

CIS 200 Exam 1 (50 points)
Monday, February 14, 2011

Name: _____

This test is closed-books and closed-notes. Please do your own work.

- 1.(6 pts) Write a **complete** Java program (everything that would go in the .java file) that asks the user for their name, and prints Hello to them. For example, if the user typed in “Bob” for the name, then your program should look like this when it runs (the user input is in red):

Enter name: Bob
Hello, Bob

```
import java.util.*;

public class Exam {
    public static void main(String[] args) {
        Scanner s = new Scanner(System.in);

        System.out.print("Enter name: ");
        String name = s.nextLine();
        System.out.println("Hello, " + name);
    }
}
```

}

2.(12 pts) Write a code fragment that asks the user for three numbers, and then prints out the biggest number. You will need to set up a Scanner to get the user input. A sample run of your fragment might look like this (user input is in red):

Enter number: 7

Enter number: 2

Enter number: 2

The biggest number entered was 7

```
Scanner s = new Scanner(System.in);
System.out.print("Enter number: ");
int num1 = Integer.parseInt(s.nextLine());
System.out.print("Enter number: ");
int num2 = Integer.parseInt(s.nextLine());
System.out.print("Enter number: ");
int num3 = Integer.parseInt(s.nextLine());

System.out.print("\nThe biggest number entered was ");

if (num1 >= num2 && num1 >= num3) {
    System.out.println(num1);
}
else if (num2 >= num1 && num2 >= num3) {
    System.out.println(num2);
}
```

```
else {  
    System.out.println(num3);  
}
```

3.(10 pts) Suppose we have declared and initialized the following variables:

```
int num1 = 52;  
int num2 = 11;  
double dub = 3.3;  
char letter = 'd';
```

Show what is printed in each of the following code fragments (assume they are executed in order). Please show your work.

a) `int value = (num1%num2)/3 + (int)dub;`
`System.out.println(value);`

$value = (52\%11)/3 + 3$
 $8/3 + 3$
 $2 + 3$
 5
Prints 5

b) `value = 33%20 - value*value + num2;`
`System.out.println(value);`

$value = 33\%20 - 5*5 + 11$
 $13 - 5*5 + 11$

13 - 25 + 11

-1

Prints -1

```
c)boolean result = (dub < 4) && (letter
    == 'D')
    System.out.println(result);
```

```
result = (3.3 < 4) && ('d' == 'D')
true && false
false
Prints false
```

```
d)int sum = 0;
    for (int i = 1; i <= 11; i += 2) {
        switch (i) {
            case 1:
                System.out.println("first");
            case 2:
                System.out.println("second");
            case 4:
                System.out.println("fourth");
            case 8:
                System.out.println("eighth");
            default:
                System.out.println("other");
                break;
        }
    }
```

```
        sum += i;
    }
    System.out.println("Sum is " + sum);
    Values of i: 1,3,5,7,9,11
    Sum = 1+3+5+7+9+11 = 36
```

Prints:

```
first
second
fourth
eighth
other (I was 1)
other (I was 3)
other (I was 5)
other (I was 7)
other (I was 9)
other (I was 11)
Sum is 36
```

4.(10 pts) The following program is supposed to get 10 numbers from the user, and print a total of how many of those numbers are between 10 and 20 (inclusive). (So if the user enters 4, 3, 20, 1, 10, 20, 11, 6, 21, 17, the program should print that 5 of those numbers were in the correct range.) This program will compile, but when we run it we will not get the desired results. What is wrong in this program? How will that affect the results? How do we fix the program? Please be specific. Also, there are several problems – please list them all.

```
import java.util.*;
public class Exam1 {
    public static void main(String[] args) {
        Scanner s = new Scanner(System.in);
        int count = 1;
        for (int i = 0; i <= 10; i++) {
            System.out.print("Enter number: ");
            int num=Integer.parseInt(s.nextLine());
            if (num <= 20) {
                count = count + num;
            }
            else {
                break;
            }
        }
        System.out.println(count +
            " were between 10 and 20");
    }
}
```

}

- 1) Will ask for 11 numbers. Change loop condition to $i < 10$
- 2) Will always make total 1 too big. Start count at 0.
- 3) Will count all numbers ≤ 20 . Make condition:
a. if ($\text{num} \leq 20 \ \&\& \ \text{num} \geq 10$)
- 4) Is summing, not counting. Change to $\text{count}++$
- 5) Get rid of else – it's leaving the loop

5.(12 pts) Write a code fragment with **nested for loops** that will print out 121, 12321, ..., 1234567654321 all on separate lines. (Note: the ... means to continue the pattern up to 1234567654321.) Do not declare any variables other than the loop counters in the for loops. (You should print one digit at a time. You will want an outer for-loop to step through each number, and two inner loops – one to count “up” for the current number, and one to count “down”.)

```
for (int i = 2; i <= 7; i++) {  
    for (int j = 1; j <= i; j++) {  
        System.out.print(j);  
    }  
    for (int j = i-1; j >= 1; j--) {  
        System.out.print(j);  
    }  
    System.out.println();  
}
```

