

# JavaScript Document Object Model (DOM)

Understanding and Manipulating the Web Page Structure

# What is the DOM?

- The **Document Object Model (DOM)** is a programming interface for web documents.
- The DOM represents the structure of an HTML or XML document as a tree of nodes, each representing part of the page.
- It allows JavaScript to dynamically access and manipulate the page content, structure, and styling.

# DOM Structure (Tree-like Structure)

- **Document:** The root node of the DOM tree.
- **Elements:** Tags like `<div>`, `<p>`, `<a>`, etc.
- **Attributes:** Represent HTML attributes like `id`, `class`, `src`, etc.
- **Text:** The actual content within the tags (e.g., "Hello World").

# Tree Structure

```
<html>
<head>
  <meta charset="UTF-8">
  <meta name="viewport" content="width=device-width, initial-scale=1.0">
  <title>Document</title>
  <link rel="stylesheet" type="text/css" href="style.css">
</head>
<body>
  <h1 id="text">Javascript DOM Manipulation</h1>
  <p>You can change your html and css code from javascript using document object model maipulation</p>
  <div id="box">
    <h2>Login Page</h2>
    <button>Login</button>
  </div>
  <script src="dom.js"></script>
</body>
</html>
```

# Accessing DOM Elements

- ▶ `getElementById()`
- ▶ `getElementsByClassName()`
- ▶ `getElementsByTagName()`
- ▶ **`querySelector()`:**
- ▶ **`querySelectorAll()`:**
  
- ▶ **`querySelector()`:** Access the first element that matches the CSS selector

# Modifying DOM Elements

- ▶ Modifying DOM Elements
  - ▶ Creating and Adding New Elements
  - ▶ Removing DOM Elements
  - ▶ Event Handling in the DOM
- 
- **click:** When an element is clicked.
  - **keydown, keyup:** When a key is pressed or released.
  - **mouseover, mouseout:** When mouse hovers over or leaves an element.
  - **submit:** When a form is submitted.

# Best Practices for DOM Manipulation

- **Use `querySelector()` and `querySelectorAll()`:** These methods are more flexible and modern.
- **Minimize Excessive DOM Manipulation:** Avoid repeatedly modifying the DOM to improve performance.
- **Ensure Accessibility:** Ensure that dynamic content is accessible to all users, including those using screen readers.