

Problem 7: Checkmate!

13 Points

Problem ID: `queens`

Rank: 2

Introduction

Having more than two queens on a chessboard is strange enough—but what if we didn't stop there? The chessboards in this problem are certainly not standard—they might not even be square! One thing is for certain: this game is far from fair.

Your task is to create a program that will output the number of spots a king will be in checkmate on a chessboard.

Program Input

The first line of the input from STDIN will contain a positive integer T denoting the number of test cases that follow. Each test case will have the following input:

- A first line consisting of two positive integers r and c separated by an x , denoting the number of rows and columns in the chessboard that will follow.
- A chessboard with the given dimensions following the first line. The chessboard is as follows:
 - Empty spaces are represented by a dash `-`
 - Spots with a queen on them are represented by the character `Q`
 - Queens are the only pieces on the chessboard.
- A blank line separating individual test cases.

Example Input:

7
3x4

Q---

4x4
Q-Q-
-QQ-

1x3

2x1
Q
-

4x4
-Q--

5x5

--Q--

5x8

--Q--Q--

Program Output

For each test case, your program should output the number of spots a king would be in checkmate on the chessboard. A chess king is in checkmate if it is currently under attack and is unable to move a safe spot. Chess kings can move one square in any direction (including diagonals).

Example Output:

```
2
12
0
1
1
0
10
```

Problem Constraints

$T \leq 60$

$1 \leq r, c \leq 250$

Assume capturing a queen is not a move available to you.

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