Arrays and for loops

Inlab 1

In today's assignment you will be defining and initializing an array and writing several methods to manipulate the array.

It would be a good idea (not required) to work with someone on this lab, only groups of two, nothing bigger and make sure both members of the group understand what is going on.

First:

- Create a class with a main method.
- In the main method write the code to initialize an integer array of 10 elements.
- Hardcode in 10 values . (Use the Random number generator if you know Java) to initialize the array. I will show this in class on Monday and post example code (I would stick to int numbers between 1 and 10).
- Write code to print out the array use a for loop.

You have finished part one. *This lab is so easy.*
Normally we would never write all our code in the main method. This lab is the only time all semester you can do that. Usually your main method will be two maybe three lines long. If you know Java you should do each of these parts in methods, if you just came from Python you can do it all in main.

Part two:
Put a comment like this //Part Two
Write code to print the array in reverse order use a for loop.

Part three
Write a method (or a //part three comment) to print out the second largest element in the array use a for loop and condition statements.

Part four
Write a method to print the average of the array. (see if you can see a pattern....you need a for loop)
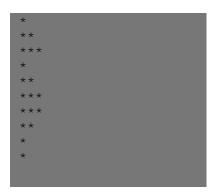
We won't get to user input on Monday so I'm skipping this next step.

Part five

Write a method to search the array for an integer the user gives you. *Search has a time complexity of O(n) for an unsorted array.*

Part six (a little harder)

Create a histogram according to your array data
If you array looks like this 1,2,3,1,2,3,3,2,1,1
Your histogram would look like this:

```
*
**
***
*
**
***
***
**
*
*
```

Part seven (they're getting harder):

Write a method to print the frequency of each integer in the array:
e.g.: If you array has the elements 2,3,2,4,2,4,2,5,4,5
You would print out:

```
  The number 2 is in the
array 4 times
  The number 3 is in the
array 1 times
  The number 4 is in the
array 3 times
  The number 5 is in the
array 2 times
```

Hint: you don't have to sort the array, use a second array. Get as much as you can done by the end of lab. **Show what you have done to your TA for credit.**