

# Problem C

## Bookshelves

Input file: `books.in`  
Output file: `books.out`

Berend is a librarian. He is responsible for the books in the university library in Preh Fiks. Because of the constant growth of the collection, the building has become too small, thus the library will move.

### Problem

Berend will take advantage of the move to place the books in another way on the new shelves. He wants to have on each board of the shelves books, where the name has the same prefix. But the longest common prefix of all books on one board may not appear as the beginning of such a prefix on any other board, so that books can be found easily via prefixes.

Example: If “Verwachting” and “Verwarring” are on one board (prefix ‘`verwa`’), then “Vermoedens” and “Verlakkerij” are not allowed to stay together on another board (prefix ‘`ver`’, in the beginning of ‘`verwa`’), but “Vroomheid” and “Vrede” may well (prefix ‘`vr`’).

Since there is always shortage of money, it is better if Berend needs few shelves.

### Input

The first line contains the number of runs. Then follows for each run

- One line containing the number of boards  $k$  in one shelf ( $1 \leq k \leq 10$ ).
- One line containing the number of books  $p$  that fit (at most) on one board ( $1 \leq p \leq 30$ ).
- One line with the number of books.
- For each book one line containing the title. A title is built up by the symbols ‘`a`’–‘`z`’, containing spaces as well. The total length is shorter than 20 symbols. All titles within one run are different.

### Output

One number per run: the minimal number of shelves Berend needs.

**Sample input**

2  
1  
2  
2  
past  
precies  
1  
2  
5  
past  
pijnlijk  
genoeg  
niet  
precies

**Output for sample input**

1  
5