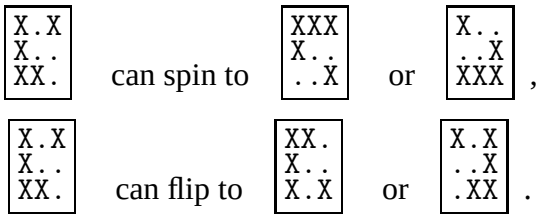
Dancing Squares

Computer Science Society
Programming Contest
Spring 2011

A *dancing square* is a "transparent" $n \times n$ matrix whose elements are "painted" with an uppercase X (`X`) or a period (`.`). A dancing square dances by *spinning* 90° clockwise or counter-clockwise, and/or *flipping* about a centered horizontal or vertical axis. For example,



When dancing squares are dancing it can be quite challenging to determine which are identically painted and which are distinct. Write a program which inputs an original dancing square, then inputs one or more additional dancing squares and determines for each one if it is identical—i.e., can be obtained from the original by some sequence of spins and/or flips, or is distinct—i.e., cannot be obtained from the original by any sequence of spins and/or flips.

Input Format

The first line of input contains the dimension $n \geqslant 1$ of all dancing squares which follow. The subsequent lines of input contain at least two dancing squares, each preceded by a blank line and consisting of n lines containing n element characters.

Output Format

For each dancing square in the standard input following the first one, output a line containing "`identical`" or "`distinct`", indicating whether it is identical to or distinct from the first one.

Input Sample

```
3

X.X
X..
XX.

XXX
..X
X..

XXX
..X
X.X
```

Output Sample

```
Square 2 is identical to square 1.
Square 3 is distinct from square 1.
```