Grandpa

Winter Workshops, Day 1, Available memory 256 MB *02.01.2020 - 08.01.2020*

There was a nonsense story here, but the verifier got rid of it.

Constraints

- $1 \leq T \leq 5$
- $1 \leq N \leq 1000$
- Try to solve the problem in O(N^2) and O(1) memory complexity! It's impossible to break even smarter $O(N^2)$ memory approaches, so please be honest and don't submit these :)

Input

Each of the T testcases follows a similar format. First, N is given, then N binary strings of length N follow.

Output

For every test, print a binary string of length N, which is different from the N other strings of length N. Any valid string will be accepted as a correct answer.

Examples

Input	Example accepted output
1 3 000 010 110	100