CPS 210 - Exam 3

Name:

1) (10 pts) Will the following code execute without an error? What are the errors?

```
int[] array = {1,2,3,4,5};

for(int i = 0; i <= array.length; i++) {
    array[i] = i + 0.5;
}
```

- True
- False

Explain:

2) What is the output of the following program?

```
public class Exam3 {
    public static void main(String[] args) {
        int x = 6;
        int y = 2;
        int z = 5;
        double[] position = {x, y, z};

        System.out.println(manipulate(position));
        for(int i = 0; i < position.length; i++) {
            System.out.println(position[i]);
        }
    }

    public static int manipulate(int[] position) {
        position[0] = 5;
        position[1] = 10;
        position[2] = 15;
        return position[0] + position[1] + position[2];
    }

    public static double manipulate(double[] position) {
        position[0] = 10.0;
        position[1] = 20.0;
        position[2] = 30.0;
        return position[0] + position[1] + position[2];
    }
}
```

Output:

Explain why:

3) (20 pts) Write a program that asks the user to enter an integer, double, and a word (one word, a space should stop the input). The program should then print out the integer, double, and word in the following format:

```
The integer is: 5
The double is: 3.14
The word is: Hello
```

4) (20 pts) Write a program that asks a user for an integer that is divisible by 5. If the user enters a number that is not divisible by 5, you should keep asking the user for a valid number until they enter one. Once they enter the valid number, print out the number they entered. Below is a sample run:

```
Enter a number that is divisible by 5: 3
Enter a number that is divisible by 5: 7
Enter a number that is divisible by 5: 10
10
```

5) (20 pts) Write a program that asks a user for a floating point number. Each time the user enters a number, the program should add the number to a running total. The program should keep asking the user for a number until the user enters a negative number or the total reaches 100. Once the user enters a negative number or the total reaches 100, the program should print out the running total. Below is a sample run:

```
//Negative number
Enter a number: 5.4
Enter a number: 10.2
Enter a number: 15.3
Enter a number: -5.4
The total is: 30.9

//Total reaches 100
Enter a number: 5.4
Enter a number: 10.2
Enter a number: 16.1
Enter a number: 68.3
The total is: 100.0
```

6) (20 pts) Write a program that asks a user for a positive integer. The program should then print out the number of digits in the number. Below is a sample run:

```
Enter a number: 123
The number of digits is: 3

Enter a number: 123456
The number of digits is: 6
```

Hint:
1) 100/10 = 10
2) 10/10 = 1
3) 1/10 = 0(integer division)
100 has 3 digits