1035 – Intelligent Factorial Factorization

Given an integer **N**, you have to prime factorize **N!** (factorial **N**).

Input

Input starts with an integer **T (≤ 125)**, denoting the number of test cases.

Each case contains an integer **N (2 ≤ N ≤ 100)**.

Output

For each case, print the case number and the factorization of the factorial in the following format as given in samples.

Case x: N = p_1 (power of p_1) * p_2 (power of p_2) * ...

Here **x** is the case number, **p_1, p_2 ...** are primes in ascending order.

Sample Input	Output for Sample Input
3 2 3 6	Case 1: 2 = 2 (1) Case 2: 3 = 2 (1) * 3 (1) Case 3: 6 = 2 (4) * 3 (2) * 5 (1)

Notes

The output for the 3rd case is (if we replace space with '.') is

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Case.3:.6.=.2.(4).*.3.(2).*.5.(1)
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