

Caribbean Online Judge

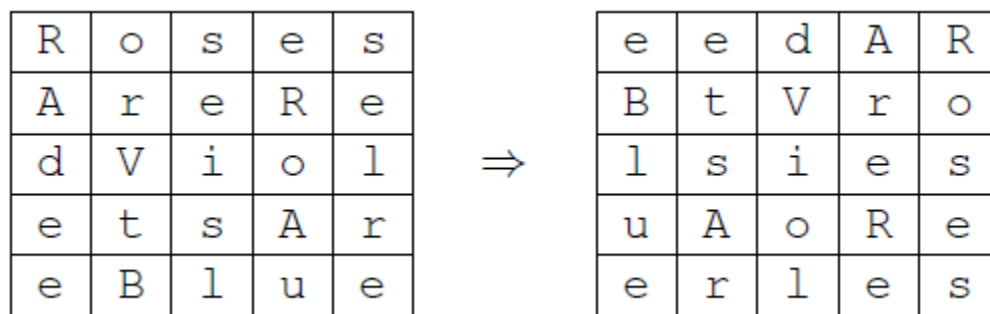
2281 - Encoded Message

Description

Alex wants to send a love poem to his girlfriend Bridget. Unfortunately, she has a nosy friend, Ellen, who might intercept his message and invade their privacy.

To prevent this, Alex has invented a scheme to make his missives indecipherable to Ellen. He arranges the letters into a square, which is rotated a quarter-turn clockwise, and then he puts the resulting letters on a single line again. (For simplicity's sake, Alex doesn't use whitespace or punctuation in his poems.)

For example, the text "RosesAreRedVioletsAreBlue" would be encoded as "eedARBtVrolsiesuAoReerles" using the following intermediate steps:



Input specification

On the first line one positive number: the number of test cases, at most 100. After that per test case:

One line with an encoded message: a string consisting of upper-case and lower-case letters only. The length of the message is a square between 1 and 10 000 characters.

Output specification

Per test case: One line with the original message.

Sample input

```
3
RSTEEOTCP
eedARBtVrolsiesuAoReerles
EarSvyeqeBsuneMa
```

Sample output

```
TOPSECRET
RosesAreRedVioletsAreBlue
SquaresMayBeEven
```