

The **Document Object Model** (DOM) represents the structure of an HTML document as a tree of nodes, where each node corresponds to an element in the document. JavaScript can be used to manipulate the DOM, allowing you to change the content, structure, and style of the webpage dynamically.

- **Common DOM Manipulation Methods:**

- 1. Selecting Elements:**

- **getElementById():** Selects an element by its ID.
    - **getElementsByClassName():** Selects elements by their class name.
    - **getElementsByName():** Selects elements by their tag name.
    - **querySelector():** Selects the first element that matches a CSS selector.
    - **querySelectorAll():** Selects all elements that match a CSS selector.

- 2. Changing Content:**

- **textContent:** Sets or gets the text content of an element.
    - **innerHTML:** Sets or gets the HTML content of an element.

- 3. Changing Styles:**

- **style:** Modify an element's inline styles directly via JavaScript.

- 4. Creating and Appending Elements:**

- **createElement():** Creates a new element.
    - **appendChild():** Appends a child element to a parent element.

- 5. Event Handling:**

- **addEventListener():** Attaches an event listener to an element.

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## Example of DOM Manipulation:

*Let's build a simple webpage that interacts with the DOM. We'll create a button that changes the text content of a <div> when clicked, and another button to change the background color of the page.*

### HTML: (index.html)

```
<!DOCTYPE html>
<html lang="en">
<head>
  <meta charset="UTF-8">
  <meta name="viewport" content="width=device-width, initial-scale=1.0">
  <title>DOM Manipulation Example</title>
  <style>
    body {
      font-family: Arial, sans-serif;
    }
    #message {
      font-size: 24px;
      margin: 20px;
    }
  </style>
</head>
<body>
<center>
  <div id="message">Click the button to change this text.</div>
  <button id="changeTextButton">Change Text</button>
  <button id="changeColorButton">Change Background Color</button>

  <script src="main.js"></script>
</center>
</body>
</html>
```

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## JavaScript: (main.js)

```
// Select the elements using their IDs
const changeTextButton = document.getElementById('changeTextButton');
const changeColorButton = document.getElementById('changeColorButton');
const messageDiv = document.getElementById('message');

// Event listener to change the text of the messageDiv
changeTextButton.addEventListener('click', function() {
  messageDiv.textContent = 'Welcome!';
});

// Event listener to change the background color of the body
changeColorButton.addEventListener('click', function() {
  document.body.style.backgroundColor = '#00a9fd'; // Light green background
});
```

## HTML Structure:

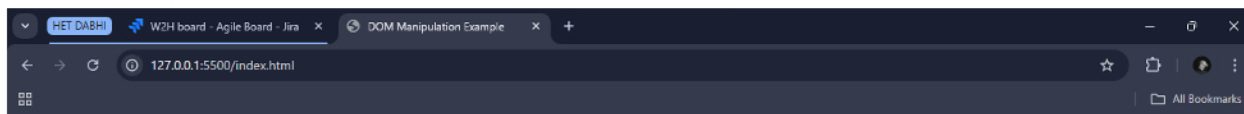
- The HTML contains a <div> with the ID message that initially displays a text message.
- There are two buttons, one to change the text and another to change the background color.

## JavaScript:

- We use **getElementById()** to select the button elements (**changeTextButton** and **changeColorButton**) and the <div> element (**messageDiv**).
- We then use **addEventListener()** to attach click event listeners to each button:
- When the "Change Text" button is clicked, it changes the text inside the messageDiv using **textContent**.
- When the "Change Background Color" button is clicked, it changes the background color of the webpage using **style.backgroundColor**.

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## Output: (Before)

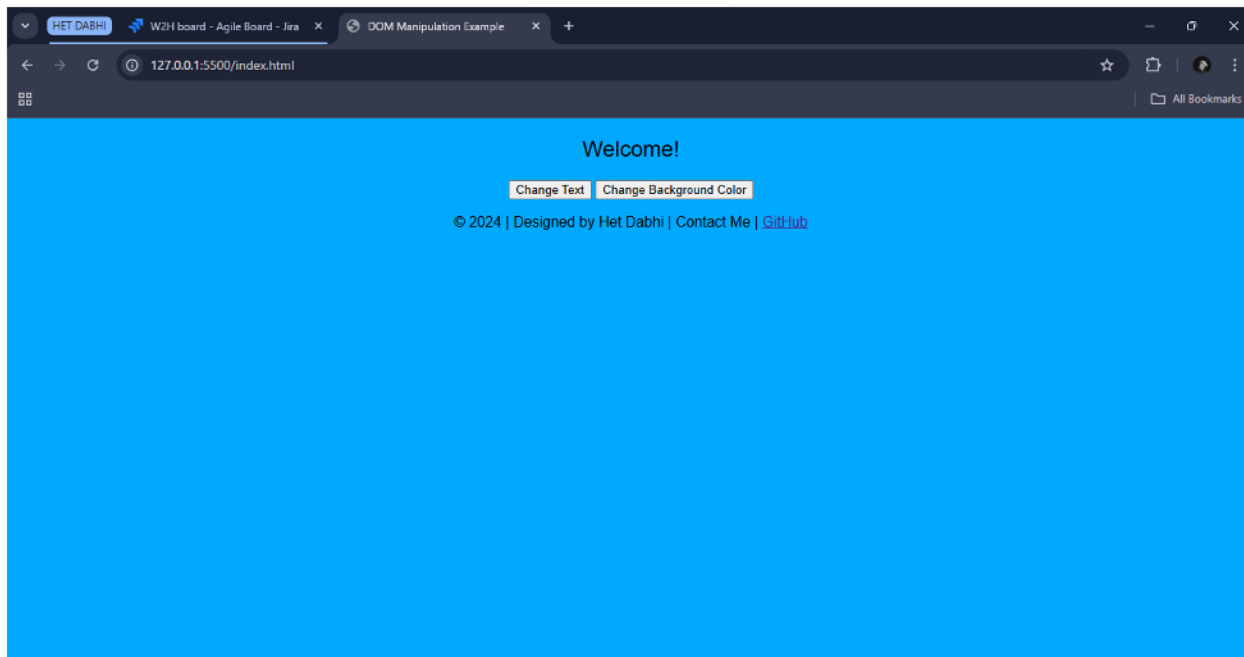


Click the button to change this text.

[Change Text](#) [Change Background Color](#)

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## After:



Welcome!

[Change Text](#) [Change Background Color](#)

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## Creating and Appending New Elements:

*Example by creating and appending a new <p> element when a button is clicked.*

**HTML: (ex.html)**

```
<!DOCTYPE html>
<html lang="en">
<head>
  <meta charset="UTF-8">
  <meta name="viewport" content="width=device-width, initial-scale=1.0">
  <title>DOM Manipulation Example</title>
  <style>
    body {
      font-family: Arial, sans-serif;
    }
    #message {
      font-size: 24px;
      margin: 20px;
    }
    #newElementContainer {
      margin-top: 20px;
    }
  </style>
</head>
<body>
<center>
  <div id="message">Click the button to add a new paragraph below.</div>

  <button id="addElementButton">Add Paragraph</button>

  <div id="newElementContainer"></div>

  <script src="script.js"></script>
</body>
</html>
```

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## JavaScript (script.js):

```
// Select the button and the container to append the new element
const addElementButton = document.getElementById('addElementButton');
const newElementContainer = document.getElementById('newElementContainer');

// Event listener to create and append a new paragraph
addElementButton.addEventListener('click', function() {
  // Create a new <p> element
  const newParagraph = document.createElement('p');

  // Add text content to the new paragraph
  newParagraph.textContent = 'This is a newly added paragraph!';

  // Append the new paragraph to the container
  newElementContainer.appendChild(newParagraph);
});
```

## Output:



Click the button to add a new paragraph below.

Add Paragraph

This is a newly added paragraph!

This is a newly added paragraph!

This is a newly added paragraph!

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