# Collatz Assignment

**Python Features Required:** Basic python, print, user defined functions, exceptions

**File(s) to Submit**: *collatz.py*

**Specification**: Write the code for the functions **`collatz`** and **`collatz_sequence`** described below. Your code should be in the *collatz.py* file.

The `collatz()` function has one parameter named `number`. If `number` is even, then `collatz()` prints `number//2` and then return this value. If `number` is odd, then `collatz()` should print and return `3*number+1`.

A ***collatz sequence*** with initial value n is the sequence of numbers collatz(n), collatz(collatz(n)), …. In all known cases, the sequence eventually reaches 1 and all subsequent values will be 1. Mathematicians aren't sure why this is the case (i.e., no one has proved that this will happen). This problem is sometimes called "the simplest impossible math problem".

So, you are to write another function `collatz_sequence()` that first prompts for and inputs the first term of the sequence using the `input()` function. Remember to convert the the string returned by the `input()` function to an integer with the `int()` conversion function.

The `int()` function will raise a `ValueError` exception if it is passed a noninteger string, as in `int('puppy')`. Your code should include a `try-except block` that prints "`Invalid input: must be an integer`" and returns `False` if the exception occurs.

Otherwise, the function prints the collatz sequence by repeatedly calling `collatz()` on the previous term in the sequence, printing the values until the function returns the value 1. After printing the 1, the function returns `True`.

The output of this program could look something like this, where user input is underlined:

Enter number: 3

10
5
16
8
4
2
1