CSCI 201 Fall 2007: Sample Questions for Exam 1

The exam will be composed of questions (usually 3 or 4) similar to those shown here

All exams are closed book

Problem 1: Definitions

Write a statement that declares an integer variable.

Write a statement that declares a String variable and stores the character sequence "hello" in that variable.

Give an example of a character literal.

Give an example of a double literal.

Give an example of an eight bit binary number.

Give an example of a data type

What is "byte code"

Problem 2: Reading Code

Answer the following questions concerning the program given below (line numbers have been included for convenience):

```
1. package testing;
2. import java.util.Scanner;
3. public class Main {
4.    public Main() {
5.    }
6.    public static void main(String[] args) {
7.        // declare variables used to hold the data
8.        final int BASE = 32;
9.        int celsiusTemp;
10.       double fahrenheitTemp;
11.
12.       // get celsius temp from user
13.       System.out.println("enter the celsius temperature as a whole number");
14.       Scanner myScanner = new Scanner (System.in);
15.       celsiusTemp = myScanner.nextInt();
16.
17.       // calculate conversion to fahrenheit
18.       fahrenheitTemp = celsiusTemp * 9/5 + BASE;
19.
20.       // output conversion results
21.       System.out.println ("Celsius Temperature: " + celsiusTemp);
22.       System.out.println ("Fahrenheit Equivalent: " + fahrenheitTemp);
23.    }
24.}
```

1. What is the name of the class being defined?

2. What kind of statement is on line 7?

3. What is the purpose of line 8?

4. On line 6, why do we need a method named *main()*?

5. What is the purpose of line 15?

6. When this program is run, if the user enters "1", will the output be 33.0 or 33.8?

Problem 3: Expressions

In Java what is the result of evaluating the following expressions?

1. 2 + 2 * 3 + 6 / 7

2. 8 %(3 + 2478) / 10 % 10

3. 4.2 / 2

4. 1 + 2 / 2.0 < 5

6. 9 == 9 || !true

7. (int)4.3 + (double)4

8. 3<4 && !(5>3)

Problem 4: Legal Statements

Identify whether each of the statements below is legal or not. A statement is said to be "legal" in Java if it compiles. A "legal" statement may still have logic errors.

6 < 7 < 8

int x = 8.9;

System.out.println("the number is " + 6);

System.out.println("6" + 6);

System.out.println(6 + "6") ;

double y = 9;

System.out.printf("%s %d", "the number is ", 6);

if (true);

Problem 5: Conditional Statements

Below are two versions of the program Age. Do the two programs print the same thing to the monitor when the user enters 21? What is printed by Version 1?

Version 1

```
import java.util.Scanner;
public class Main
{
  public static void main (String[] args)
  {
    final int MINOR = 21;

    System.out.print ("Enter your age: ");
    Scanner scanner = new Scanner(System.in);
    int age = scanner.nextInt();
    System.out.println ("You entered: " + age);

    if(age == MINOR)
      System.out.println ("This is your year.");
    if (age <= MINOR)
      System.out.println ("Youth is a wonderful thing.");
    if (age >= MINOR)
      System.out.println ("Life begins at 40.");
    else
      System.out.println ("Age is a state of mind.");
    System.out.println ("Enjoy!");
  }
}
```

Version 2

```
import java.util.Scanner;
public class Main
{
  public static void main (String[] args)
  {
    final int MINOR = 21;

    System.out.print ("Enter your age: ");
    Scanner scanner = new Scanner(System.in);
    int age = scanner.nextInt();
    System.out.println ("You entered: " + age);

    if(age == MINOR)
      System.out.println ("This is your year.");
    else if (age <= MINOR)
      System.out.println ("Youth is a wonderful thing.");
    else if (age >= MINOR)
      System.out.println ("Life begins at 40.");
    else
      System.out.println ("Age is a state of mind.");
    System.out.println ("Enjoy!");
  }
}
```

Problem 6: Writing code

The numbers 3, 6, 39, and 42 are all multiples of 3, that is, 3 divides each of the numbers with no remainder. Write a conditional statement that prints whether a number stored in a variable called *number* is a multiple of three.

Examples of the output of your conditional statement (when run as part of a larger program) would look like the following:

```
138 is a multiple of three

7 is NOT a multiple of three
```

EXAMPLE SOLUTION:

```
if (number % 3 == 0)  {
   System.out.println(num + " is a multiple of three");
}
else  {
   System.out.println(num + " is NOT a multiple of three");
}
```