Prime Factory

Prime factory is a factory that generates primes. It makes primes by factorizing any given positive integer greater than 2 into several primes. For example, if 75 is given to the factory, 3, 5 and 5 are made since $3\times5\times5 = 75$. (The factory can make same primes more than once)

As a customer of Prime Factory, I would like to know that if I give a positive integer n to the factory, what primes I can get. In order to do that, we must factorize n into prime numbers. Can you write a program that does the job for me?

Input

Your input consists of an arbitrary number of lines, but no more than 1,000.

For each line, an integer n $(2 \leq n \leq 10^7)$ is given.

The end of input is indicated by a line containing only the value -1.

Output

For each input line, print the prime factorization of n. Print all the primes in non-increasing order, separated by a space. You *must* print primes k times if it is occurred k times in the prime factorization. (You can refer to the example)

Example

Standard input	Standard output
2 30 75 10000000 -1	2 2 3 5 3 5 5 2 2 2 2 2 2 2 5 5 5 5 5 5 5

Time Limit

3 seconds.