Unknown Title

36. Valid Sudoku

Medium

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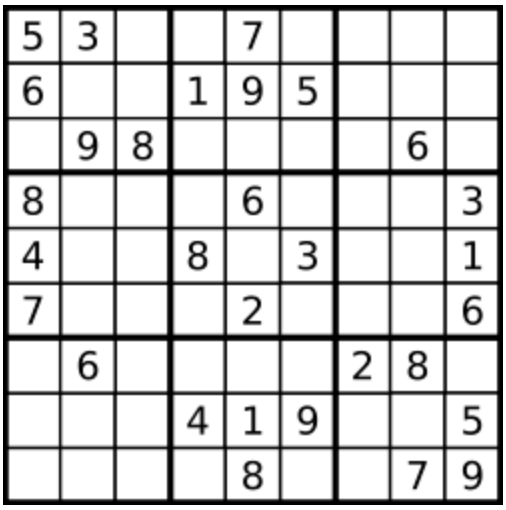
Determine if a 9 x 9 Sudoku board is valid. Only the filled cells need to be validated **according to the following rules**:

1. Each row must contain the digits 1-9 without repetition.
2. Each column must contain the digits 1-9 without repetition.
3. Each of the nine 3 x 3 sub-boxes of the grid must contain the digits 1-9 without repetition.

Note:

- A Sudoku board (partially filled) could be valid but is not necessarily solvable.
- Only the filled cells need to be validated according to the mentioned rules.

Example 1:



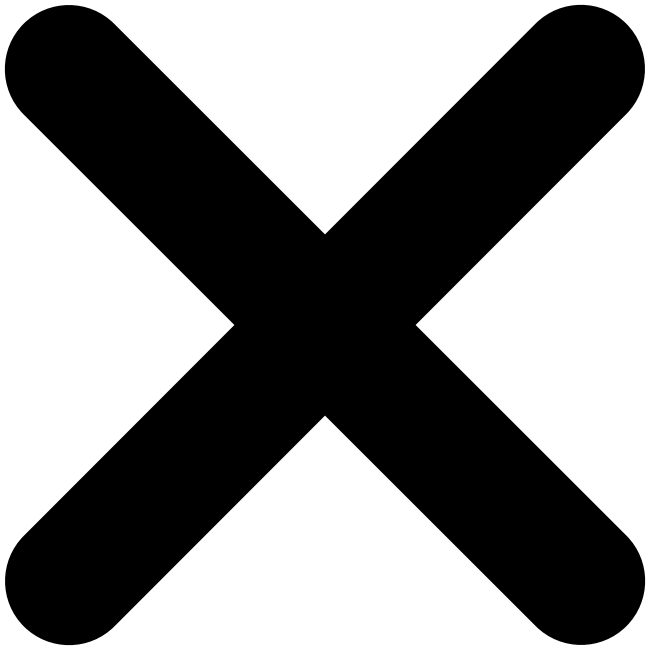
Input: board =
[["5","3",".",".","7",".",".",".","."]
,["6",".",".","1","9","5",".",".","."]
,[".","9","8",".",".",".",".","6","."]
,["8",".",".",".","6",".",".",".","3"]
,["4",".",".","8",".","3",".",".","1"]
,["7",".",".",".","2",".",".",".","6"]
,[".","6",".",".",".",".","2","8","."]
,[".",".",".","4","1","9",".",".","5"]
,[".",".",".",".","8",".",".","7","9"]]
Output: true

Example 2:

Input: board =
[["8","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"]]
Output: false
Explanation: Same as Example 1, except with the **5** in the top left corner being modified to **8**. Since there are two 8's in the top left 3x3 sub-box, it is invalid.

Constraints:

- `board.length == 9`
- `board[i].length == 9`
- `board[i][j]` is a digit `1-9` or `'.'`.



Seen this question in a real interview before?

1/5

Yes

No

Accepted

2,300,346/3.6M

Acceptance Rate

63.7%

Companies

Discussion (306)

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@

💡 Discussion Rules

1. Please don't post **any solutions** in this discussion.

2. The problem discussion is for asking questions about the problem or for sharing tips - anything except for solutions.

3. If you'd like to share your solution for feedback and ideas, please head to the solutions tab and post it there.

betrayy

Jan 22, 2023

Was it just me who couldn't figure out the "formula" for knowing which sub-box you're in at position (r,c)?

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Sam_Zhang

Sep 27, 2017

the following test case for 'valid sudoku', it's invalid. why the expected answer is true?
it make me confused.
[".87654321","2.....","3.....","4.....","5.....","6.....","7.....","8.....","9....."]

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astrobot95

Jan 01, 2024

Lot of comments saying this should be easy but I think medium is a fair rating for this problem. It isn't complex (it is basically a brute force problem). But it tests you in other areas of programming like iteration over 2D arrays, iteration over 3x3 grids in the 9x9 array, character to ASCII value conversions etc,.

These things are not particularly trivial.

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jjjjgggg

Feb 28, 2019

This problem is easy at best. The board dimension is fixed 9x9 so every solution is O(1) in theory. Using 27 hash sets would be a no brainer for any one.

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pahtreeck

Oct 28, 2016

This is the only test case that I am not passing:
[“....5..1.”,”.4.3.....”,”.....3..1”,”8......2.”,”..2.7....”,”.15......”,”.....2...”,”.2.9.....”,”..4......”]

The expected result is "false", but I don't see anything wrong with this particular Sudoku. I'm returning true for this test case. Can anyone help me identify why it's not valid?

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Rinka Yadav

May 29, 2024

my 300th <3

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William Chen

Feb 12, 2023

I find it the hardest to figure out what the box number should be with the row and column number. Is there a better way of thinking about this?

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ToanNguyen

Apr 01, 2019

After I submitted my code, the checker reported a wrong answer for this test case

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

How could the checker expects "False" result for this. Could someone please point me out?

Thanks,

Thomas

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ibrahimaksan

Dec 10, 2022

Test Case 473 is wrong. There is no mistake on the board but it returns false ?
. . . . 5 . . 1 .
. 4 . 3 . . . . .
. . . . . 3 . . 1
8 . . . . . 2 .
. . 2 . 7 . . . .
. 1 5 . . . . . .
. . . . . 2 . . .

. 2 . 9 . . . . .
. . 4 . . . . . .

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From {1, 2,..., 9} there are 2**9=512 different ways to choose each
digit once or none.
There are 27 conditions need to check.
3 kinds of conditions: columns , rows and blocks.
Each board[i][j] lies exactly in one column, one row and one block.
bitset<9> or boolean arrays suffice to use for recording and checking and play the role of hash tables!!

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Tip

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