Program 1

Write a program to find the largest prime factor of a given integer

The Largest prime factor is a very simple concept. Let us break it down:

- Every number has many different factors.
- Factors are numbers that completely divide a particular number to get zero as a remainder.

Example1:- (Even Numbers)

- If we look at the number 6, it has four factors: 1, 2, 3, 6.
- However, of these factors, 1, 2 and 3 are prime numbers.
- As 3 is greater than 1, 2. 3 is said to be the largest prime factor of number 6.

Example1:- (Odd Numbers)

- If we look at the number 15, it has four factors: 1, 3, 5, 15.
- However, of these factors, 1, 3 and 5 are prime numbers.
- As 5 is greater than 1 &3, 5 is said to be the largest prime factor of number 15.

Example 3:- (Prime Numbers)

- If we look at the number 13, it has 2 factors: 1,13.
- However, of these factors, 1 and 13 are prime numbers.
- As 13 is greater than 1 so 13 is said to be the largest prime factor of number 13.

Program

```
#Read the input
n=input("Enter the number\n")

#convert to int
n=int(n)
maxPrime=-1

#Run this loop for Even Numbers
#check the given number is even or not
while n%2==0:
   maxPrime=n
   #Reduce the number dividing by 2
   n=n/2

#Run this loop for odd numbers
#num**2 to find the squareroot of given number
#i starts from 3 and incremented by 2
#because we need to check only for odd numbers
for i in range(3, int(n**0.5)+1,2):
    #to check even number
    while n%i==0:
        maxPrime=i
        #Reduce the number dividing by i
        n=n/i
```

```
#if n is greater assign maxPrime = n
if n>2:
    maxPrime=n

#To print max prime factor
print("Max Prime factor :  ",int(maxPrime))
```

Output

```
Enter the number
10
Max Prime factor :   5
```