The XORcist

After a long journey, a treasure hunter finally reaches a cave containing an enormous treasure. Unfortunately for him, he finds out that the cave entrance is guarded by a demon.

The treasure hunter looks through the map for a clue on how to defeat the demon, and finds an encoded message. The message, when decoded can be used as a spell to defeat the demon.

The encoded message has a list of integers followed by another list of pairs of integers. After much experimentation he figures out how to decode the spell using the integers.

- The initial list corresponds to an array of integers A.

- Each pair (l, r) in the following list corresponds to a character in the spell, where the character can be obtained by

    1. Calculating the integer n, where n is the bitwise XOR of all integers from A_l to A_r

    2. Calculating the character which corresponds to the ASCII code given by $(n \bmod 94) + 33$.

Help the treasure hunter defeat the demon.

Input Format

First line contains a single integer N, the number of elements in the array A.
Second line contains N space separated integers, elements of the array A.
Third line contains a single integer K, the number of characters in the spell.
K lines follow, each containing a pair of integers (l, r) which corresponds to a character in the spell.

Constraints

- $1 \leq N,K \leq 10^5$

- $1 \leq A_i \leq 10^9$

- $0 \leq l \leq r \leq N$

Limits

- Time Limit: 1s

- Memory Limit: 256MB

Output Format

A single string, the *spell* to defeat the demon.

Sample Input 0

```
11
20512528 20512567 20512627 20512568 20512630 20512576 20512523 20512581 20512532 20512607
20512540
10
0 1
1 2
2 3
5 6
3 4
4 5
6 7
7 8
8 9
9 10
```

Sample Output 0

```
HelloWorld
```