# Strange Numbers

DiPS CodeJam 22-

## **Prompt**

Pranav and Prithvi are playing a game of *Strange Numbers*. Pranav gives Prithvi 2 numbers, x and k. Prithvi now needs to determine whether there is an integer a, such that it has x positive divisors and exactly k of them are prime numbers. Can you help him?

## Input Format

The first and only line of the input will contain 2 space-separated integers in the format x, k.

## **Output Format**

The first and only line of your output must contain: 1, if an integer a exists, or 0 if it does not.

#### Constraints

 $1 \le a \le 1000$ 

## Sample Input/Output

Input	Output
8 6	0

## Solution

Let's assume that a valid a exists. The prime factorisation of a would be  $\prod_{i=1}^k p_i^{a_i}$  where  $p_i$  are the prime factors of a and  $a_i$  are the exponents. Then, it is known that the number of factors of a are  $\prod_{i=1}^k (a_i+1)$ . Hence, we have  $x = \prod_{i=1}^k (a_i+1)$  for  $a_i \ge 1$ , hence  $(a_i+1) \ge 2$ . Thus, valid choice for a exists if the prime factorization of x has at least k terms. So, we just need to compute prime factorization of x.

# Sample Program

```
x,k = map(int, input().split())
c = 1
i = 2
while i*i <= x:
    while x%i==0:
        x//=i
        c+=1
    i+=1
if c >= k:
    print(1)
```

else:
 print(0)