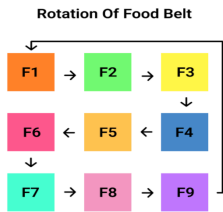# Food Belt

Problem Description

Restaurants are coming up with new technologies to serve food. The food is being served to customers using food belts. The conveyor belt is used to serve people, where food items are kept on the belt and are then moved ahead.

The food belt moves in a manner as shown below.

Rotation Of Food Belt

The above figure shows example for one rotation of food belt. So, the task is to display the food belt after 'R' rotations and display the index of food item 'Fx' on the food belt. There are 9 food items on the food belt, as depicted in the image above. After 9 rotations every food item will be in its initial position. Thus, one rotation is defined as a food item moving to its next position.

Note: Top left indicates index [0, 0] and bottom right indicates index [m-1, n-1].

Suppose if the food belt is M x N, then the even numbered rows move from left to right and odd numbered rows move from right to left. Consider 0 to be even number.

Constraints

$1 <= M <= 50$

$1 <= N <= 50$

$R >= 0$

Input

First line contains two space separated integers M and N which denote the size of the food belt having M rows and N columns.

Next M lines contain N space separated strings which denote the food items.

Next line contains an integer 'R' denoting the number of rotations.

Next line contains the food item 'Fx' whose index in the food belt after 'R' rotations has to be found. Here x denotes an integer.

Output

Display the food belt in the first M lines after R rotations and then display the index of the food item 'Fx' in the (M+1)[th] line. The *Examples* section elaborates the format of printing the index. If no such food item 'Fx' is available, then display 'Not Available'.

Refer the *Examples* section for better understanding.

Time Limit (secs)

1

Examples

Example 1

Input

4 4

F1 F2 F3 F4

F5 F6 F7 F8

F9 F10 F11 F12

F13 F14 F15 F16

2

F2

Output

F14 F13 F1 F2

F7 F8 F4 F3

F6 F5 F9 F10

F15 F16 F12 F11

[0, 3]

Explanation

After two rotations of the food belt, the food items on food belt are as follows:

F14 F13 F1 F2

F7 F8 F4 F3

F6 F5 F9 F10

F15 F16 F12 F11

And the index of 'F2' on the food belt is [0, 3].

Example 2

Input

1 20

F19 F11 F7 F10 F12 F14 F16 F3 F20 F6 F8 F5 F2 F13 F9 F17 F18 F4 F15 F21

15

F12

Output

F14 F16 F3 F20 F6 F8 F5 F2 F13 F9 F17 F18 F4 F15 F21 F19 F11 F7 F10 F12

[0, 19]

Explanation

Initially, 'F12' is at [0, 4]. Hence after fifteen rotations it will be at [0, 19]

The entire food belt after 15 rotations is depicted as below:

F14 F16 F3 F20 F6 F8 F5 F2 F13 F9 F17 F18 F4 F15 F21 F19 F11 F7 F10 F12