



```
/*                               North American */  
/*   Invitational Programming Contest */  
/* Hosted by the University of Chicago */  
/*                               28-30 March, 2014 */
```

## J: Two Knight's Poem

Two chess knights have decided to collaborate on writing short, one-line poems. They have obtained the use of a laptop to type their poetry. The laptop keyboard is composed of 4 rows of 10 keys. 30 of these are symbol keys, 4 are Shift keys, and 6 are Space keys.

<b>Q</b> q	<b>W</b> w	<b>E</b> e	<b>R</b> r	<b>T</b> t	<b>Y</b> y	<b>U</b> u	<b>I</b> i	<b>O</b> o	<b>P</b> p
<b>A</b> a	<b>S</b> s	<b>D</b> d	<b>F</b> f	<b>G</b> g	<b>H</b> h	<b>J</b> j	<b>K</b> k	<b>L</b> l	<b>:</b> ;
<b>Z</b> z	<b>X</b> x	<b>C</b> c	<b>V</b> v	<b>B</b> b	<b>N</b> n	<b>M</b> m	<b>&lt;</b> ,	<b>&gt;</b> .	<b>?</b> /
<b>Shift</b>	<b>Shift</b>	<b>Space</b>	<b>Space</b>	<b>Space</b>	<b>Space</b>	<b>Space</b>	<b>Space</b>	<b>Shift</b>	<b>Shift</b>

Note that the **Shift** and **Space** keys, which are usually extra-wide keys on a keyboard, are treated here as multiple individual keys that each have the same effect.

The knights will type the poem by making moves, one at a time, that are valid for a chess knight. A chess knight can move two positions vertically and then one horizontally, or one position vertically and then two horizontally. For example, from the **D** key, a knight can move to any of these keys: **Q**, **Z**, **T**, **B**, the second **Shift** key from the left, and the second **Space** key from the left.

One knight always begins each poem on the left-most Shift key. The other knight always begins on the right-most Shift key. Either knight may move first, and either may make multiple consecutive moves. The knights cannot occupy the same key.

Each move of a knight will type at most one character, adding to the poem. Landing on a symbol key or **Space** key will type one character. A knight landing on a symbol key types the upper value of that key when the other knight is on a **Shift** key; otherwise, the lower value is typed. Landing on a **Space** key always types a single space character, regardless of whether the other knight is on a **Shift** key. Landing on a **Shift** key does not add anything to the poem.

### Input

There will be several test cases in the input. Each test case will consist of a string on a single line, representing a poem. Each poem will consist of 1 to 100 characters inclusive, using only characters from the symbol keys on the keyboard and spaces. No poem will begin or end with a space. The input will end with a line with a single asterisk (\*).



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## Output

For each poem, output 1 if the knights can type the poem, or 0 if they cannot. Output each number on its own line, with no spaces. Do not print any blank lines between outputs.

Sample Input	Sample Output
S, veA, eVE, aU	1
S, veA, eVE, aUc	0
CAlming eventa	1
CAL	1
*	