Lab: Generator

This exercises focus is on the creation of a generator.

Write a *prime number* generator – this generator should return in sequence all the prime numbers from 1 up to a given limit (if you want an example see the code at the end of the document) however you are free to have a go at writing it yourself.

A Prime Number is a positive whole number, greater than 1, that has no other divisors except the number 1 and the number itself.

That is, it can only be divided by itself and the number 1, for example the numbers 2, 3, 5 and 7 are prime numbers as they cannot be divided by any other whole number. However, the numbers 4 and 6 are not because they can both be divided by the number 2 in addition the number 6 can also be divided by the number 3.

If the user inputs a number below 2, print an error message.

For any number greater than 2 loop for each integer from 2 to that number and determine if it can be divided by another number (you will probably need two for loops for this; one nested inside the other). For each number that cannot be divided by any other number (that is it is a prime number) print it out.

If the user enters anything other than a positive integer, then you should tell then that the number is invalid and ask them to enter another number.

The generator should take a *limit* to give the maximum size of the loop you use to generate the prime numbers. You could call this `prime_number_generator()`.

If the user enters 27 then the output would be:

```
Please input the number:27
2, 3, 5, 7, 11, 13, 17, 19, 23,
```

Hints

The following indicates how a prime number can be calculated:

```
def prime_number_generator(num):
    """ Provides a sequence of prime numbers up to num"""
    for i in range(2, num):
        # Assume a number is a prime number until proved otherwise
        prime_number = True
        for j in range(2, i):
            # If there is no remainder then its not a prime number
            if i % j == 0:
                prime_number = False
                break
        if prime_number:
            yield i
```