Section 2

36. Valid Sudoku

Medium | Topics | Companies

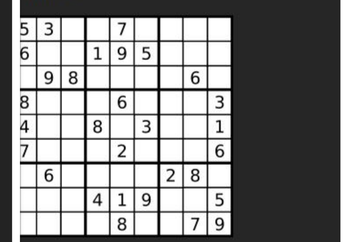
Determine if a `9 x 9` Sudoku board is valid. Only the filled cells need to be validated **according to the following rules**:

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

Voy a chequear con un array de fila y otro F (filas x cols) para las S columnas, inicializados con 0

F va a representar los vals. del 1 al 9 de la fila actual y se va a marcar con 1 si en la posición n-1, en que el número q. encontremos en M=pm[i][j] (m tablero 9*9 y i,j ∈ {0,...,8})

S va a llevar un registro mientras esto chequeando las filas con F, de las columnas parecido a F, pero de todas las cols en simultaneo

Si intento marcar con 1 algo q. ya marqué ⇒ Sudoku no válido

Tengo que chequear q. cada 3x3 sea válido tamb.

Dado q. hay 9 cajas 3x3 y cada caja tiene 9 numeros ⇒ Utilizo la misma idea de ir marcando con 1's

0	1	2
3	4	5
6	7	8

0 si $i \in \{0,1,2\} \wedge j \in \{0,1,2\}$
1 si $i \in \{0,1,2\} \wedge j \in \{3,4,5\}$

Agrupo por división entera
0, 1, 2 / 3 ⇒ 0

$a_{i_k}...a_{i_0} \rightarrow i_k n^k + ... + i_0 n^0$

∴ Id de cd. box = $i \cdot 3 + j$