# Xor Of Scores

Input file: standard input
Output file: standard output
Time limit: 2 second
Memory limit: 128 megabytes

One TA of CP1 was making the list of scores obtained by the students in Codechef May Challenge. To test his knowledge in CP the Head TA thought of following three queries:

1) "+ x" - add score x to the list.
2) "- x" - erase ***one occurrence*** of score x from the list. It's guaranteed that at least one x is present in list of scores.
3) "? x" - TA is given score x and need to compute the the maximum value of bitwise exclusive OR (also know as XOR) of score x with some score y present in the list.

As you can be the next CP1 TA, the TA decided to ask you to solve the given question and he also decided that the marks in the long challenge were between 0 to 1000 but for this problem they will be between 1 to $10^9$.

## Input Format

The first line of the input contains a single integer q ($1 \le q \le 200\,000$) — the number of queries TA has to perform.
Each of the following q lines of the input contains one of three characters '+', '-' or '?' and an score $x_i$ ($1 \le x_i \le 10^9$). It's guaranteed that there is at least one query of the third type.
***Note, that the score zero is always present from the beginning.***

## Output Format

For each query of the type '?' print an integer - the maximum value of bitwise XOR of score $x_i$ with some existing score in the list.

| ***Sample Input*** | ***Sample Output*** |
|---|---|
| 9<br>+ 8<br>+ 9<br>+ 11<br>+ 6<br>+ 1<br>? 3<br>- 8<br>? 3<br>? 8 | 11<br>10<br>14 |