Problem 2—Triangular Word Search

Ol' Weird Harold loves to do word search puzzles in the newspaper, but, because he's so weird, he likes to do word searches in triangular rather than rectangular grids. In such a grid, a word can be hidden forward or backward, horizontally or diagonally, but not vertically. Given a word search triangle and an input word, you are to compute how many times that word appears in the grid.

INPUT SPECIFICATION. Each input case begins with an unsigned decimal integer *n* indicating the number of rows in the grid followed by <**EOLN**>. The next *n* lines of the input case are the triangular word grid. Look at the samples for the formatting of this grid. Note that the number of letters in the *i*th. row is *i*, that there is one space between adjacent letters in a row, that there are no trailing spaces at the end of the line, and that the only characters in the grid itself are uppercase letters. Following each grid is the word to search for, followed by <**EOLN**>. The only characters in the word are uppercase letters; in particular, there are no spaces between the letters in this word. An extra <**EOLN**> follows each input case. The last input case is followed by "0<**EOLN**>". This line is not to be processed; it merely signifies the end of input.

OUTPUT SPECIFICATION. The output cases should appear in the same order as their corresponding input cases. Each output case consists of the following line: "Case *c*: *w* appears in the triangle *n* time(s)." *c* is the number of the case being processed. *w* is the word to be searched for. *n* is the number of times that word appears in the grid. Each output line is followed by exactly one <**EOLN**>. Note that if the same word can be found more than once (e.g. both forward and backward) in the same sequence of letters, that counts as only a single occurrence of the word.

SAMPLE INPUT.

```
6<EOLN>
·····B<EOLN>
····A·A<EOLN>
···T·T·T<EOLN>
··B·A·A·A<EOLN>
·T·A·B·B·B<EOLN>
B·A·T·M·A·N<EOLN>
BAT<EOLN>
<EOLN>
3<EOLN>
··B<EOLN>
·O·O<EOLN>
B·O·B<EOLN>
BOB<EOLN>
<EOLN>
0<EOLN>
<EOF>
```

SAMPLE OUTPUT.

```
Case·1:·BAT·appears·in·the·triangle·9·time(s).<EOLN>
Case·2:·BOB·appears·in·the·triangle·3·time(s).<EOLN>
<EOF>
```