CS 251L
2010.8.24
Review Quiz

The purpose of this quiz will be to enable you to know where you stand in preparation for this semester's material. It is important that you have a firm grasp of procedural programming in Java. The quiz will not be graded but it is highly recommended that you complete this over the next two weeks as we review.

1. Enumerate every primitive data type and the number of bytes required by each.

2. Enumerate each arithmetic operator.

3. Enumerate each relational operator.

4. Show three different ways to increment a variable by one.

5. Explain the difference between the following two blocks of code:

```
int i = 0;
System.out.println(++i);

int i = 0;
System.out.println(i++);
```

6. What is the result of this expression if a = 10, b = 20, and c = 30? (by hand obviously! ☺)

```
++a % 7 + b * c++ / 10 - a
```

7. List the resulting values and data types of these expressions:

   10 * 20
   10.0 * 20
   20 / 10
   10 / 20
   10.0 / 20
   20 / 10.0

8. Does Java have a separate language keyword for “else if” ?

9. What are the 3 types of loops?

10. Convert this loop to a top-tested loop:

```
for(int var = 0; var < 20; var += 2) {
   dbConnection.ping();
   var += 2;
}
```

11. Write a counted loop to sum every integer divisible by 17 between 100 and 200, inclusive.

12. Write a bottom-tested loop whose body executes the statement `connection.establish();` and then tests the condition `!connection.isAlive();`

13. Declare an array of type double and of size 20 and initialize its values to the square roots of the numbers between 49 and 68.

14. Identify what the following loop does:

```
float[] prices = // initialize array.
for(int a = 0; a < prices.length - 1; a++) {
   for(int b = a + 1; b < prices.length; b++) {
      if(prices[a] > prices[b]) {
         float temp = prices[a];
         prices[a] = prices[b];
         prices[b] = temp;
      }
   }
}
```

15. Are strings in Java a primitive data type?

16. List the results of these expressions:

```
"Paris".charAt(3)

"Moscow".substring(0, 2)

"Berlin".substring(3)

"Caracas".indexOf("q")

"Manama".replace('a', 'o')

"Buenos Aires".lastIndexOf('e')
```

17. What is the output of the following code?

```
String s = "Canada";
String s2 = new String("Canada");

System.out.println(s == s2);
System.out.println(s.equals(s2));
```

18. Write a method that, given the two floating-point lengths of the legs of a right triangle, returns the hypotenuse of this triangle.

19. Write four methods that each take in an array of integers. These methods will return:
    a. The maximum value of the array
    b. The mean value of the array. Values of -1 in the array do not affect the mean.
    c. The median value of the array. Assume you have access to this self-explanatory method:
    ```
    private int[] sort(int[] array);
    ```
    d. The mode of the array (a thinker…).