

Yet Another Fancy Game

Two girls - Ivica and Marica - play an interesting game.

First, they randomly choose a natural number N . They also define $M = 1$.

Ivica plays first, then Marica, then Ivica, then Marica and so on.

In each move, a girl has to increase M by 1 or multiply M by 2 (that is, $M = M+1$ or $M = 2 \cdot M$). The resulting number **must not be greater than N** .

The **loser** of the game is the girl who gets $M = N$. The other girl is, of course, the winner.

Write a program to determine the winner, assuming that both girls play optimally.

Input

In the first line there is an integer T ($1 \leq T \leq 5$), the number of games.

T lines follow. In i^{th} line there is an integer N ($2 \leq N \leq 10^{15}$), a chosen number for i^{th} game.

Output

For each of the T games print the name of the winner.

Example

Input:

4
2
3
4
5

Output:

Marica
Ivica
Marica
Marica