

DMOPC '16 Contest 4 P1 - Fast Exponents

Molly's teacher assigned her very tedious homework:

Given an integer i_i , find out if it's a power of two or not

Molly asks Andrew, but [he would much rather play Geometry Dash](#), so he decides to ~~enlave~~ ask you to do it instead!

Input Specification

The first line will contain a single integer, N .

Lines $2 \dots N + 1$ will each contain an integer, i_i .

Output Specification

For each of the N integers, output if they are a power of 2, otherwise output

Constraints

$$1 \leq N \leq 10^6$$

$$1 \leq i_i < 2^{63}$$

Sample Input

```
2
1
3
```

Sample Output

```
T
F
```