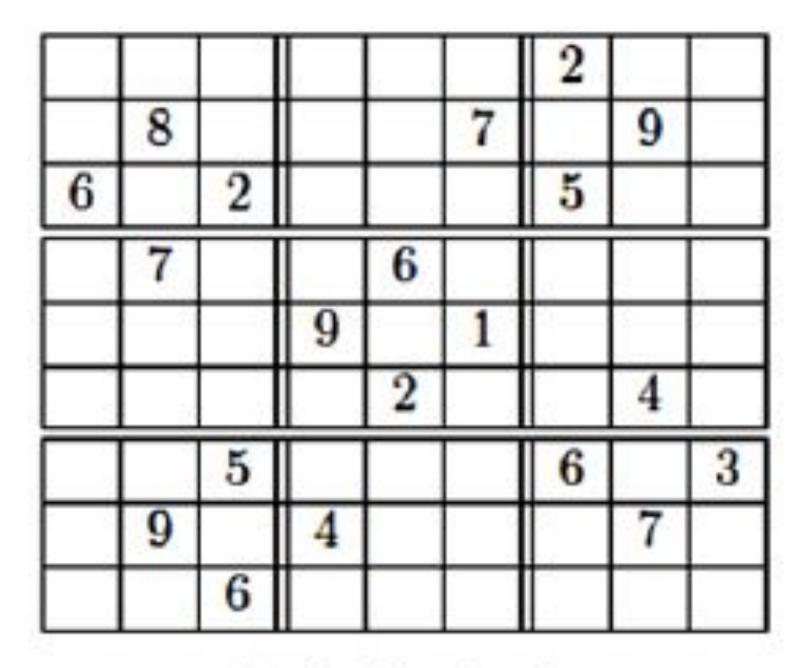
W04D3: Sudoku Validator



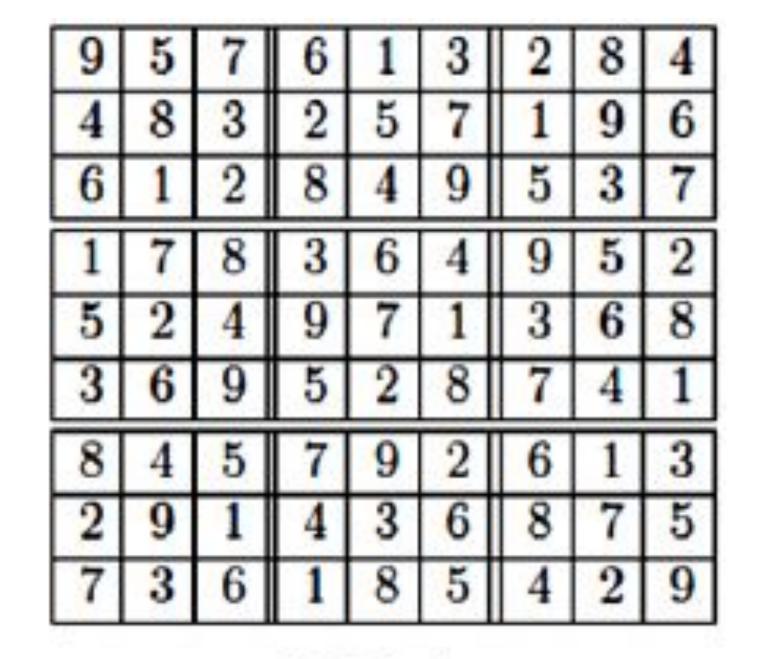
TODAY'S AGENDA

- Synthesize fundamental concepts learned so far
 - Iteration (loops)
 - Data Types (Nested Arrays)

SUDOKU



(a) Sudoku Puzzle



(b) Solution

SUDOKU

- Popular number puzzle from Japan
- Players fill in 9 x 9 Grid of Numbers
- A board is "solved" if:
 - Numbers [1-9] are used only once per row (no repeats!)
 - Numbers [1-9] are used only once per column (no repeats!)
 - Numbers [1-9]s are used only once per 3x3 mini-grid (no repeats!)

SUDOKU SOLVER

- Create a function to check if a Sudoku board is valid
- Your function should return true if the board is valid, false if it isn't

SUDOKU SOLVER - RESTATE

- Create a function that takes an array of arrays of integers as an argument, representing a Sudoku Board
- My function will return a Boolean, based on whether the Sudoku solution is valid

SUDOKU SOLVER - EXAMPLES

```
var validPuzzle = [
   [8,9,5, 7,4,2, 1,3,6],
   [ 2,7,1, 9,6,3,
                   4,8,5],
   [4,6,3, 5,8,1, 7,9,2],
           6,1,7, 2,5,8
   [ 9,3,4,
           2,3,8,
                   9,6,4],
   [ 5,1,7,
   [ 6,8,2, 4,5,9,
                   3,7,1],
            8,7,4,
                    6,2,3],
   [ 1,5,9,
                   8,1,9],
   [7,4,6, 3,2,5,
   [3,2,8, 1,9,6, 5,4,7]
];
```

```
var invalidPuzzle = [
   [8,9,5, 7,4,2, 1,3,6],
   [ 2,7,1,
            9,6,3,
                    4,8,5],
   [4,6,8,5,8,1,7,9,2],
   [ 9,3,4, 6,1,7, 2,5,8 ],
   [ 5,1,7,
            2,3,8,
                    9,6,4],
   [6,8,2,7,5,9,3,7,1],
                   6,2,3],
            8,7,4,
   [ 1,5,9,
   [7,4,6,
            3,2,5,
                    8,1,9],
   [ 3,2,8, 1,9,6,
                    5,2,7
```

SUDOKU SOLVER - APPROACH

- Write helper functions to get array for a specific row, column, or subsection
- Write a helper function to validate a specific row, column, or subsection
- Loop over each of the 9 rows, columns, subsections, and validate each.
 - If any isn't valid, return false. Otherwise, return true

SUDOKU SOLVER - APPROACH

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SUDOKU SOLVER - CODE

 When you feel confident in your approach, translate it to code

 Remember to break down complex logic into smaller helper functions

