

Sudoku Verifier

Sudoku is a game with few simple rules, where the goal is to place nine sets of positive digits (1...9) into the cells of a fixed grid structure. A valid Sudoku solution should conform to the following rules:

- A cell in a Sudoku game can only store positive digits, i.e. 1...9.
- A "sub-grid" is a 3x3 arrangement of cells.
- All digits appear only once in a sub-grid, i.e. they cannot repeat.
- The Sudoku board (or global grid) consists of a 3x3 arrangement of sub-grids, yielding a 9x9 arrangement of cells.
- A digit can appear only once in the rows of the global grid.
- A digit can appear only once in the columns of the global grid.

Your task is to check the validity of a given solution for a Sudoku game:

1. You should read the candidate solution from a string variable, which would have been displayed like below, when printed on the screen:

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1 2 3 4 5 6 7 8 9
9 1 2 3 4 5 6 7 8
8 9 1 2 3 4 5 6 7
7 8 9 1 2 3 4 5 6
6 7 8 9 1 2 3 4 5
5 6 7 8 9 1 2 3 4
4 5 6 7 8 9 1 2 3
3 4 5 6 7 8 9 1 2
2 3 4 5 6 7 8 9 1
```

2. You shall check whether the provided string follows the correct format (i.e. 9 lines with 9 entries in each line).
3. You shall check the validity of the candidate solution against the rules listed above.
4. You shall throw "CustomSudokuException" for all error cases including but not limited to: wrong format for a solution string.
5. You program shall provide the functionality to return a string message on the validity of the solution:
 - If it is valid, the following message shall be displayed: "This is a valid solution", followed by the solution itself (as above).
 - If the solution is not valid you shall return a failure message, indicating the reason why it is not valid, e.g. "9 appears more than once in row 5" (Assume that the lower left corner of the grid has the coordinates (1, 1)). Again, you shall display the solution after this error message.