

1. Create a class called `Recursion` which contains recursive implementations of the following static methods:
 - a. `public static int factorial (int n)`
 - b. `public static int fibonacci (int n)`
 - c. `public static int power (int x, int y)`
 - d. `public static int gcd (int x, int y)`
2. Please note that these methods should only calculate and return a value, not perform any printing. These methods require argument values to be ≥ 0 , if they are not throw an `IllegalArgumentException`. Also be sure to use correct method signatures so that my tester program will be compatible with your `Recursion` class.
3. Create a program with a main method or include a main method in your `Recursion` class. This main method will provide a menu that prompts the user if they want to do a factorial, Fibonacci, power, or gcd. Based on the user selection you will then prompt the user for any inputs that would be needed to use as method arguments, then call the appropriate method with the required arguments. Print arguments and the return value in sentence form, example:

`2 to the power 5 equals 32`
4. Comments
 - a. Comment your class, constructors, and methods using Javadoc comments. Those begin with `/**` and end with `*/`. Be sure to provide useful comments for each. Refer to that section in Chapter 1.

Deliverable:

- Submit a single .zip file with:
 - a .pdf that shows several runs of your program to show that you properly tested boundary conditions and handled invalid arguments.
 - your .java files. Include the actual .java files
 - Javadoc comments are required in your code but you **do not** have to submit the directory with the html output of the Javadoc compiler.
- All in one single .zip file.