

# The Grid Search

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

```
1234567890
0987654321
1111111111
1111111111
2222222222
```

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

```
876543
111111
111111
```

If we scan through the original array, we observe that the 2D pattern begins at the second row and the third column of the larger grid (the 8 in the second row and third column of the larger grid is the top-left corner of the pattern we are searching for).

So, a 2D pattern of  $P$  digits is said to be present in a larger grid  $G$ , if the latter contains a contiguous, rectangular 2D grid of digits matching with the pattern  $P$ , similar to the example shown above.

### Input Format

The first line contains an integer,  $T$ , which is the number of test cases.  $T$  test cases follow, each having a structure as described below:

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

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

The following line contains two space-separated integers,  $r$  and  $c$ , 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, which represent the pattern  $P$ .

### Constraints

$$1 \leq T \leq 5$$
$$1 \leq R, r, C, c \leq 1000$$
$$1 \leq r \leq R$$
$$1 \leq c \leq C$$

### Test Case Generation

Each individual test case has been generated by first specifying the size ( $R$  and  $C$ ) of the large 2D matrix, and then randomly generating the digits in it. A limited number of digits in the larger matrix may be changed by the problem setter (no more than 5% of the total number of digits in the matrix). So the larger 2D matrix is almost-random. The pattern matrix has been manually-curated by the problem setter.

### Output Format

Display 'YES' or 'NO', depending on whether (or not) you find that the larger grid  $G$  contains the rectangular pattern  $P$ . The evaluation will be case sensitive.

### Sample Input

```
2
```

```
10 10
7283455864
6731158619
8988242643
3830589324
2229505813
5633845374
6473530293
7053106601
0834282956
4607924137
3 4
9505
3845
3530
15 15
400453592126560
114213133098692
474386082879648
522356951189169
887109450487496
252802633388782
502771484966748
075975207693780
511799789562806
404007454272504
549043809916080
962410809534811
445893523733475
768705303214174
650629270887160
2 2
99
99
```

## Sample Output

```
YES
NO
```

## Explanation

The first test in the input file is:

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

As one may see, the given 2D grid is indeed present in the larger grid, as marked in bold below.

```
7283455864
6731158619
8988242643
3830589324
2229505813
5633845374
6473530293
7053106601
```

0834282956  
4607924137

The second test in the input file is:

15 15  
400453592126560  
114213133098692  
474386082879648  
522356951189169  
887109450487496  
252802633388782  
502771484966748  
075975207693780  
511799789562806  
404007454272504  
549043809916080  
962410809534811  
445893523733475  
768705303214174  
650629270887160  
2 2  
99  
99

The search pattern is:

99  
99

This cannot be found in the larger grid.