

Kick Start 2017 - Round A

Pattern Overlap

Problem

Alice likes reading and buys a lot of books. She stores her books in two boxes; each box is labeled with a pattern that matches the titles of all of the books stored in that box. A pattern consists of only uppercase/lowercase English alphabet letters and stars (*). A star can match between zero and four letters. For example, books with the titles `GoneGirl` and `GoneTomorrow` can be put in a box with the pattern `Gone**`, but books with the titles `TheGoneGirl`, `Gonetomorrow`, and `GoneWithTheWind` cannot.

Alice is wondering whether there is any book that could be stored in either of the boxes. That is, she wonders if there is a title that matches both boxes' patterns.

Input

The first line of the input gives the number of test cases, **T**. **T** test cases follow. Each consists of two lines; each line has one string in which each character is either an uppercase/lowercase English letter or *.

Output

For each test case, output one line containing `Case #x: y`, where *x* is the test case number (starting from 1) and *y* is `TRUE` if there is a string that matches both patterns, or `FALSE` if not.

Limits

$1 \leq T \leq 50$.

Memory limit: 1GB.

Small dataset (Test set 1 - Visible)

Time limit: 20 seconds.

$1 \leq \text{the length of each pattern} \leq 200$.

Each pattern contains at most 5 stars.

Large dataset (Test set 2 - Hidden)

Time limit: 40 seconds.

$1 \leq \text{the length of each pattern} \leq 2000$.

Sample

Sample Input

```
3
****
It
Shakes*e
```

Sample Output

```
Case #1: TRUE
Case #2: TRUE
Case #3: FALSE
```

```
S*speare  
Shakes*e  
*peare
```

In sample case #1, the title `It` matches both patterns. Note that it is possible for a `*` to match zero characters.

In sample case #2, the title `Shakespeare` matches both patterns.

In sample case #3, there is no title that matches both patterns. `Shakespeare`, for example, does not work because the `*` at the start of the `*peare` pattern cannot match six letters.