Coding Area

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02Hr 29Min 49Sec

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Light The Room

Problem Description

An office has seating arrangements in a square matrix format. Light fixtures are done in such a way that all the workstations receive minimum 100% brightness.

Each light would cover four workstations (4 in square). It provides 100% lighting for workstations that are directly under it, provides 50% light for adjacent workstations (which can be maximum 12). If two lights provide 50%, light each, to a workstation, the

resultant light received would result in 100% brightness for that workstation. Similarly, if four lights provide 50% light to a workstation, then the resultant light received by that workstation is 200% brightness.

If the light covering of the workstation is greater than 200% brightness, then it is not suitable for seating.

Lighting fixtures are placed at every row-column intersection

Employees may be seated randomly. Given their seating positions find out the minimum number of light bulbs required to be turned on, such that workstation brightness requirements are met.

Constraints

1 < Room Size < 7

2 < No of employees <10

Input Format

First Line contains an integer S, which denotes the size of the room

Second Line contains an integer N, which denotes the number of employees

Next N lines provide the position of the employees separated by space. First integer represent the row number and second integer represent the column number. Left top is (0, 0) and right bottom is (S-1, S-1)

Output

One integer representing the minimum number of light bulbs to be turned on, to provide minimum 100% brightness and maximum 200% brightness at the active workstation.

Test Case

Explanation

Example 1

Input

4

4

1 0

1 3

3 1

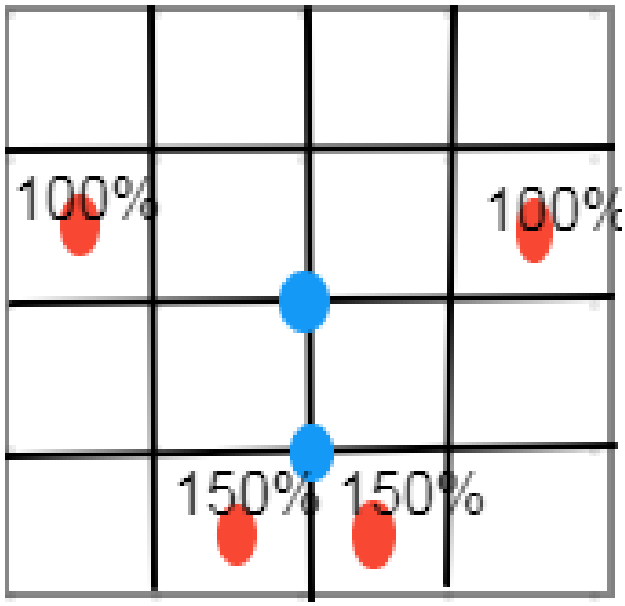
3 2

Output

2

Explanation

In the above figure, the red dots denote the workstation and the blue dots denote the lights that should be turned on such that all workstation have required level of brightness.



Example 2

Input

4

5

0 3

1 1

3 0

3 2

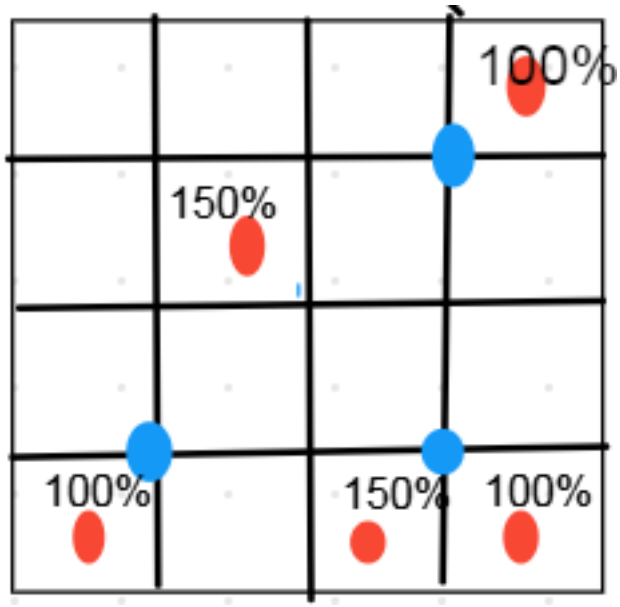
3 3

Output

3

Explanation

As seen from the above figure, three light bulbs will be required to meet brightness requirement.



Upload Solution [Question : H]