

## Homework 4: Math With Loops, Part II

Input a number from the user, and use it to perform the following calculations. You may assume that the number (which we will call  $n$ ) is either zero or positive.

1. Print out every positive odd number that is less than or equal to  $n$ .
2. Calculate  $n!$  (the factorial of the number). That is, calculate  $1 \times 2 \times 3 \times \dots \times n$ .  $0!$  is 1.
3. Calculate the  $n$ th Fibonacci number. The 0th Fibonacci number is 0, the 1st is 1, and after that each one is the sum of the two previous ones. So the sequence goes 0, 1, 1, 2, 3, 5, 8, 13, ...

Here is a sample of how your program might look:

```
Please enter a nonnegative integer: 6
Odd numbers less than or equal to 6: 1, 3, 5
6! = 720
Fib(6) = 8
```

Each of these calculations should be done inside of its own function, and each of these functions will require a loop. Your main function will thus be very simple: all it needs to do is get the number from the user, call the proper subfunctions (passing the proper argument), and report on their return values. Try to write your code such that no function besides `main()` prints anything out.

Both the factorial and Fibonacci functions will very quickly “overflow” with large inputs, and become incorrect. This is okay. (If you want, you can use a `long` return type to help rectify this.)

Of course, all previous stylistic comments still hold. This class should be called `LoopMath2`.