

# COSC 120, Class Exercise #2

## Instructor: Dr. Fred Park

### Part I: Warmup

1. Write code that calculates the smallest of 3 distinct numbers.
2. Write code that outputs the largest odd out of two numbers.

### Part II: Loops and Iteration

1. Write code that prompts a user to enter a positive integer N and then outputs the sum of 1 to N.
2. Write code that outputs the first N terms of the Fibonacci sequence:  
1 1 2 3 5 8 ...  $a_n$  ...  
where the n-th term of the sequence is given by  $a_n = a_{n-2} + a_{n-1}$
3. Use a while loop to output the factorial of N i.e.  $N!$  where N is input by a user.
4. Use a while loop to output the approximation to  $e \approx 2.718281828459046$  up to  $10^{-8}$ . i.e. the tolerance Tol ;  $|e - S_N|$  where  $A_n$  is the n-th partial sum:

$$S_N = \sum_{n=1}^N \frac{1}{n!} = \frac{1}{0!} + \frac{1}{1!} + \frac{1}{2!} + \frac{1}{3!} + \dots + \frac{1}{n!} + \dots + \frac{1}{N!}$$

where  $0! = 1$  and  $n! = n * (n - 1) \dots 3 * 2 * 1$ .