**Recursion Examples**

This project is a C# console application I built for fun to test some theories on recursion. I wanted to do looping without using the built-in functionality in .Net, so I devised two challenges for myself. The first was to loop using the Collatz Conjecture, which says that you can start with any positive number and eventually end up with a value of one by either multiplying by three and adding one if the number is odd or dividing by two if the number is even, then repeating this process until a value of one is achieved. The second challenge was to use a Fibonacci sequence to count up to a number the user input starting at one. A Fibonacci sequence takes two values and adds them together to get a new value, then the new value is used as the second number in the next iteration while the old second number is used as the first number in the next iteration. One reason I wanted to do two different versions of recursion was because I wanted to build one where I injected the values as parameters into the method on each iteration and another that used global variables that were updated after each iteration, which were then pulled into the body of the method for the next iteration. The Collatz Conjecture utilizes Dependency Injection, while the Fibonacci sequence utilizes global variables. I enjoy math challenges like these and had a lot of fun figuring these problems out.