Prime Power Challenge

HackerRank

You are a top-level player in NumberCraft, a virtual puzzle game where players explore dungeons made entirely of numbers. Each dungeon has a Boss Number that guards the exit. To defeat it, you need to break it into its prime components — because only understanding the number's "**prime powers**" reveals its weakness.

The game engine provides you with the Boss Number **N (1 ≤ N ≤ 10^25)**. Your mission is to compute its prime factorization with exponents, so you can unleash the correct attack sequence.

Input Format

A single integer N

Constraints

N (1 ≤ N ≤ 10^25)

Output Format

Print the prime factorization in ascending order, formatted as:
p1^e1 * p2^e2 * ... * pk^ek
If e[i] = 1, omit the exponent.

Sample Input 0

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450
```

Sample Output 0

```
2 * 3^2 * 5^2
```

Sample Input 1

```
101
```

Sample Output 1

```
101
```