Problem E. Li Hua and Maze

Time limit 1000 ms
Mem limit 262144 kB

There is a rectangular maze of size $n \times m$. Denote (r, c) as the cell on the r-th row from the top and the c-th column from the left. Two cells are *adjacent* if they share an edge. A *path* is a sequence of *adjacent* empty cells.

Each cell is initially empty. Li Hua can choose some cells (except (x_1, y_1) and (x_2, y_2)) and place an obstacle in each of them. He wants to know the minimum number of obstacles needed to be placed so that there isn't a *path* from (x_1, y_1) to (x_2, y_2).

Suppose you were Li Hua, please solve this problem.

Input

The first line contains the single integer t ($1 \le t \le 500$) — the number of test cases.

The first line of each test case contains two integers n, m ($4 \le n, m \le 10^9$) — the size of the maze.

The second line of each test case contains four integers x_1, y_1, x_2, y_2 ($1 \le x_1, x_2 \le n, 1 \le y_1, y_2 \le m$) — the coordinates of the start and the end.

It is guaranteed that $|x_1 - x_2| + |y_1 - y_2| \ge 2$.

Output

For each test case print the minimum number of obstacles you need to put on the field so that there is no *path* from (x_1, y_1) to (x_2, y_2).

Sample 1

Input	Output
3 4 4 2 2 3 3 6 7 1 1 2 3 9 9 5 1 3 6	4 2 3

Note

In test case 1, you can put obstacles on $(1, 3)$, $(2, 3)$, $(3, 2)$, $(4, 2)$. Then the path from $(2, 2)$ to $(3, 3)$ will not exist.