# Problem 4 – Chess Knight

Chess is the oldest game, we still play today. Many people say "Chess is the game of life", so in new era when we start using computers, chess was one of the first game made. Now its your job to implement it, actually one little part of chess. There are 6 types of piece in chess and all of them have specific moves and roles in game. But probably most specific piece is "Knight"!

The knight move is unusual among chess pieces. When it moves, it can move to a square that is **two squares away horizontally and one square vertically**, or **two squares vertically and one square horizontally**. The complete move therefore looks like the **letter L**. Unlike all other standard chess pieces, the knight can **"jump over"** all other pieces (of either color) to its destination square. Chess is played on a **square**[**board**](https://en.wikipedia.org/wiki/Chessboard)**of eight rows and eight columns.**

Your task is to implement a chess board with some pieces on it. After that you will receive **a knight start position**. Then you will start receiving moves for knight, till you read **"END" command**. Moves can be invalid knight's move or can be go out of board. When you receive one of this **invalid moves** you have to **skip this action** and move to next command. First thing you need to print is all pieces that knight take, **separated with ", ".** After that you need to print **two lines** with count of invalid moves and moves that get knight out of board.

### Input

On first 8 rows you will receive a game board rows if format:

**{O| | |O| |O| | |}**

Where all empty spaces mean that cell is empty and all letters mean that there is a chess piece. Then you will read a number **"02",** which is **start position for knight**. First digit represent a **row in board** and second digit represent **a col**. Counting for rows and cols starts from **top left corner**. After all this you will start receiving moves in format:

**{02 -> 23}**

First number is start position of knight, second number is new position of knight.

### Output

On first line print all chess pieces that knight take in format:

**Pieces take: {O, O, Q}**

On next line print count of invalid moves in format:

**Invalid moves: {count}**

On next line print count of moves that knight go out of board in format:

**Moves out of board: {count}**

### Constraints

* Knight always will start from empty cell
* Knight can move many times, but never take another piece
* Moves count will be in range [0…1000000]
* Time limit: 0.3 sec. Memory limit: 16 MB.

### Examples

|  |  |
| --- | --- |
| **Input** | **Output** |
| | | | | | | | |  | | | | | | | |  | | |Q| |Q| | |  | |Q| | | |Q| |  | | | | | | | |  | |Q| | | |Q| |  | | |Q| |Q| | |  | | | | | | | |  44  44 -> 23  END | Pieces take: Q  Invalid moves: 0  Board out moves: 0 |
| B| |P| |R| | |P|  | | | | | | | |  | | |Q| |K| | |  P| |K|P|R| |K| |  | | | | | | | |  | |K| | | |K| |  | | |B| |K| |P|  R| | | | | | | |  44  44 -> 23  23 -> 44  44 -> 25  25 -> 08  25 -> 06  06 -> 18  END | Pieces get: Q, K  Invalid moves: 1  Board out moves: 1 |