

1. True or False

- _____ a. A typical operating system switches between active programs in a multi-tasking system.
- _____ b. One component of computer hardware is the GUI.
- _____ c. Several transistors may be combined to form a gate.
- _____ d. One of the components that comes with the JDK is a text editor.
- _____ e. A program can compile with no errors and still cause an exception at run time.
- _____ f. Java bytecode is just another name for source code.
- _____ g. Inheritance is useful for making programs run faster.
- _____ h. Names of classes are case sensitive.
- _____ i. An instance of a class is a bytecode file.
- _____ j. A "no-args" constructor can only be defined in classes that do not have a main method.
- _____ k. Different objects of the same class can have different methods.
- _____ l. A subclass has direct access to the private fields of the superclass.
- _____ m. A recursive algorithm always includes at least one for loop.

2. Convert the decimal number (base 10) 719_{10} to both binary (base 2) and hexadecimal (base 16). Box your answers.

3. Convert the hexadecimal number (base 16) $F5A_{16}$ to both decimal (base 10) and binary (base 2). Box your answers.

4. Given 3 int values, x, y, and z, return their sum. However, if one of the values is the same as another of the values, it does not count towards the sum.

For example:

someSum(1, 2, 3) returns 6
someSum(4, 5, 6) returns 15

someSum(1, 1, 3) returns 3
someSum(3, 3, 3) returns 0

someSum(3, 2, 3) returns 2
someSum(5, 2, 2) returns 5

public int someSum(int x, int y, int z)

5. Given 2 Strings, a and b, return a new String made of the first char of a and the last char of b, so "yo" and "java" yields "ya". If either String is length 0, use '@' for its missing char.

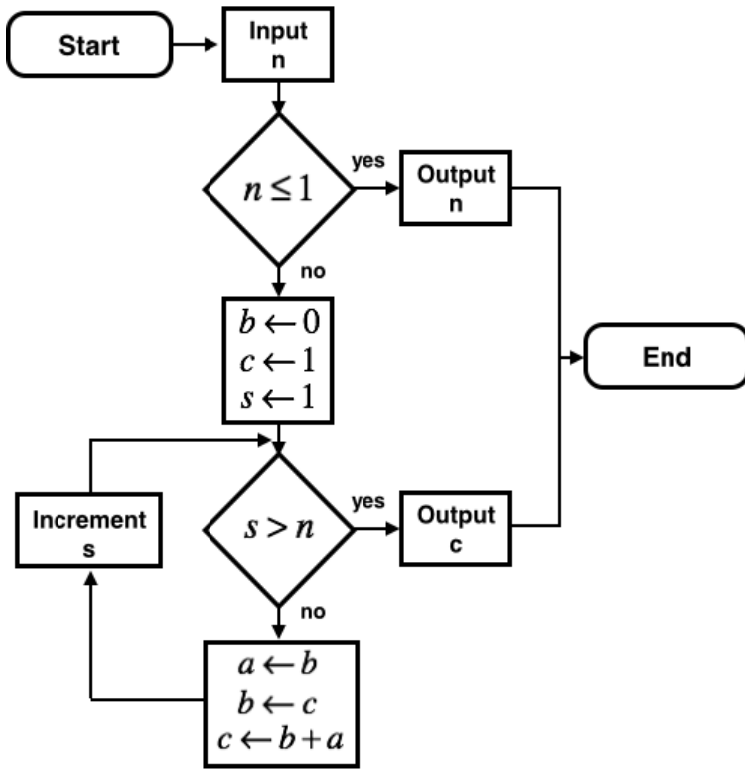
atChars("last", "chars") returns "ls"
atChars("yo", "java") returns "ya"
atChars("hi", "") returns "h@"

atChars("", "hello") returns "@o"
atChars("kitten", "zip") returns "kp"
atChars("", "") returns "@@"

public String atChars(String a, String b)

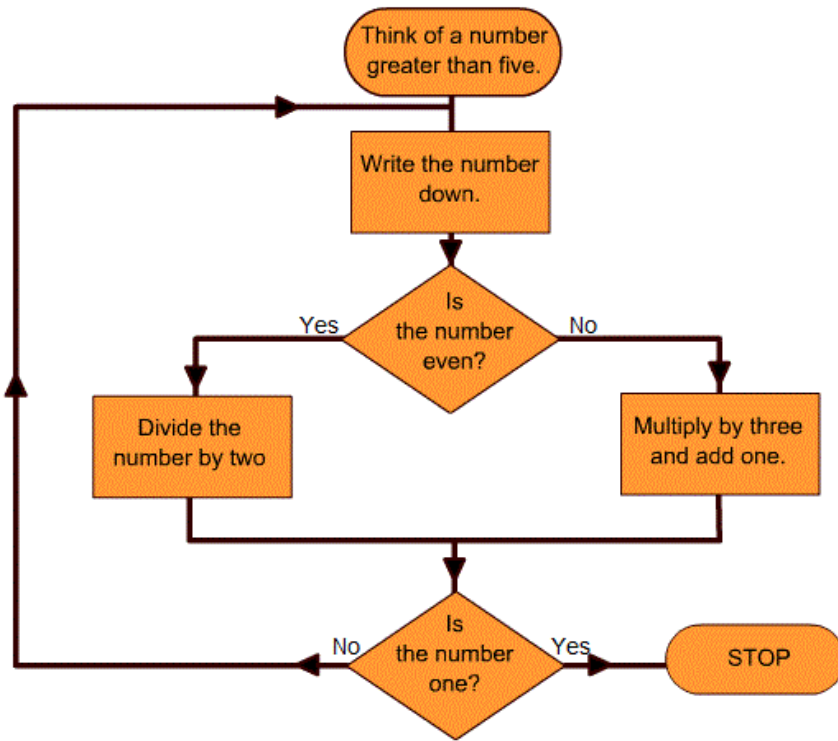
6. Implement the flowchart algorithm below in a Java method.

Bibbidi Algorithm



```
public int bibbidi(int n)
```

7. Implement the flowchart algorithm below in a Java method.



```
public void downToOne(int n)
```

8. Circle and label the 10 compiler errors in the following methods. You may assume that they form part of a valid class.

- a. reached end of file while parsing (missing '}')
- b. incompatible types, int found boolean required
- c. variable might not have been initialized
- d. non-static method cannot be referenced from a static context
- e. variable is already defined
- f. possible loss of precision
- g. cannot find symbol
- h. bad operand type
- i. ';' expected
- j. return type required

```
public static void main(String [] args)
{
    notRight();
}

public notRight()
{
    String s;
    boolean done = false;
    double value = 3.0;
    int count;

    do
    {
        int temp = value + 1;
        System.out.println(done + temp);
    } while(!done)

    if(done) {
        s += "FRED";

        for(int count = 1; count = 10; count++)
        {
            s += count;
        }
    }
}
```