

HTML5 API

Module 1: Introduction to HTML5 APIs

- Overview of HTML5 and its significance
- Understanding the various HTML5 APIs
- Use cases and benefits of HTML5 APIs

Module 2: Geolocation API

- Introduction to the Geolocation API
- Retrieving the user's location
- Handling errors and accuracy
- Practical use cases

Lab 1: Geolocation API

- Create a simple application to get and display the user's location on a map
- Handle various geolocation errors

Module 3: Web Storage API

- Introduction to localStorage and sessionStorage
- Differences between localStorage and sessionStorage
- Storing, retrieving, and removing data
- Practical use cases

Lab 2: Web Storage API

- Create an application to store user preferences using localStorage
- Implement session-based data storage with sessionStorage

Module 4: Canvas API

- Introduction to the Canvas API
- Drawing shapes and text
- Working with images
- Practical use cases

Lab 3: Canvas API

- Create a drawing application using the Canvas API
- Implement basic shapes and image manipulation on the canvas

Module 5: WebSockets API

- Introduction to WebSockets
- Establishing a WebSocket connection
- Sending and receiving data
- Practical use cases

Lab 4: WebSockets API

- Create a real-time chat application using WebSockets
- Implement bi-directional communication between the client and server

Module 6: File API

- Introduction to the File API
- Reading files using FileReader
- Handling file uploads
- Practical use cases

Lab 5: File API

- Create an application to upload and read files using the File API
- Implement file validation and error handling

CSS

Module 1: Introduction to Advanced CSS

- Overview of CSS3 and its advancements
- Importance of mastering advanced CSS techniques
- Tools and resources for advanced CSS development

Module 2: CSS Grid Layout

- Introduction to CSS Grid
- Defining grid containers and items
- Creating complex grid layouts
- Responsive design with CSS Grid

Lab 1: CSS Grid Layout

- Create a responsive web page layout using CSS Grid
- Implement complex grid structures and ensure responsiveness

Module 3: Flexbox Layout

- Introduction to Flexbox
- Flex container and item properties
- Creating flexible and adaptive layouts
- Aligning and distributing space with Flexbox

Lab 2: Flexbox Layout

- Create a navigation bar and a multi-column layout using Flexbox
- Apply Flexbox properties for alignment and spacing

Module 4: CSS Animations and Transitions

- Understanding CSS transitions
- Creating keyframe animations
- Applying animations to elements
- Performance consideration

Lab 3: CSS Animations and Transitions

- Create a series of animated elements using keyframes
- Implement transitions for interactive elements (e.g., buttons, hover effects)

Module 5: Advanced Selectors and Pseudo-classes

- Overview of advanced CSS selectors
- Using attribute selectors, pseudo-classes, and pseudo-elements
- Combining selectors for powerful targeting

Lab 4: Advanced Selectors and Pseudo-classes

- Create a style sheet using advanced selectors to target specific elements
- Apply pseudo-classes and pseudo-elements for enhanced styling

Bootstrap Framework

Module 1: Introduction to Bootstrap

- What is Bootstrap?
- Benefits of using Bootstrap
- Overview of Bootstrap's features and components
- Adding Bootstrap to your project (CDN and local setup)
- Basic HTML template with Bootstrap integration
- Understanding the grid system
- Creating responsive layouts with rows and columns
- Using breakpoints for different screen sizes

Module 2: Bootstrap Components and Utilities

- Navigation bars (Navbar)
- Buttons and button groups
- Forms and form controls
- Cards and media objects
- Typography and text utilities
- Spacing utilities (margins and padding)
- Display properties and visibility classes

JavaScript

Module 1: Introduction to JavaScript

- Overview of JavaScript and its role in web development

- JavaScript syntax and basic constructs
- Setting up the development environment (Browser DevTools, Code Editor)
- Writing and executing a simple JavaScript program

Lab 1: Getting Started with JavaScript

- Write a basic JavaScript script to display a message in the console
- Experiment with variables, data types, and basic operators

Module 2: Functions and Scope

- Defining and calling functions
- Function expressions and arrow functions
- Understanding scope and closures
- Higher-order functions

Lab 2: Functions and Scope

- Write functions to perform specific tasks (e.g., calculate the factorial of a number)
- Experiment with function scope and closures in different contexts

Module 3: Advanced Functions and Closures

- Understanding higher-order functions
- Function expressions and arrow functions
- Closures and their practical applications
- Immediately Invoked Function Expressions (IIFE)

Lab 3: Advanced Functions

- Write functions that accept other functions as arguments
- Create closures to maintain state between function calls
- Implement IIFE for module-like structures

Module 4: Asynchronous JavaScript

- Introduction to asynchronous programming
- Understanding callbacks
- Promises: creation, chaining, and error handling
- Async/Await syntax

Lab 4: Asynchronous JavaScript

- Convert a callback-based function to use Promises
- Use async/await to handle asynchronous operations
- Implement error handling in asynchronous code

Module 5: JavaScript Modules

- Overview of JavaScript modules (ES6)

- Importing and exporting modules
- Benefits of using modules in JavaScript
- Working with module bundlers (e.g., Webpack)

Lab 5: JavaScript Modules

- Create and export JavaScript modules
- Import and use modules in a project
- Set up and configure Webpack for module bundling

Module 6: Error Handling and Debugging

- Advanced error handling techniques
- Custom error types
- Debugging JavaScript code in the browser
- Using debugging tools and breakpoints

Lab 6: Error Handling and Debugging

- Write custom error types and handle them in your code
- Debug a JavaScript application using browser DevTools
- Practice setting breakpoints and inspecting variables

Module 7: Working with the DOM

- Advanced DOM manipulation techniques
- Event delegation and event bubbling
- Creating and inserting elements dynamically
- Handling complex events

Lab 7: Advanced DOM Manipulation

- Implement event delegation in a dynamic list
- Create, modify, and insert DOM elements programmatically
- Handle complex events with multiple event listeners

Module 8: Modern JavaScript Development

- Introduction to modern JavaScript frameworks and libraries (e.g., React, Vue, Angular)
- Overview of build tools and package managers (e.g., npm, yarn)
- Setting up a modern JavaScript development environment
- Best practices for writing maintainable JavaScript code

Web Accessibility

Module 1: Overview of Web Accessibility

- Importance of web accessibility

- Legal and ethical considerations
- Understanding different types of disabilities
- Introduction to WCAG 2.1
- Principles of accessibility: Perceivable, Operable, Understandable, Robust (POUR)
- Key success criteria for Level A, AA, and AAA
- What is ARIA and why it's important
- ARIA roles, states, and properties
- Using ARIA to enhance accessibility

Module 2: Practical Implementation of Web Accessibility

- **Creating Accessible Forms**
 - Using proper labels and fieldsets
 - Implementing error messages and validation
 - ARIA attributes for form controls
- **Keyboard Accessibility**
 - Ensuring all interactive elements are focusable and operable via keyboard
 - Managing focus with JavaScript
 - Using ARIA for complex widgets (e.g., modals, dropdowns)
- **Testing for Accessibility**
 - Manual testing with screen readers (e.g., NVDA, VoiceOver)
 - Automated testing tools and browser extensions
 - Using browser DevTools for accessibility