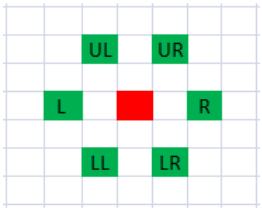
Red Knight's Shortest Path

In ordinary chess, the pieces are only of two colors, black and white. In our latest version of chess, we are including some new pieces with unique movements. One of the most powerful pieces in this version is the *red knight*.

The red knight can move to six different positions based on its current position (UpperLeft, UpperRight, Right, LowerRight, LowerLeft, Left) as shown in the figure below.



The board is a grid of size $n \times n$. Each cell is identified with a pair of coordinates (x, y), where x is the row number and y is the column number, both zero-indexed. Thus, $(0, 0)$ is the upper-left corner and $(n-1, n-1)$ is the bottom-right corner.

Given the coordinates of the starting position of the red knight and the coordinates of the location that it has to reach, if the figure can reach the destination, print the minimal number of moves that the red knight has to make in order to reach the destination and after that, print the order of the moves that the figure must follow to reach the destination in the shortest way. If the figure cannot reach the destination, output only the word "Impossible".

Note: Because there may be multiple shortest paths leading to the destination, assume that the red knight considers its possible neighbor locations in the following order of priority: *UL, UR, R, LR, LL, L*. In other words, if there are multiple possible options, the red knight prioritizes the first move in this list, as long as the shortest path is still achievable. Check sample test case 2 for an illustration.

Input Format

The input consists of one line containing five space-separated integers n, x_i, y_i, x_f, y_f. (x_i, y_i) denotes the coordinates of the initial position and (x_f, y_f) denotes the coordinates of the final position.

Constraints

- $5 \leq n \leq 200$
- $0 \leq x_i, y_i, x_f, y_f < n$
- the initial and the final positions are different

Output Format

If the destination can be reached, print two lines. In the first line, print a single integer denoting the minimum number of moves that the red knight has to make in order to reach the destination. In the second line, print the space-separated sequence of moves.

If the destination cannot be reached, print a single line containing only the word `Impossible`.

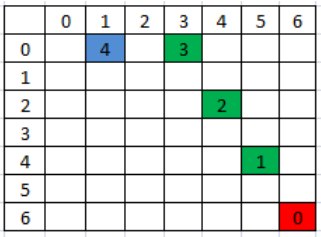
Sample Input 0

```
7
6 6 0 1
```

Sample Output 0

```
4
UL UL UL L
```

Explanation 0



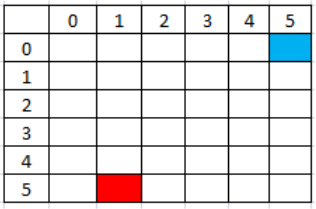
Sample Input 1

```
6
5 1 0 5
```

Sample Output 1

```
Impossible
```

Explanation 1



Sample Input 2

```
7
0 3 4 3
```

Sample Output 2

```
2
LR LL
```

Explanation 2