

## Xor Trickery

You are given Q queries in a file:

- Queries of type 1: add x to the current array
- Queries of type 2: check if x can be created by taking a subset of the current array and taking the xor of all the elements in the subset (print 1 if possible, 0 if not)
- Queries of type 3: print the max integer created by taking a subset of the current array and taking the xor of all the elements in the subset
- Queries of type 4: revert the array back to the array before the xth query.

Input:

The input starts with integer Q, and a new line.

Then each following line will have a query that starts with an integer t, which denotes the type of query.

If the query requires an integer x, then there will also be an x after the type, separated by a space.

Output:

The answers to all type 2 or type 3 queries with new lines in between each answer at the end.

Constraints:

$Q = 10^4$

$0 < \text{All integers that are added and checked} < 10^9$