2H – Assigning partners

A workshop is been organizing with an activity involving pairs of students. They decided to assign partners ahead of time. You need to determine if they did this consistently. That is, whenever A is a partner of B, then B is also a partner of A, and no one is a partner of themselves.

Input

Each test case consists of three lines. The first line consists of an integer N ($1 < N \leq 30$), which is the number of students in the class. The second line contains the first names of the N students separated by single spaces. (Names contain only uppercase or lowercase letters, and no two students have the same first name). The third line contains the same N names in some order, separated by single spaces. The positions of the names in the last two lines indicate the assignment of partners: the i^{th} name on the second line is the assigned partner of the i^{th} name on the third line.

Output

The output will be `good` if the two lists of names are arranged consistently, and `bad` if the arrangement of partners is not consistent.

Examples

Input:
4 Ada Alan Grace John John Grace Alan Ada

Output:
good

Input:
7 Rich Graeme Michelle Sandy Vlado Ron Jacob Ron Vlado Sandy Michelle Rich Graeme Jacob

Output:
bad