



# Assignment 2 : JavaScript

Deadline  
10th June, 23:59



Task

160 + 55 (Bonus)

## Designing the Sudoku Game



Build a Sudoku Game using  
HTML, CSS & JavaScript



### 1. Title

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- Give an attractive title/subtitle at the top of the website.
- Use a suitable graphic/icon for your game and display it beside the title.

### 2. Sudoku Board

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- Render a 9x9 grid representing the Sudoku board using HTML and CSS. 10
- Prefilled numbers should be non-editable; blank cells should be input boxes. 5
- Automatically generate a new puzzle on page load or on clicking "New Game". 5
- Ensure the generated puzzle has only one valid solution. 5
- Allow users to enter numbers in the empty cells. 5
- Include a "Check Solution" button that validates the current puzzle state. 5



## 3. Game Features

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### a. Validation & Interactions

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- Highlight invalid entries (repeated numbers in a row, column, or 3x3 box).
- Show an error message when incorrect numbers are present.
- Display a success message when the puzzle is solved correctly.

### b. Game Control

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- Add a Reset button to clear only user-entered inputs while keeping prefilled numbers.
- Add a "New Game" button to load a fresh puzzle.
- Use a modal warning when resetting to confirm user intent.

### c. Scorecard / Stats

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- Track and display the number of completed puzzles.
- Save user stats like puzzles solved, fastest time, and total time using localStorage and provide a button to reset score and stat history.

## 4. Design / Implementation

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### a. Design a responsive layout that works well on both desktop and mobile

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### b. Code structure and Readability: Make sure your code is Reusable, Easy to read and follow the DRY (Don't Repeat Yourself) principle.

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### c. You may use CSS frameworks like Bootstrap for styling convenience.

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## 5. Puzzle Generation Logic

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### a. Implement a Sudoku puzzle generator using JavaScript.

### b. Use backtracking to generate a full, valid Sudoku solution.

### c. Remove numbers from the solved grid to create a playable puzzle.

### d. Ensure that each generated puzzle has a unique solution.

## + BONUS!

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### a. Timer & Leaderboard

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- Add a timer to track how long the user takes to solve a puzzle.
- Maintain a leaderboard of best times.

### b. Hint Feature

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- Add a hint button that fills in one correct cell at a time.

### c. Customizations

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- Add a dark mode or theme switch.
- Let users choose the board font style or size.

### d. Extra UX & Game Enhancements

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- Animate cell-filling or solving status.
- Allow keyboard navigation using the arrow keys and number keys.
- Let users input puzzles manually and then solve them using your algorithm.

### e. Difficulty Settings

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- Add difficulty levels (Easy, Medium, Hard) with appropriate logic for clue count.

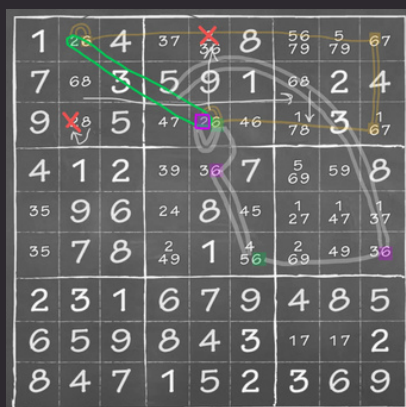
## Resources

- Sudoku Generation: <https://www.geeksforgeeks.org/create-a-sudoku-puzzle-using-html-css-javascript/>
- DOM Manipulation: [Resources](#)
- JavaScript Basics: [Resources](#)

# Words of Advice

- Start by learning the basics of JavaScript. Understand simple concepts like variables, functions, loops, arrays and DOM manipulation. They'll be your trusty companions as you build your game. You can follow the tutorial given in the resources section or any other tutorial which you find helpful.
- First, get the board and number placement working, then move to checking, puzzle generation, and additional features. Use the browser console to debug and test small pieces of logic.
- If you get stuck, don't shy away from Googling/ChatGPTing your problem. It too is a very important skill as a developer. But never blindly copy the code. Try to understand what is being done, and learn from it.
- And if you ever get lost along the way, don't hesitate to ask for help. With determination and a sprinkle of creativity, you'll soon triumph in crafting your very own Sudoku masterpiece!

**Have fun!** Be creative and express your vision through design. Happy Coding!



**KEEP  
HUSTLING!**