(Adv.) Competitive Programming

Submit until End of Contest, via the judge interface

HPI Hasso Plattner Institut
Digital Engineering · Universität Potsdam

Problem: powers (1 second timelimit)

You are currently playing a simple game with one of your friends. You friends says two numbers n and k. Your task is simple: Split n in exactly k powers of two. An example for the numbers $n = 11$ and $k = 4$ is `1 1 1 8`. Since the numbers are really big, you would like to have some help from your computer.

Input The input starts with the single number t ($t < 5.000$), the amount of games. Afterwards t lines follow. Each line contains the two numbers n ($1 \leq n \leq 2^{32}$) and k ($1 \leq k \leq 100$).

Output Please print for each game two lines. The first line should contain if it is `POSSIBLE` or `NOT POSSIBLE` to split the number and the second line should contain the increasing sequence of powers of two. Sometimes a game has multiple answers like $n = 11$ and $k = 4$ can also be `1 2 4 4`. Please always choose the lexicographical smallest one. The means you should choose `1 1 1 8` instead of `1 2 4 4`.

Sample input

```
6
1 3
25 1
12 2
27 7
16 1
20 6
```

Sample output

```
NOT POSSIBLE
NOT POSSIBLE
POSSIBLE
4 8
POSSIBLE
1 1 1 2 2 4 16
POSSIBLE
16
POSSIBLE
1 1 1 1 8 8
```