

L. Recognizing the Language

Time limit: 5 seconds
Memory limit: 65535 kBytes

Description

Develop a program to recognize in which language is written a certain text, based on some dictionaries.

The standard input consists of the following data:

- n ($2 \leq n \leq 5$) languages / dictionaries;
- each language / dictionary is described by *name*, its *length* (≤ 10000 , the number of words), and the actual words;
- after the last language / dictionary, an unspecified number of *phrases* (≤ 15) to be analyzed are following; every phrase is described by its length (number of words ≤ 5000), and the actual words.

Every word, including the language, is a case sensitive string containing up to 15 letters.

Your mission is to identify which language(s) each phrase belongs to. Check, for every word of the phrase, in which dictionaries can be found (some words may be found in two or more dictionaries). Determine, for every language, the number of recognized words, and select the maximum one. If, for a particular language, the number of recognized words exceeds half the length of phrase, display that language. If more than one language is detected (the same number of words were detected), separate the languages by comma and space; display the languages in the order of their appearance (not necessarily alphabetic). If the number of recognized words does not exceed half the length of phrase, display ? (question mark). Do not check if a particular word of any phrase is repeated, manage them as distinct.

Input

See the description.

Output

See the description.

Example

Input	Output
2	rom, ita
rom 4 luna mare	ita
ziua miercuri	?
ita 3	rom
luna mezzo mare	
4 ziua luna mezzo mare	
3 luna mezzo mare	
4 patrone merchant luna mare	
3 ziua miercuri ombrest	

Explanation: The input data includes two languages / dictionaries: rom (4 words) and ita (3 words). You have to analyze four phrases containing 4 words, 3 words, 4 words, and 3 words, respectively.