Problem D. Demon Slayer

Time limit   1000 ms
Memory limit   256MB

Problem Description

The Demon Slayer Corps never rests, for countless demons lurk in the shadows of the night. To complete their missions, Kagaya Ubuyashiki must carefully select the most suitable squad of swordsmen.

There are n swordsmen in the Corps, each with a strength value denoted as a_i. When forming a squad for a mission, a consecutive range of swordsmen can be chosen, and the total squad strength is defined as the XOR of their strength values.

However, a swordsman's strength is not fixed forever. Through training and combat, a swordsman's strength may be updated.

Kagaya cannot calculate all of this alone. He needs your help to handle the following tasks:

- **Update**: Given a position p and a new value x, update the strength of the swordsman at position p to x.

- **Query**: Given a range $[l, r]$, compute the XOR of the strengths of all swordsmen from index l to r, representing the total squad strength.

Input format

The first line contains one integers $n(1 \le n \le 5 \cdot 10^5)$ — the number of swordsmen.

The second line contains n integers $a_1, a_2, ..., a_n(1 \le a_i \le 10^9)$ — the initial strength values of the swordsmen.

The third line contains one integers $q(1 \le q \le 5 \cdot 10^5)$ — the number of operations.

The next q lines each describe an operation:

- 1 p x — Update the strength of the swordsman at position p to x $(1 \le p \le n, 1 \le x \le 10^9)$.

- 2 l r — Query the XOR of strengths in the range $[l, r]$ $(1 \le l \le r \le n)$.

Output format

For each query operation, output the XOR of the specified range on a separate line.

No output is required for update operations.

Subtask score

Subtask	Score	Additional Constraints
1	17	$N \leq 3000$ $Q \leq 3000$
2	31	There are only query operations
3	52	No Constraints

Sample

Sample Input 1

```
5
1 4 3 10 2
3
2 1 3
2 2 4
2 2 5
```

Sample Output 1

```
6
13
15
```

Sample Input 2

```
5
5 3 2 0 1
5
2 2 4
2 2 5
1 4 4
2 1 5
2 2 5
```

Sample Output 2

```
1
0
1
4
```