

# Range Xor

You are given an array and Q queries of two types.

Type 0: Given a number x , insert the number at the last of the array.

Type 1: Given a number X and two integers L, R, Find a number Y in the range L, R to maximize  $X \oplus Y$

## Constraints:

$0 \leq \text{element of array} \leq 10^9$

$1 \leq N \leq 10^5$

## Input Format:

First line of the test case will be the number of queries Q .

Then on next Q subsequent lines you will be given a query either of type 0 or type 1.

Query of type 0 is of the form : 0 X, where X is the integer to be inserted .

Query of type 1 is of the form : 1 L R X

## Output Format:

For each query of type 1 output the desired value.

## Sample Input

```
5
0 3
0 5
0 10
0 6
1 1 4 6
```

## Sample Output

```
10
```

## Difficulty

Medium

## Explanation