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C. Distinct Xor Subsequence Queries II

time limit per test: 1 second memory limit per test: 256 megabytes

You are given an empty sequence a. Your task is to process q queries of the following types:

- 1. Append x to the end of sequence a;
- 2. Consider all 2^k possible subsequences of a, where k represents the current length of a. Among these subsequences, determine how many have a bitwise XOR value equal to x. Output the result modulo 998244353.

Input

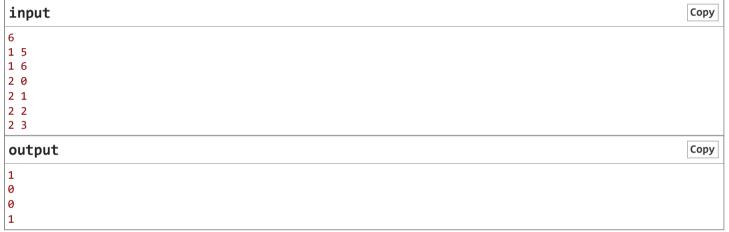
The first line of input contains a single integer q ($1 \le q \le 2 \times 10^5$).

Then, there are q lines describing the queries. Each line has two integers: $1~x~(0 \le x < 2^{60})$ or $2~x~(0 \le x < 2^{60})$

Output

For each query of type 2, print a line of a single integer denoting the answer.

Examples





Introductory Problems: XOR Basis

Finished

Practice



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file:	Choose File No file chosen	
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Submission	Time	Verdict	
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