APCS Problem Set 4a: Algorithms and Basic Flow Control

3.3 Iterative Addition

In the table below, show the variable state after each iteration until the stopping condition is reached (i.e., there are no more values in `LIST`). Then, list the total number of iterations to the right. **Note: When counting the total number of iterations, don't count the 0th one.** (5pts)

| Iteration	sum	LIST
0	0	(52, 118, 917, 36, 661, 98)
1	52	(118, 917, 36, 661, 98)

Total Iterations: _____

3.5 Iteration Book Problems

For these problems, it is best to write your solutions on scratch paper first before writing the final versions below.

1. Ch. 7, #16. Complete the table, **circling the return value**. *Iteration* refers to the number of times the loop has been run. (5pts)

Iteration	n	b	p
0	37		
1	36		

3. Ch. 7, #1. Complete the flowchart below. (5pts)
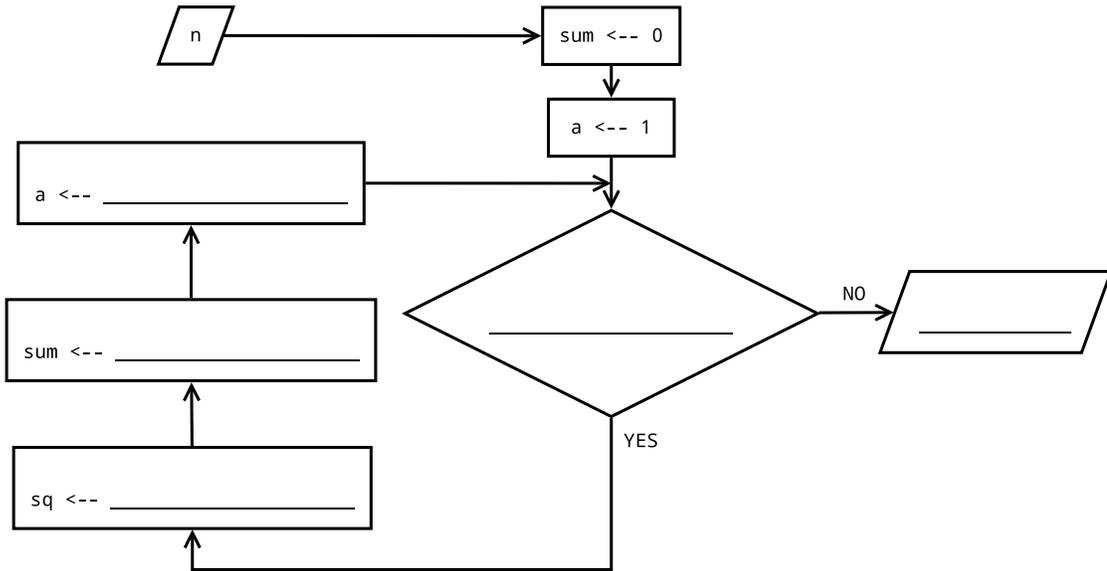
4. Ch. 7, #4. Write the code you added to the `divide()` method. (5pts)

```
public static void divide(int m, int n) {
    System.out.print(m + " / " + n + " = ");

    int q = 0; //store the quotient in this variable
    int r = 0; //store remainder in this variable

    //your algorithm goes below ////////////////////////////


    _____

    _____

    _____

    _____

    _____

    _____

    // end of your algorithm ///////////////////////////////

    System.out.println(q + " R" + r);
}
```

4 Euclid's GCF Algorithm (Litvin §7.7)

1. Copy the flowchart for *Euclid's GCF Algorithm* from Livtin §7.7. (4pts)

2. If the process described by the flowchart were part of a method called `GCF()`, and we made the method call shown below, how many iterations would it take to find the GCF[1]? **Show your scratch work below.** (4pts)

```
int myGCF = GCF( 24, 36 );
```

3. How many iterations would finding

```
GCF( 40, 16 )
```

take? **Show your scratch work below.** (4pts)

Reaffirmation of Academic Honesty

Have you continued to follow the course's policy on academic honesty, as described in the syllabus and in Problem Set #1?

Signature: _____   Date: _____

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[1]Greatest Common Factor, i.e. the largest whole-number divisor of two or more whole numbers.