**Lab : Recursion**

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| MyMath |
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| + Power( base : int, exp : int ) : int+ Sum( n : int ) : int+ Factorial( n : int ) : int+ Mod ( val : int, divisor : int ) : int |

Implement the class MyMath as follows:

*Power( base : int, exp : int ) : int*

* Recursively calculate the value of base to the power of exp, base^exp. Example: Power(2,3) = 2\*2\*2 = 8.

**public int Power(int base, int exp){**

 **if(exp == 0)**

 **return 1;**

 **return base \* Power(base, exp-1);**

**}**

*Sum( n : int ) : int*

* Recursively calculate the sum of all numbers between 0 and n. Example: Sum(5) = 0+1+2+3+4+5 = 15.

**public int Sum(int n){**

 **if(n==0)**

 **return 0;**

 **return n + Sum(n-1);**

**}**

*Factorial( n : int ) : int*

* Recursively calculate the factorial of n, or n!. Example: Factorial(5) = 1\*2\*3\*4\*5 = 1200

**public int factorial(int n) {**

 **if(n == 1) {**

 **return 1;**

 **} else {**

 **return n \* factorial (n - 1);**

 **}**

 **}**

*Mod ( val : int, divisor : int ) : int*

* Recursively calculate the remainder of dividing val by the divisor. Example: Mod(8,3) = 2. Do not use %.

**public int mod(int val, int divisor) {**

 **if(val < divisor)**

 **return val;**

 **else**

 **return mod(val - divisor, divisor);**

 **}**