

## Problem K: Digraphs

A *digraph* is a graph with orientation... oh, sorry, not this time. Let's stop being nerds for a minute and talk about languages (*human* languages, not PHP).

Digraphs are pairs of characters that represent one phoneme (sound). For example, "ch" in English (as in "church") is a single consonant sound. The languages of Central Europe are fond of digraphs: Hungarian "sz", Czech "ch" and Polish "rz" are fine examples of them.

Digraphs are very annoying for people who do not use them natively. We will make up a letter-puzzle specifically for those people. Given a list of digraphs, construct a biggest possible square of lower case English letters such that its rows and columns *do not* contain any of these digraphs. This means that no two consecutive letters (read from top to bottom or from left to right) can form a digraph.

### Input

The first line of input contains the number of test cases  $T$ . The descriptions of the test cases follow:

Each test case starts with an integer  $n$ ,  $0 \leq n \leq 676$ , denoting the number of forbidden digraphs. The  $n$  following lines contain the digraphs.

### Output

For each test case print a square of the largest possible size which does not contain any of the digraphs. If it is possible to construct a square of size  $20 \times 20$  or bigger, print only a  $20 \times 20$  square.

### Example

*Part of the example test data below was omitted for clarity. You can access full sample tests at your workstation.*



For an example input	a possible correct answer is:
2	aw
628	wz
aa	ababababababababab
az	bababababababababa
ba	ababababababababab
bb	bababababababababa
bc	ababababababababab
...	bababababababababa
by	ababababababababab
ca	bababababababababa
cb	ababababababababab
cc	bababababababababa
...	ababababababababab
cy	bababababababababa
da	ababababababababab
...	bababababababababa
dy	ababababababababab
...	bababababababababa
wa	ababababababababab
...	bababababababababa
wy	ababababababababab
ya	bababababababababa
...	
yy	
za	
zb	
...	
zy	
zz	
2	
aa	
bb	