

SEM - VII - 2022-23

CNS Lab

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Assignment 12

Prime Factorization

Theory:

Prime factorisation is a method to find the prime factors of a given number, say a composite number. These factors are nothing but the prime numbers. A prime number is a number which has only two factors, i.e. 1 and the number itself. For example, 2 is a prime number which has two factors, 2×1

Code:

```
import math

def prime_factors(num):
    flag=0;
    while num % 2 == 0:
        flag=1
        num = num / 2

    if flag==1:
        print('factorize by prime no.: ',2)

    for i in range(3, int(math.sqrt(num)) + 1, 2):

        # while i divides n , print i ad divide n
        print(i)
        while num % i == 0:
            print('factorize by prime no.: ',i)
            num = num / i

    if num > 2:
```

```
        print('factorize by prime no.:',num)
# calling function

num = 35567
prime_factors(num)
```

Output:

```
In [6]: runfile('D:/CNS Lab/prime_factorization.py', wdir='D:/CNS Lab')
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factorize by prime no.: 7
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factorize by prime no.: 5081.0
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