Introduction

Word searches are fun! And scrambling letters is fun! So how fun would it be to scramble a bunch of letters and then search for words? Too fun for, um... words!

Let's start with a few lines of text like this:

```
Two roads diverged in a yellow wood,
And sorry I could not travel both
And be one traveler, long I stood
And looked down one as far as I could
```

Next, let's scramble the letters by picking a number of rows and rewriting the letters top-to-bottom, left-to-right. We'll ignore all non-letter characters in the process and convert the letters to upper-case.

```
TAVDEWNRUTEHEREGOLDOFID
WDEILODYLTLAOARIDODNAC
OSRNLOSIDRBNNVLSAOOERO
RDGAODOCNAODEEOTNKWAAU
OIEYWAROOVTBTLNODENSSL
```

How cool is that? Now, can you find the word GOLD? TOE? HAND? RAW? Can you write a program that could find them?

Input

The first line of input gives the number of rows in the scramble (up to a maximum of twenty-three). The line after the number of rows gives the number of lines in the input text, followed by the input text. The next line gives the number of search words, followed by the search words, one per line.

```
5
4
Two roads diverged in a yellow wood,
And sorry I could not travel both
And be one traveler, long I stood
And looked down one as far as I could
6
GOLD
NODE
TOE
MELT
RAW
HERE
```

Output

First the program must print the scrambled text. Then the program must print each of the search words, followed by the row and column (in the scramble) of the word's first letter. If a word appears more than once, print all the row/column pairs with commas between each pair. Words may appear horizontal, vertical, backwards, or diagonal, just like a classic word search puzzle. If the program cannot find the search word, it must print the phrase "NOT FOUND" instead of the row and column. The top-left corner of the scramble is row zero, column zero.

```
TAVDEWNRUTEHEREGOLDOFID
WDEILODYLTLAOARIDODNAC
OSRNLOSIDRBNNVLSAOOERO
RDGAODOCNAODEEOTNKWAAU
OIEYWAROOVTBTLNODENSSL
GOLD 0 15
NODE 4 14
TOE 3 15
MELT NOT FOUND
RAW 2 2, 4 6
HERE 0 11
```