describe an algorithm that finds the second largest integer from the list.
   (Please self-test your algorithm on the list 1,1,2,2,3,3,\ldots n,n. Your algorithm should return the number \( n \), but not \( n-1 \). You don’t need to write down the testing in submitted homework.)

Suggested Practice Problems:
§3.2: 1, 2, 3, 4, 7, 8, 9, 20, 21, 22, 25, 30, 37, 45, 46, 47, 61, 74.