

1 The rules of $n \times n$ Simplified Sudoku

An $n \times n$ square of boxes whose positions are filled with the numbers $1, 2, \dots, n$ (one number per box) is called a *completed Sudoku*. The Sudoku is called *valid* if no row or column contains a repeated number. Otherwise it is called *invalid*.

Here is an example of a valid Sudoku:

1	3	2
3	2	1
2	1	3

Here is an example of an invalid Sudoku:

3	1	2
3	2	1
2	1	3

It is invalid because the first column contains a repeated 3. It is also invalid because the second column contains a repeated 1.

(In regular Sudoku puzzles, the box is 9×9 , and the same no-repeat rule must apply to 3×3 sub-boxes; here we do not use such a rule.)

2 Task

Prove that there is no way to complete the table below so that it is valid Sudoku. (In other words, this puzzle has no solution.)

1		3
2	1	

Advice and thoughts: A proof is a written logical argument that would convince your peers of the truth of the statement, beyond any reasonable doubt. This is a writing assignment. Your proof may be only a few sentences long, but you should choose those sentences so as to be as clear as possible.