

# Prime factors

Every positive integer can represent the product of primes. Prime factorization or integer factorization of a number is breaking a number down into the set of prime numbers which multiply together to result in the original number. This is also known as prime decomposition. Implement prime factorization and output the exponent of each prime factors in number N.

## Input

The only integer ( $N \leq 10^9$ ).

## Output

Each line contains its respective prime and exponent divisors. The prime factors are exported in ascending order.

## Example

**Input:**

12

**Output:**

2 2

3 1