

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

$$1 \leq T \leq 5$$

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

$$1 \leq r \leq R$$

$$1 \leq c \leq C$$

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.