

QUESTION # 1:**Amir and Stairs**

Amir wants to climb up a stair of n steps. He can climb 1 or 2 steps at each move. Amir wants the number of moves to be a multiple of an integer m .

What is the minimal number of moves making him climb to the top of the stairs that satisfies his condition?

Input Format

The single line contains two space separated integers n, m ($0 < n \leq 10000, 1 < m \leq 10$)

Output Format

Print a single integer — the minimal number of moves being a multiple of m . If there is no way he can climb satisfying condition print -1 instead.

Examples**Input 1**

10 2

Output 1

6

Input 1

3 5

Output 2

-1

Explanation:

For the first sample, Amir could climb in 6 moves with following sequence of steps: {2, 2, 2, 2, 1, 1}.

For the second sample, there are only three valid sequence of steps {2, 1}, {1, 2}, {1, 1, 1} with 2, 2, and 3 steps respectively. All these numbers are not multiples of 5.

QUESTION # 2:**Letter**

Bahram decided to write an anonymous letter cutting the letters out of a newspaper heading. He knows heading s_1 and text s_2 that he wants to send. Bahram can use every single heading letter no more than once. Bahram doesn't have to cut the spaces out of the heading — he just leaves some blank space to mark them. Help him; find out if he will manage to compose the needed text.

Input Format

The first line contains a newspaper heading s_1 . The second line contains the letter text s_2 . s_1 and s_2 are non-empty lines consisting of spaces, uppercase and lowercase Latin letters, whose lengths do not exceed 200 symbols. The uppercase and lowercase letters should be differentiated. Bahram does not cut spaces out of the heading.

Output Format

If Bahram can write the given anonymous letter, print YES, otherwise print NO

Examples**Input**

Instead of dogging Your footsteps it disappears but you dont notice anything
where is your dog

Output

NO

Input

Instead of dogging Your footsteps it disappears but you dont notice anything
Your dog is upsteears

Output

YES

Input

abcdefg hijk
k j i h g f e d c b a

Output

YES

QUESTION # 3:**The Grid Search**

Given a 2D array of digits or *grid*, try to find the occurrence of a given 2D pattern of digits. For example, consider the following grid:

```
1234567890
0987654321
1111111111
1111111111
2222222222
```

Assume we need to look for the following 2D pattern array:

```
876543
111111
111111
```

The 2D pattern begins at the second row and the third column of the grid. The pattern is said to be *present* in the grid.

Input Format

The first line contains an integer t , the number of test cases.

Each of the t test cases is represented as follows:

The first line contains two space-separated integers R and C , indicating the number of rows and columns in the grid G .

This is followed by R lines, each with a string of C digits representing the grid G .

The following line contains two space-separated integers, r and g , indicating the number of rows and columns in the pattern grid P .

This is followed by r lines, each with a string of c digits representing the pattern P .

Constraints

$$1 \leq t \leq 5$$

$$1 \leq R, r, C, c \leq 1000$$

$$1 \leq r \leq R$$

$$1 \leq c \leq C$$

Output Format

Display YES or NO, depending on whether P is present in G .

Examples**Input**

```
1
10 10
7283455864
6731158619
8988242643
3830589324
2229505813
5633845374
6473530293
7053106601
0834282956
4607924137
3 4
9505
3845
3530
```

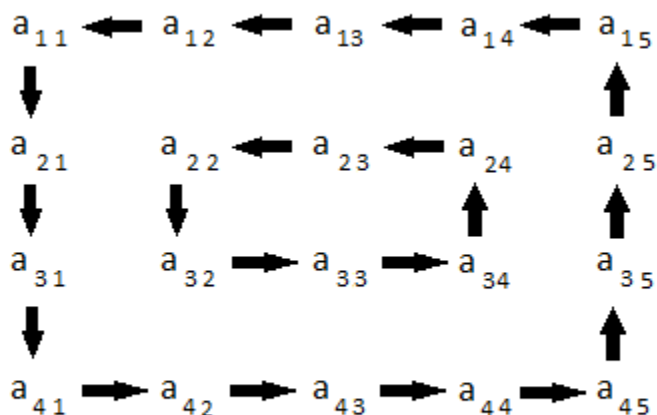
Output

```
YES
```

QUESTION # 4:**Matrix Layer Rotation**

You are given a 2D matrix of dimension $m \times n$ and a positive integer r . You have to rotate the matrix r times and print the resultant matrix. Rotation should be in anti-clockwise direction.

Rotation of a 4×5 matrix is represented by the following figure. Note that in one rotation, you have to shift elements by one step only.

**Matrix Rotation**

It is guaranteed that the minimum of m and n will be even.

As an example, rotate the Start matrix by 2:

Start	First	Second
1 2 3 4	2 3 4 5	3 4 5 6
12 1 2 5	-> 1 2 3 6	-> 2 3 4 7
11 4 3 6	12 1 4 7	1 2 1 8
10 9 8 7	11 10 9 8	12 11 10 9

Input Format

The first line contains three space separated integers, m , n , and r , the number of rows and columns in matrix, and the required rotation.

The next m lines contain n space-separated integers representing the elements of a row of matrix.

Constraints

$$2 \leq m, n \leq 300$$

$$1 \leq r \leq 10^9$$

$$\text{Min}(m, n) \% 2 = 0$$

$$1 \leq a_{ij} \leq 10^8$$

Output Format

Print each row of the rotated matrix as space-separated integers on separate lines.

Examples

Input

```
4 4 2
1 2 3 4
5 6 7 8
9 10 11 12
13 14 15 16
```

Output

```
3 4 8 12
2 11 10 16
1 7 6 15
5 9 13 14
```

Input

```
5 4 7
1 2 3 4
7 8 9 10
13 14 15 16
19 20 21 22
25 26 27 28
```

Output

```
28 27 26 25
22 9 15 19
16 8 21 13
10 14 20 7
4 3 2 1
```