

1398 – Winger Trial

After the great winger Donaldo left his soccer team, coach sir Thelex has found himself in a great fix. The strength of his team is reduced greatly and he needs to find a suitable replacement immediately. The coach selects a number of young wingers from around the world and sets up a trial for them.

The trial will take place on a rectangular shaped field of length **L** meters and width **W** meters. There are **N** robot defenders placed on the field. The defenders do not change their positions but if a winger's distance from a defender is not more than **d** meters, it will automatically tackle him. A robot defender may tackle at most once. On the beginning of the trial, a winger stands on the left edge of the field (across the length) with a soccer ball. Now, his task is to avoid the obstructions of the robot defenders and reach the rightmost edge of the field with the ball. Please tell him the minimum number of tackles he must face in order to reach the opposite end. A player must not go outside the field or he will be disqualified.

Input

Input starts with an integer **T** (≤ 100), denoting the number of test cases.

Each case starts with a line containing four integers **L W N d** ($1 \leq L, W \leq 10000, 1 \leq N \leq 100, 1 \leq d \leq 1000$) as described above. Each of the following **N** lines contains two integers defining the **x** and **y** co-ordinates of a defender. You can consider the co-ordinate of the lower-left corner of the field to be **(0, 0)** and upper-right corner to be **(L, W)**. Obviously, all the defenders are located inside the field. The left edge is denoted by the line **(0, 0), (0, W)** and the right edge is denoted by the line **(L, 0), (L, W)**. The winger wants to move from left edge to right.

Output

For each case, print the case number and the minimum number of tackles that needs to be dealt with.

Sample Input	Output for Sample Input
2 500 300 5 100 250 0 250 150 250 300 100 150 400 150 10 10 4 4 2 3 8 3 2 7 8 7	Case 1: 1 Case 2: 2