Word Generator

Input file:	`standard input`
Output file:	`standard output`
Time limit:	2 seconds
Memory limit:	256 megabytes

A machine has M slots numbered from 1 to M, where cards with letters can be placed. Each slot i can only be filled with cards from a specific set of available cards for that slot. When all M slots are filled, the letters in the cards form a word by concatenating the letters from left to right across the slots.

Each card can only be used once to create words.

A word is considered **beautiful** if and only if all of its characters are distinct. For example, the words `abchd`, `a`, and `ab` are beautiful, while the words `abdsa` and `aa` are not.

The task is to determine the maximum number of distinct beautiful words that can be created using the available cards for each slot.

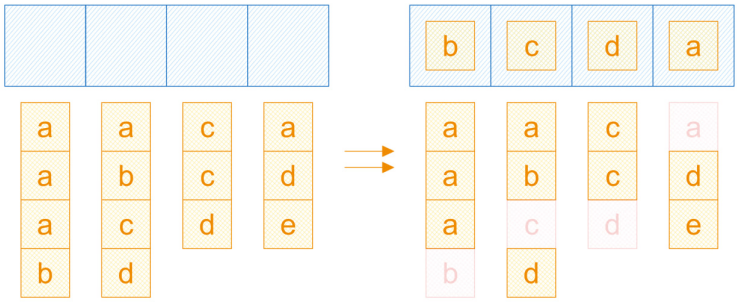

Figure 1. The first test from the sample.

Input

The first line contains one integer T ($1 \le T \le 10^3$), the number of test cases. Then, for each test case:

- The first line contains one integer M ($1 \le M \le 26$).
- Then, M lines follow, each containing one string S_i, the set of cards that can be used for slot i. It is guaranteed that for each $c \in S_i$, we have $c \in \{\texttt{a}, \texttt{b}, \ldots, \texttt{z}\}$.

The total sum of $|S_i|$ across all test cases does not exceed 10^6.

Output

For each test:

- First, print one line consisting of one integer C, the maximum number of words that you can create.
- Then, print C lines, each consisting of one string W_i, words which you created.

Example

standard input	standard output
2 4 aaab abcd ccd ade 3 aaabc abbbc abccc	3 bcda adce abcd 5 abc abc abc cab bca