The game of Spot is played on an $N \times N$ board as shown below for $N = 4$. During the game, alternate players may either place a black counter (spot) in an empty square or remove one from the board, thus producing a variety of patterns. If a board pattern (or its rotation by 90 degrees or 180 degrees) is repeated during a game, the player producing that pattern loses and the other player wins. The game terminates in a draw after $2N$ moves if no duplicate pattern is produced before then.

Consider the following patterns:
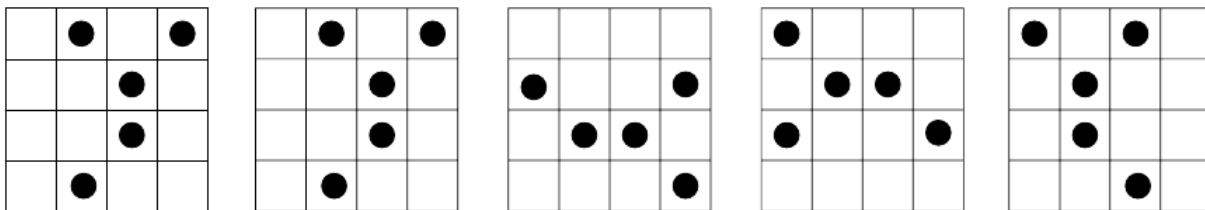
If the first pattern had been produced earlier, then any of the following three patterns (plus one other not shown) would terminate the game, whereas the last one would not.

Input

Input will consist of a series of games, each consisting of the size of the board, N ($2 \leq N \leq 50$) followed, on separate lines, by $2N$ moves, whether they are all necessary or not. Each move will consist of the coordinates of a square (integers in the range $1..N$) followed by a blank and a character '+' or '−' indicating the addition or removal of a spot respectively. You may assume that all moves are legal, that is there will never be an attempt to place a spot on an occupied square, nor to remove a non-existent spot. Input will be terminated by a zero (0).

Output

Output will consist of one line for each game indicating which player won and on which move, or that the game ended in a draw. See the Sample Output below for the exact format.

Sample Input

```
2
1 1 +
2 2 +
2 2 -
1 2 +
2
1 1 +
2 2 +
1 2 +
2 2 -
0
```

Sample Output

```
Player 2 wins on move 3
Draw
```