

Spiderman saves the victim

Problem Code: **SPIDRMAN**



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Problem description.

Consider NewYork city which has grid like structure of houses. You are provided the city map in the form of a matrix. Each cell represents a building. From each building you can go to adjacent four buildings in four directions : east, west, north, south. Spiderman wants to rescue a victim which is on some building. You will be provided with the location of victim and spiderman is situated at (1,1) building. But, there is a condition that spiderman can not jump between buildings if the difference in their heights is greater than some particular value. Find a way for spiderman to reach the victim by crossing the minimum number of buildings.

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Input

Input contains multiple test cases. First Line is a integer T, representing the number of test cases to follow.

First line of each test case has 4 numbers - M, N, X, Y, D. Here MxN is the dimension of the city grid. (X,Y) is location of victim.

This is followed by M lines. Each line consist of N space separated positive integers corresponding to building heights. D is the maximum difference between heights of buildings that spiderman can cross.

Output

One line for each test case containing a single integer, denoting the minimum number of buildings spiderman needs to cross. Return -1 if its not not possible.

Constraints

Should contain all the constraints on the input data that you may have. Format it like:

- $1 \leq T, M, N, X, Y \leq 100$
- $1 \leq D \leq 100000$
- Each building height will be less than 100000

Example

Input :

```
3
3 3 3 3 2
1 2 3
6 9 4
7 8 5
3 3 3 3 1
1 8 3
9 5 6
7 2 4
3 3 3 3 1
1 6 7
2 5 8
3 4 9
```

Output :

```
3
-1
7
```

Explanation

In the first test case, we have to cross buildings with height 2, 3, 4 to reach building (3,3). So the answer is 3.

In the second test case, we cannot go to either of the buildings with height 8 or 9. So answer is -1.

In the third case, we have to cross building with height 2, 3, 4, 5, 6, 7, 8 (in that order). So answer is 7.

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Tags: [directi_campus \(/tags/problems/directi_campus/\)](/tags/problems/directi_campus/)

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Time Limit: 2 secs

Source Limit: 50000 Bytes

Languages: C, CPP 4.3.2, CPP 6.3, CPP14, JAVA, PYTH, PYTH 3.5

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