# Problem 16: Word Worm

**Difficulty:** Medium

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## Problem Background

The goal of a word search is simple: find words in a block of letters either up, down, left, right, or diagonally. We have all played this game hundreds of times. But this isn't your run-of-the-mill word maze. Today you will search for a word worm that bends its way in any direction through a block of letters. The worm may even overlap itself. Don't let him get away!

## Problem Description

Word worms can move left, right, up, down, and diagonally. Word worms can also overlap other word worms (even itself).

Here is an example of a word worm spelling the word LOCKHEED:

```
A D E K H E Q
B X E H K J R
J I L O C K D
R P I G N A H
T E N E F H M
J U O P L N T
```

As another example, the following could be used to spell the word BANANA:

```
B A N
```

## Sample Input

The first line of your program's input, received from the standard input channel, will contain a positive integer representing the number of test cases. Each test case will include:

- A line containing two positive integers, separated by a space.
  - R, representing the number of rows in the puzzle.
  - C, representing the number of columns in the puzzle.
- R lines, each containing C space separated capital letters.
- A positive number N representing the number of words to follow.
- N lines, each containing a single word in all capital letters. These are words to search for in the puzzle.

```
1
6 7
A D E K H E Q
B X E H K J R
J I L O C K D
R P I G N A H
T E N E F H M
J U O P L N T
4
LOCKHEED
PLANE
JET
ENGINE
```

## Sample Output

Your program should print the list of words that were found in the grid, in the order they were listed in the input file.  If a word could not be found, do not print it out.

```
LOCKHEED
JET
ENGINE
```