60-141
Intro to Algorithms & Programming II Winter 2014

Lab #2: Algorithm, Recursive Function
(Due at the end of the lab period)

Objectives:
- Practice designing/implementing algorithms
- Practice use of recursive functions

Pre-requisite(s):
- Read chapter 1-5.

In this Lab, you have code and document the following functions using **RECURSION** only. As with the last lab, test the functions by calling them from a simple interactive **main()** function using a **menu,** with different values. Overall, you should have one C program (call it **Lab2.c**) containing one **main()** function and 4 other functions, where the functions are called based on an interactive user **menu**:

1	Summation: $\sum_{k=1}^{n} k = 1 + 2 + 3 + \cdots + n$;
2	Factorial(0) = 1; Factorial(n) = n * (n-1) * . . . * 2 * 1 Requirement: n >= 0
3	Fibonacci(0) = 0; Fibonacci(1) = 1; Fibonacci(n) = Fibonacci(n-1) + Fibonacci(n-2); Requirement: n >= 0
4	gcd (x, y) = x, if y=0 gcd (x, y) = gcd (y, x MOD y), if y > 0 Requirement: x and y both $\geq$ 0
5	Power(a,b) = a^b Requirement: a > 0, b $\geq$ 0, b is an integer

How to document functions?

```
/*
      Objective: Describe the function/its purpose briefly
      Input: Describe the input parameters, or the
      assumptions/requirements for the function.
      Output: Describe the output of the function. (What does it
      return? What does it print?)
*/
```