Problem F. The Chosen One

Welcome to the 2017 ACM-ICPC Asia Nanning Regional Contest.

Here is a breaking news. Now you have a chance to meet alone with the Asia Director through a game.

All boys and girls who chase their dreams have to stand in a line. They are given the numbers in the order in which they stand starting from 1.

The host then removes all boys and girls that are standing at an odd position with several rounds.

For example if there are $n = 8$ boys and girls in total. Initially standing people have numbers $1, 2, 3, 4, 5, 6, 7$ and 8. After the first round, people left are $2, 4, 6$ and 8. After the second round, only two people, 4 and 8, are still there.

The one who stays until the end is the chosen one.

I know you want to become the chosen one to meet alone with your idol. Given the number of boys and girls **in total**, can you find the best place to stand in the line so that you would become the chosen one?

Input

First line of the input contains the number of test cases t ($1 \le t \le 1000$).

Each of the next t lines contains the integer n which is the number of boys and girls in total, where $2 \le n \le 10^{50}$.

Output

The output displays t lines, each containing a single integer which is the place where you would stand to win the chance.

Sample

4 5 12 23 35	4 8 16 32