

37. Sudoku Solver

Write a program to solve a Sudoku puzzle by filling the empty cells.

A sudoku solution must satisfy all of the following rules:

Each of the digits 1-9 must occur exactly once in each row.

Each of the digits 1-9 must occur exactly once in each column.

Each of the digits 1-9 must occur exactly once in each of the 9 3x3 sub-boxes of the grid.

The '.' character indicates empty cells.

Example 1:

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

Input: board =

```
[[ "5","3",".", ".", "7",".", ".", ".", ".", "6",
".", "9","8",".", ".", ".", ".", "6",
".", "8",".", ".", "6",".", ".", ".", "3",
"4",".", ".", "8",".", "3",".", ".", "1",
"7",".", ".", ".", "2",".", ".",
.", "6",[".", "6",".", ".", ".", "2","8",".",
[".", ".", "4","1","9",".", ".", "5",
[".", ".", ".", "8",".",
", "7","9"]]
```

Output:

[["5", "3", "4", "6", "7", "8", "9", "1", "2"], ["6", "7", "2", "1", "9", "5", "3", "4", "8"], ["1", "9", "8", "3", "4", "2", "5", "6", "7"], ["8", "5", "9", "7", "6", "1", "4", "2", "3"], ["4", "2", "6", "8", "5", "3", "7", "9", "1"], ["7", "1", "3", "9", "2", "4", "8", "5", "6"], ["9", "6", "1", "5", "3", "7", "2", "8", "4"], ["2", "8", "7", "4", "1", "9", "6", "3", "5"], ["3", "4", "5", "2", "8", "6", "1", "7", "9"]]

Explanation: The input board is shown above and the only valid solution is shown below:

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

Constraints:

board.length == 9

board[i].length == 9

board[i][j] is a digit or '.'.

It is guaranteed that the input board has only one solution.