Analysis of Algorithms: Assignment 2

Due date: January 18 (Thursday)

Problem 1

Suppose that $A[1..n]$ is an integer array, and some integers occur several times in this array. For example, if A is $\langle 4, 1, 4, 6, 1, 4, 7, 8 \rangle$, then 1 occurs two times and 4 occurs three times.

Write an algorithm for counting integers that occur several times; note that each of these integers must be counted only once. For instance, if the input array is $\langle 4, 1, 4, 6, 1, 4, 7, 8 \rangle$, then your algorithm should return 2, since there are two integers (1 and 4) that occur several times. As another example, if the array is $\langle 1, 1, 3, 4, 3, 6, 4, 4 \rangle$, the algorithm should return 3.

Problem 2

Estimate the worst-case running time of your algorithm, using the method described in class.