

# 1992 ACM MID-CENTRAL REGIONAL PROGRAMMING CONTEST

## Problem #2 - Spy Search

Program File: **SPY.PAS** or **SPY.C**  
Input File: **SPY.IN**  
Output File: **SPY.OUT**

As a spy in a highly technical world, you frequently see many different types of encrypted messages. The messages you receive today, however, are the strangest yet. They are grids of letters and lists of words. The words can be found in the grids. After marking out the found words and replacing Z's with blanks, your message can be read. Each line of your message is in a different puzzle. It looks like a lot of repetitive work — ideal for your wristwatch computer.

Here's how the word search works: For each word in the word list, find all occurrences in the grid and mark them out. There may be zero, one, or multiple occurrences of each word. Each occurrence doesn't necessarily have to be in a straight line. Each letter must be in one of the eight adjacent locations to the previous letter. No letter can be used twice within an occurrence. Letters can be used by multiple occurrences or different words.

### Sample Grid

WAESANLC  
KONMEYZP  
ERAODGAR  
ANRMNWMW  
IEOURAYS

### Sample Word List

SNAKE  
AROUND  
IN  
ANY  
WAY

### Grid With Words Crossed Out

WAESANLC  
KONMEYZP  
ERAODGAR  
ANRMNWMW  
IEOURAYS

Taking the remaining letters (in row-major order) and replacing the Z's with blanks gives us the message: **WELCOME PROGRAMMERS**

The input file, **SPY.IN**, contains several data sets. Each data set consists of a grid and an accompanying word list:

- The first line of a data set contains a positive integer,  $N$  ( $N \leq 25$ ), which corresponds to the number of lines in the grid that follows.
- The next  $N$  lines contain the characters for the grid. Each of these lines contain the same number of characters. The maximum line length is 80 characters.
- The line after the grid contains a non-negative integer,  $M$ , which corresponds to the number of words in the word list. The maximum value of  $M$  is constrained only by the standard definitions for integers in Pascal and C.
- Each of the next  $M$  lines contains one of the words in the word list.

A value of 0 for  $N$  terminates the input file.

Your output should consist of one line for each data set. That line should be the message line given by crossing out the found words and replacing the Z's with blanks. The remaining characters should be read in row-major order. You can assume that there will be fewer than 80 characters remaining (ie. the message will fit on one line).

Sample Input File

```
5
WAESANLC
KONMEYZP
ERAODGAR
ANRMNWMW
IEOURAYS
5
SNAKE
AROUND
IN
ANY
WAY
0
```

Sample Output File

```
WELCOME PROGRAMMERS
```