A. Lights, Snakes and Cages

Time limit: 1s Memory limit: 1536 MB

In the zoo there are N cages in which we keep N snakes: each snake in its cage. For experimental reasons, in a month we will move each snake to a different cage: this reordering is given in the input.

Each cage is illuminated by special light, which may be of type A, type B or type C. Your task is to assign the lights A, B, C to the cages so that:

1) each snake will change its lighting, i.e. it will be moved to the cage illuminated differently from the cage it currently inhabits;

2) lightings are equally distributed, i.e. the number of cages A, the number of cages B and the number of cages C differ by at most one.

Input

The first line contains an integer N ($2 \le N \le 300\,000$), the number of snakes and cages. Cages are numbered from 1 to N.

Each of the next N lines contains an integer. When K-th of these lines contains the number L, it means that the snake from the cage K will be moved to the cage L ($K \neq L$). Two snakes will not move to the same cage.

Output

Print the string composed of the characters A, B and C, such that the K-th character denotes the lighting of the cage K.
If there are multiple solutions, print **any**.

Example

Input:

```
4
4
3
2
1
```

Output:

```
ACBC
```

Croatia nationals 2014 (6th grade, 3rd problem "Zmije")