

Homework 4

CMPSC 465

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Problem 1:

I did not work in a group
I did not consult without anyone my group member
I did not consult any non-class materials

Problem 2: *Divide and Conquer*

a) Pseudo-code

Algorithm 1: Finding majority element in an array

Input : An array $A[1 \dots n]$ that may or may not contain a majority element (an element for which appears more than $n/2$ times in the array)

Output: The majority element

```
1 majorityElement = A[1], count = 1
2 for  $i \leftarrow 1$  to  $n$  do
3   if count = 0 then
4     | majorityElement :  $e = A[i]$ 
5     | count  $\leftarrow$  1
6   else if majorityElement = A[ $i$ ] then
7     | count := count + 1
8   else
9     | count := count - 1
10  end if
11 end for
12 return majorityElement
```

Problem 3: *Reverse Graph*

Problem 4: *Graph Basics*