Factor

Do you remember prime factorization? Every number can be expressed in prime multiplication. For example, 6 = 2 x 3. Your task is to output the prime factorization of (N!).

Format Input
The input begins with an integer T indicating the number of test cases. In each test case, there is an integer N indicating the number.

Format Output
For each test case, output the prime factorization of (N!). You should output it in the format p_i q_i, where pi is the prime number and q_i is the power of the prime, each in different line.

Constraints
1 <= T <= 10
1 <= N <= 1000

Sample Input	Sample Output
2 3 10	Case #1: 2 1 3 1 Case #2: 2 8 3 4 5 2 7 1