

The 25<sup>th</sup> Annual  
ACM International Collegiate  
Programming Contest  
ASIA Regional - Taejon



Problem H  
Coins  
Input: coins.in

Once upon a time the following puzzle was suggested to pupils on a regional middle school olympiad on mathematics:

\* A set of coins consists of 15 coins: 14 coins are valid while a remaining 15-th coin is a false one. All valid coins have one and the same weight while the false coin has a different weight. One valid coin is marked. Is it possible to identify a false coin balancing coins 3 times at most?

A jury member was a trainer of a team of undergraduates for programming contests. So a question on how to put the puzzle for programming arose naturally. Finally the problem was formulated as follows:

\* A set of coins consists of  $N$  coins:  $(N-1)$  coins are valid while a remaining  $N$ -th coin is a false one. All valid coins have one and the same weight while the false coin has a different weight. One valid coin is marked. Write a program which for every input pair

- a number  $N$  of coins under question,
- a limit  $K$  of balancing

outputs either “POSSIBLE” or “IMPOSSIBLE” with respect to existence of a strategy to identify the false coin balancing coins  $K$  times at most.

### Input

The first line of input contains a single integer  $T$  that represents a total amount of different pairs  $(N, K)$  to process. Every line of next  $T$  lines contains two integers  $N$ ,  $2 \leq N \leq 100$  and  $K$ ,  $0 \leq K \leq 100$ .

### Output

The output file should contain  $T$  lines with “POSSIBLE” or “IMPOSSIBLE” per line.

#### Sample Input

```
3
6 2
10 2
15 3
```

#### Output for the Sample Input

```
POSSIBLE
IMPOSSIBLE
POSSIBLE
```