Problem I. Linguistics Puzzle

Input file:	`standard input`
Output file:	`standard output`
Time limit:	1 second
Memory limit:	256 megabytes

When preparing for the International Collegiate Linguistics Contest, Mr. Ham meets an unknown language X. He is given an integer n ($2 \le n \le 52$) and n^2 numbers written in Language X. The n^2 numbers are generated by the following rules:

- Generate a sequence $a_0, a_1, \ldots, a_{n^2-1}$ that satisfies $a_{n \cdot i+j} = i \cdot j$ for all $0 \le i, j < n$.
- Shuffle the sequence.

Mr. Ham is an experienced ICLCer. He finds out some basic rules of Language X:

- There are n different symbols in Language X. Mr. Ham uses the first n lowercase letters to represent them if $n \le 26$. Otherwise, he uses the first 26 lowercase letters and the first $n-26$ uppercase letters to represent them.
- The numbers in Language X are written in base n. Each digit is represented by a symbol in Language X.
- Like in Arabic numerals, the digits are written from the most significant digit to the least significant digit, i.e. $\texttt{a} \cdot n + \texttt{b}$ is written as `ab` instead of `ba`. There are no leading zeros, i.e. `a` is written as `a` instead of `0a`.

Mr. Ham wants to know which symbol represents digit i in Language X for each $0 \le i < n$. He asks you for help.

Input

Each test contains multiple test cases. The first line contains the number of test cases T ($1 \le T \le 50$). The description of the test cases follows.

The first line of each test case contains an integer n ($2 \le n \le 52$), the number of symbols in Language X.

The second line contains n^2 strings $s_1, s_2, \ldots, s_{n^2}$, the numbers in Language X. Each string consists of at most 2 lowercase and uppercase letters.

It is guaranteed that the answer exists.

Output

Output a string of length n, the i-th character is the symbol that represents digit $i-1$ in Language X.

If there are multiple answers, output any of them.

Examples

standard input	standard output
2 3 a b a b b b b c cc 4 d d d d d c b a d b cd cb d a cb bc	bca dcba
2 4 d a a bc ba bc b a a a d a a cb c c 4 a b da b b d ad b db b a c da b c b	abcd bdac

Note

In the first test case of the first sample, the letter b represents digit 0, the letter c represents digit 1, and the letter a represents digit 2. The numbers given in the input are $1, 0, 1, 0, 0, 0, 0, 2, 4$.