Damir likes to rotate. Right now he is rotating tables of letters. He wrote an R×C table onto a piece of paper. He has also chosen an angle K, a multiple of 45, and wants to rotate his table that many degrees clockwise.

It turns out this task is a bit too hard for Damir, so help him out.

INPUT

The first line contains two integers R and C separated by a space ($1 \leq R \leq 10$, $1 \leq C \leq 10$) the number of rows and columns in Damir's table.

Each of the next R lines contains one row of Damir's table, a string of C lowercase letters.

The last line contains an integer K, a multiple of 45 between 0 and 360 (inclusive).

OUTPUT

Output Damir's table rotated K degrees clockwise, like shown in the examples. The output should contain the smallest number of rows necessary. Some rows may have leading spaces, but no rows may have trailing spaces.

EXAMPLES

input

```
3 5
damir
marko
darko
45
```

output

```
  d
 m a
d a m
 a r i
  r k r
   k o
    o
```

input

```
3 5
damir
marko
darko
90
```

output

```
dmd
aaa
rrm
kki
oor
```

input

```
5 5
abcde
bcdef
cdefg
defgh
efghi
315
```

output

```
    e
   d f
  c e g
 b d f h
a c e g i
 b d f h
  c e g
   d f
    e
```