

One of the preferred kinds of entertainment of people living in final stages of XX century is filling in the crosswords. Almost every newspaper and magazine has a column dedicated to entertainment but only amateurs have enough after solving one crossword. Real professionals require more than one crossword for a week. And it is so dull — just crosswords and crosswords — while so many other riddles are waiting out there. For those are special, dedicated magazines. There are also quite a few competitions to take part in, even reaching the level of World Championships. Anyway — a lot.

You were taken on by such a professional for whom riddle solving competing is just a job. He had a brilliant idea to use a computer in work not just to play games. Somehow anagrams found themselves first in the line. You are to write a program which searches for anagrams of given words, using a given vocabulary, tediously filled with new words by yours employer.

Input

The first line contains T the number of test cases. There is a blank line after this. Then, T test cases follow — each separated by a blank line. Each test case has the following structure:

```
< number of words in vocabulary >
< word 1 >
.....
< word N >
< test word 1 >
.....
< test word k >
END
```

< number of words in vocabulary > is an integer number $N < 1000$. < word 1 > up to < word N > are words from the vocabulary. < test word 1 > up to < test word k > are the words to find anagrams for. All words are lowercase (word 'END' means end of data — it is **NOT** a test word). You can assume all words are not longer than 20 characters.

Output

For each < test word > — in the order in which it appeared — list the found anagrams in the following way:

```
Anagrams for: < test word >
< No >) < anagram >
.....
```

< No > should be printed on 3 chars.

In case of failing to find any anagrams your output should look like this:

```
Anagrams for: < test word >
No anagrams for: <test word>
```

Print a blank line between datasets.

Sample Input

```
1

8
atol
lato
microphotographics
rata
rola
tara
tola
pies
tola
kola
aatr
photomicrographics
END
```

Sample Output

```
Anagrams for: tola
 1) atol
 2) lato
 3) tola
Anagrams for: kola
No anagrams for: kola
Anagrams for: aatr
 1) rata
 2) tara
Anagrams for: photomicrographics
 1) microphotographics
```