COSC 1046 Practice Test 2

INTRODUCTION TO COMPUTER SCIENCE I
Practice Test 2
Instructor: Aaron Langille
Time Allowed (for the real test): 80 mins

Student Name: _____
Student #: _____

Instructions:
1. Read all the questions carefully.
2. Answer ALL questions on the pages provided.
3. No aids permitted.
4. Show rough work where reasonable. It ~may~ earn you part marks.

This practice test is designed to give you an idea of the type of questions on the actual test. It does not represent the length, all question types nor the complete range of topics that may be covered. Use it only as practice. ***Note: This version was adapted from a PDF and there may be a couple of errors here and there. Please use the forum to report any so that I can correct them.***

Multiple Choice - (expect 20-30) - Put your answer in the small blank line beside the question.

1. _____ Which of the following is valid?

a.
```
float y;
5 = 54.9;
```

b.
```
float w;
w = 1.0f;
```

c.
```
float v;
v = 1.0;
```

d.
```
float y;
double z;
z = 934.21;
y = z;
```

2. _____ The _____ statement is used to make simple decision in Java

a. `do-while` b. `for` c. `branch` d. `if`

3. _____ What will be the values of x and y as a result of the following code

```
int x = 25, y = 8;
x += y++;
```

a. `x = 25, y = 8`
b. `x = 33, y = 8`
c. `x = 34, y = 9`
d. `x = 33, y = 9`

4. _____ One or more objects may be created from a(n) _____

a. field b. class c. method d. instance

5. _____ When you pass an argument to a method be sure that the argument's data type is compatible with

a. IEEE standards
b. the method's return type
c. the parameter variable's data type
d. the version of Java currently being used

6. _____ This type of method performs a task and then terminates

a. value-returning b. `void` c. local d. simple

7. _____ If you attempt to use a local variable before it has been given a value

a. a compiler error will occur
b. the local variable will always contain 0
c. the results will be unpredictable
d. the local variable will be ignored

8. _____ Values that are sent into a method are called

a. variables b. arguments c. literals d. types

9. Write a complete method (header and body) that takes a String as an argument and returns true if it is valid postal code, false otherwise.

10. Write nested loops that will print all the “times” between 10:05:15 and 15:00:59.

11. Consider the method below.

```
public static int mystery (int a){
      if(a<0){
            return -1;
      }
      int n = a;
      while(n > 0 && n < 25){
            if(n % 2 == 0){ //n is even
                  n = n / 2;
            }
            else if(n==1){
                  return n*2;
            }
            else{
                  n = n - 1;
            }
      }
      return 1;
}
```

What is the value stored in result after each of the statements is executed? Use words to clarify your answer if it helps.

a) `double result = mystery(39);`

b) `double result = mystery(-6);`

c) `double result = mystery(10);`

12. Write a complete object class called CoffeeMaker. Your class should have the following:
    - Three data fields, an integer for the number of scoops of coffee in the maker, a double to keep track of the number of cups of water in the maker and a boolean to show whether the coffee maker is off or on.
    - A zero-argument constructor that sets up a coffee maker with no water, no coffee and turned off.
    - An argumented constructor that creates a coffee maker with a specified amount of water and coffee but turned off.
    - Accessors for each one of the data fields.
    - Mutators to accomplish the following
        - Add water and coffee to the coffee maker (single method)
        - Clean the coffee maker – remove the water, remove the coffee and turn the coffee maker off.
        - Make coffee – if there is no coffee or water, return the String "can't make coffee right now". If there is water and coffee present, turn the coffee maker to on and return the strength of the coffee depending on the ratio of cups water to scoops of coffee: if cups to scoops < 1, return the String "strong coffee", if cups to scoops > 1 return the String "weak coffee", else return the String "good coffee".
    - An appropriate toString() method.

13. Write the statements (NOT a complete class) to:
    - Create two coffee makers, use each of the constructors.
    - Use the mutator(s) to make sure that both coffee makers are ready to make coffee. Hard-code the values, DO NOT get them from the user.
    - Retrieve the average number of cups of water and average number of scoops of coffee in the two coffee makers.
    - Make coffee from one of the coffee makers.
    - Clean the one that just made coffee.
    - Print the state of both objects.

    (Hint: You can still do most of this even if you didn't complete the first part.)