

# Assignment 2 - Grid Maker

## 1 Team Members

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## 2 Project Description

The Grid Maker project is a group-based interactive website that allows users to create and manipulate a grid of cells. By clicking menu buttons, users can add or remove rows and columns on the fly. They can also choose a color from a dropdown menu to fill or clear the cells in various ways either one cell at a time, all uncolored cells, or the entire grid. This functionality demonstrates core web development concepts taught in the class such as HTML for structure (home and grid pages, the table, menu buttons) CSS for styling (default cell appearance, home and grid maker pages design) JavaScript for DOM manipulation and event handling (adding/removing rows and columns, applying & clearing colors).

## 3 Requirements

### 3.1 Business Requirements (BR)

BR #1 – Grid Manipulation: Users shall be able to create and modify a grid by adding or removing rows and columns.

BR #2 – Cell Coloring: Users shall be able to color cells individually or in bulk to customize the grid.

BR #3 – Accessibility: The website shall be accessible via a standard web browser.

### 3.2 Functional Requirements (FR)

FR #1 – Add/Remove Rows: Users shall be able to add a new row at the bottom of the grid or remove the last row from the grid. BR Reference: BR #1

FR #2 – Add/Remove Columns: Users shall be able to add a new column to each existing row or remove the last column from each row. BR Reference: BR #1

FR #3 – Color Selection: Users shall be able to select a color from a dropdown list ( Red, Blue, Green, Yellow). BR Reference: BR #2

FR #4 – Color Cells: Users shall be able to color individual cells by clicking on them, fill all uncolored cells, fill all cells, or clear all cells. BR Reference: BR #2

FR #5 – Homepage Link: A homepage shall display team members names and provide a link to the Grid Maker page and . BR Reference: BR #3

### 3.3 Non-Function Requirements (NFR)

NFR #1 – Page Load Time: The Grid Maker page and homepage shall load with a maximum page load time of 2 seconds

NFR #2 – Usability: The interface shall be organized with clearly labeled buttons and a simple color dropdown.

NFR #3 – Browser Compatibility: The application shall function correctly on the latest versions of major browsers such as Safari and Chrome.

## 4 Software Architecture and Diagram

The project follows a client-side architecture, using HTML, CSS, Javascript, and DOM manipulation. The architecture includes

- **Frontend:**

- Index.html - the homepage

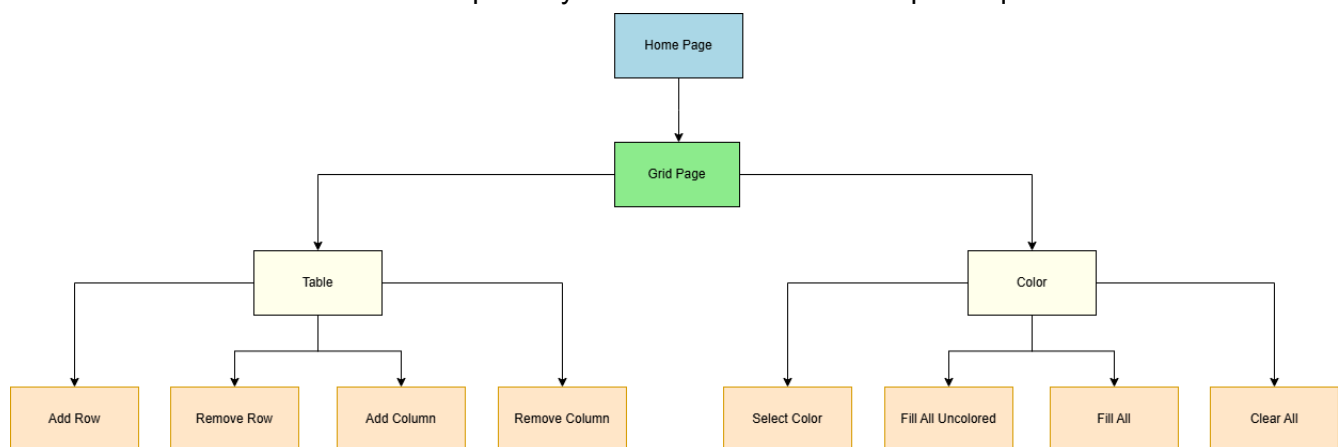
- Styles.css - the homepage styling

- Grid.html - the grid page for the grid-maker

- Gridstyles.css -the grid styling

- script.js - the javascript that allows the user to make and color a grid

- **Main Homepage** - Contains a welcome page for users and the people who work on the grid maker
- **Grid Homepage** - This contains the page for users to make a grid and color it.
- **Table Section** - Allows the user to add rows and columns and remove rows and columns to create the grid that they desire
- **Color Section** - Allows the user to color the grid, fill all uncolored cells, fill all cells, and clear all cell colors
- **Version Control** - GitHub repository for feature branches and pull requests.



## **5 Epics**

### 5.1 Epics

#### Epic #1 – Grid Manipulation

- Requirement Reference: BR #1, FR #1, FR #2
- Description: Provide functionality for users to dynamically add and remove rows and columns in the grid.

#### Epic #2 – Cell Coloring

- Requirement Reference: BR #2, FR #3, FR #4
- Description: Enable users to choose colors and apply them to the cells individually or in bulk.

#### Epic #3 – Homepage & Deployment

- Requirement Reference: BR #3, FR #5, NFR #3
- Description: Provide a welcoming homepage listing team members, a link to the grid maker page, and ensure the project is deployed on GitHub Pages.

## **6 User Stories & Acceptance Criteria**

### 6.1 User Story

#### User Story #1 – Add Row

- Epic Reference: Epic #1
- FR Reference: FR #1
- Description:  
As a user, I want to add a new row to the grid so that I can expand it vertically.
- Acceptance Criteria:
  1. Clicking the “Add Row” button inserts a new row at the bottom of the table.
  2. Each cell in the new row is initialized to white (uncolored).
  3. The row counter numRows is updated to reflect the new row count.

#### User Story #2 – Remove Row

- Epic Reference: Epic #1
- FR Reference: FR #1
- Description:  
As a user, I want to remove the last row in the grid so that I can reduce the grid size when needed.
- Acceptance Criteria:
  1. Clicking the “Remove Row” button deletes the bottommost row of the table.
  2. The row counter (numRows) is decremented accordingly.

3. If no rows remain, numCols is reset to 0 (the grid becomes empty).

#### User Story #3 – Add Column

- Epic Reference: Epic #1
- FR Reference: FR #2
- Description:  
As a user, I want to add a new column to the grid so that I can expand it horizontally.
- Acceptance Criteria:
  1. Clicking the “Add Col” button inserts a new cell in every existing row.
  2. If no rows exist, a single new row is created automatically with one column.
  3. Each new cell is initialized to white (uncolored).
  4. The column counter (numCols) is updated to reflect the new column count.

#### User Story #4 – Remove Column

- Epic Reference: Epic #1
- FR Reference: FR #2
- Description:  
As a user, I want to remove the last column in the grid so that I can reduce the grid width when needed.
- Acceptance Criteria:
  1. Clicking the “Remove Col” button deletes the rightmost cell in every row.
  2. The column counter (numCols) is decremented accordingly.
  3. If no columns remain, all rows are cleared, and numRows is reset to 0 (the grid becomes empty).

#### User Story #5 – Select Color

- Epic Reference: Epic #2
- FR Reference: FR #3
- Description:  
As a user, I want to choose a color from a dropdown so that I can color the cells in the grid.
- Acceptance Criteria:
  1. The drop down includes at least four color options (e.g., Red, Blue, Green, Yellow) plus a default “SELECT.”
  2. Selecting a color updates a global variable (colorSelected).
  3. If “SELECT” is chosen, an alert or warning indicates that a valid color must be selected before coloring.

#### User Story #6 – Color Single Cell

- Epic Reference: Epic #2
- FR Reference: FR #4
- Description:  
As a user, I want to color a single cell by clicking on it so that I can customize specific cells.
- Acceptance Criteria:
  1. Clicking on any cell changes its background color to the currently selected color.

2. If no valid color is selected, the system alerts the user to pick a color.
3. The cell's new color persists until changed again by the user.

#### User Story #7 – Fill All Uncolored

- Epic Reference: Epic #2
- FR Reference: FR #4
- Description:  
As a user, I want to fill all uncolored (white) cells with the selected color so that I can quickly color empty cells.
- Acceptance Criteria:
  1. Clicking the “Fill All Uncolored” button changes only the cells that are white.
  2. Cells that are already colored remain unchanged.
  3. If no color is selected, the user is prompted to choose one.

#### User Story #8 – Fill All

- Epic Reference: Epic #2
- FR Reference: FR #4
- Description:  
As a user, I want to fill all cells (colored or not) with the selected color so that I can quickly unify the grid's appearance.
- Acceptance Criteria:
  1. Clicking the “Fill All” button changes every cell's color to the currently selected color.
  2. If no color is selected, the user is prompted to choose one.

#### User Story #9 – Clear All

- Epic Reference: Epic #2
- FR Reference: FR #4
- Description:  
As a user, I want to clear all colored cells back to white so that I can reset the grid easily.
- Acceptance Criteria:
  1. Clicking the “Clear” button sets every cell's background color to white.
  2. The action does not affect the grid's size (rows/columns remain the same).

#### User Story #10 – Homepage & Navigation

- Epic Reference: Epic #3
- FR Reference: FR #5
- Description:  
As a user, I want to start from a homepage that introduces the project and lists team members, and then navigate back and forth to the Grid Maker page easily.
- Acceptance Criteria:
  1. The homepage index.html displays the team's names and has a link or button labeled “Go to Grid Maker.”
  2. Clicking this link/button navigates to the Grid Maker page in the same browser tab or a new tab, depending on the design choice.

3. The homepage has a good design with a background image or appealing styling.

## **7 Project Schedule**

[https://docs.google.com/spreadsheets/d/1uZ9B9NMJQ-mr1gQDjhNtbhhcF2oLSf\\_H/edit?usp=sharing&oid=101099444048707873952&rtpof=true&sd=true](https://docs.google.com/spreadsheets/d/1uZ9B9NMJQ-mr1gQDjhNtbhhcF2oLSf_H/edit?usp=sharing&oid=101099444048707873952&rtpof=true&sd=true)

Project	Category	Assigned to	Estimated start	Estimated finish	Estimated work (in hours)	Estimated duration (in days)	Actual start	Actual finish	Actual work (in hours)	Actual duration (in days)
Project 2	Index Page	Everyone	3/11/2025	3/14/2025	2 hours	3 days	3/11/2025	3/14/2025	10 hours	3 days
Project 2	Grid Page	Everyone	3/11/2025	3/14/2025	15 hours	2 days	3/11/2025	3/14/2025	7 hours	2 days
Project 2	Remove Row Function	Leo Chen	3/11/2025	3/13/2025	5 hours	1 day	3/11/2025	3/13/2025	5 hours	1 day
Project 2	Remove Column Function	Leo Chen	3/11/2025	3/13/2025	4 hours	1 day	3/11/2025	3/13/2025	4 hours	1 day
Project 2	Clear All Cells Function	Leo Chen	3/12/2025	3/14/2025	6 hours	1 day	3/12/2025	3/14/2025	6 hours	1 day
Project 2	Fill All Uncolored Function	Khandakar Wahiduzzaman	3/13/2025	3/13/2025	3 hours	1 day	3/13/2025	3/13/2025	3 hours	1 day
Project 2	Fill All Function	Khandakar Wahiduzzaman	3/13/2025	3/13/2025	2 hours	1 day	3/13/2025	3/13/2025	2 hours	1 day
Project 2	Add Column Function	Abdulla Saleh	3/11/2025	3/13/2025	2 Hours	2 days	3/11/2025	3/15/2025	3 Hours	2 days
Project 2	Add Row Function	Abdulla Saleh	3/11/2025	3/13/2025	2 Hours	2 days	3/11/2025	3/15/2025	3 Hours	2 days
Project 2	Color Cell Function	Abdulla Saleh	3/11/2025	3/13/2025	2 Hours	2 days	3/11/2025	3/15/2025	3 Hours	2 days
Project 2	Select Color Function	Abdulla Saleh	3/11/2025	3/13/2025	2 Hours	2 days	3/11/2025	3/15/2025	3 Hours	2 days