Project_Euler_003

February 4, 2018

1 Project Euler Problem 3

The prime factors of 13195 are 5, 7, 13 and 29.

What is the largest prime factor of the number 600851475143 ?

In [1]:
```
# The simplest way to find the prime factors of a number n
# is to start by dividing n by 2 as many times as you can,
# then by 3, etc.  This method does not require a prime
# sieve, since dividing by all powers of smaller primes
# will exclude any composite numbers you hit along the way.
# For instance, once we've checked 2 and 3, we don't need to
# worry about 4 and 6 showing up in the list of prime factors.

bignum = 600851475143
i = 2

while bignum > 1:
    if bignum == i:
        print("The largest prime factor is {}.".format(i))
        bignum = 1
    elif bignum % i == 0:
        print("{} is a prime factor.".format(i))
        bignum = bignum / i
    elif bignum % i != 0:
        i += 1
```

```
71 is a prime factor.
839 is a prime factor.
1471 is a prime factor.
The largest prime factor is 6857.
```