

**TRAINING TRAINS**

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IT Services and IT Consultancy \ Internship-Inplant Training \ Software Training Institute

உங்கள் கடை மற்றும் வியாபாரத்திற்கு ஏற்ற **Website & Andriod App** மற்றும் **Software** மிகச்சிறந்த முறையில் செய்து கொடுக்கப்படும்.

Expertise : **AI, Machine Learning & Data Science \ Cybersecurity & Ethical Hacking**
IoT, Blockchain & Cloud Computing \ Full Stack Web & Mobile Development
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JavaScript – 100+ Lab Exercises (Basic, Intermediate, Advanced)

□ Basic Level (35+ Exercises)

Objective: Build a strong foundation in JavaScript syntax, logic, and browser interactions.

□ Fundamentals & Syntax

- Print "Hello, World!" in the console.
- Declare variables using `var`, `let`, and `const`.
- Perform arithmetic operations.
- Understand data types: string, number, boolean, null, undefined.
- Use `typeof` operator.

□ Control Structures

- Create conditional statements using `if`, `else if`, `else`.
- Write switch-case logic.
- Implement `for`, `while`, and `do...while` loops.
- Practice nested loops.

□ Functions & Scope

- Create simple functions with parameters.
- Use arrow functions.
- Demonstrate lexical scope and block scope.
- Implement recursion (e.g., factorial, Fibonacci).

□ Arrays & Strings

- Initialize arrays and access elements.
- Use array methods: `push`, `pop`, `shift`, `unshift`, `splice`.
- Iterate using `forEach`, `map`, `filter`, `reduce`.
- Manipulate strings using `slice`, `split`, `replace`, `toUpperCase`.

□ DOM Manipulation



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- Access elements using `getElementById`, `querySelector`.
- Change text, HTML, and styles dynamically.
- Add event listeners (click, input, hover).
- Create and append new elements.

□ Intermediate Level (40+ Exercises)

Objective: Deepen JavaScript capabilities including object manipulation, asynchronous programming, and modern ES6+ features.

□ Objects & OOP Basics

- Create and modify objects.
- Use object destructuring.
- Loop through object properties.
- Define object methods and use `this`.
- Create constructor functions and classes.

□ ES6+ Features

- Use `let` and `const` effectively.
- Apply template literals.
- Use rest and spread operators.
- Use default and named function parameters.
- Destructure nested arrays and objects.

□ Asynchronous JavaScript

- Understand callbacks and create a callback function.
- Create and handle Promises.
- Use `async/await` to fetch data.
- Handle Promise chaining and error handling.
- Create a loading UI while data is fetched from an API.

□ API Integration

- Use `fetch()` to call an API (e.g., JSONPlaceholder).
- Display API results in the DOM.
- Handle errors and response status codes.



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- Implement a search form with live API querying.
- Build a simple weather app using an open API.

□ Debugging & Tools

- Use browser DevTools (Console, Network, Elements).
- Debug using breakpoints.
- Log complex data structures.
- Use ESLint to maintain code standards.

□ Advanced Level (40+ Exercises)

Objective: Master advanced topics including functional programming, modular code, event loops, and performance optimization.

□ Advanced Functions & Closures

- Implement closures and use cases.
- Demonstrate currying and partial application.
- Understand and apply memoization.
- Use higher-order functions.
- Build your own version of `map`, `filter`, and `reduce`.

□ The Event Loop & Execution Context

- Explain and visualize the call stack.
- Simulate blocking vs. non-blocking code.
- Use `setTimeout`, `setInterval`, `clearTimeout`, and `clearInterval`.
- Create examples that demonstrate the event loop.

□ Modular JavaScript

- Structure code with ES6 Modules (`import / export`).
- Implement the Revealing Module Pattern.
- Use bundlers like Webpack or Vite (basic setup).
- Organize files by feature or domain.

□ Advanced Objects & Classes



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- Use ES6 classes with inheritance.
- Define static and private properties.
- Implement mixins and composition patterns.
- Override and extend built-in prototypes.
- Build a publish-subscribe pattern.

☐ **Browser APIs & Storage**

- Use LocalStorage, SessionStorage, and Cookies.
- Implement custom events and event delegation.
- Work with the Geolocation API.
- Build drag-and-drop functionality.
- Access and manipulate the Clipboard API.

☐ **Performance & Best Practices**

- Benchmark and profile performance.
- Optimize loops and DOM manipulation.
- Avoid memory leaks.
- Lazy load scripts and images.
- Debounce and throttle input events.

☐ **Testing & Deployment**

- Write unit tests using Jest.
- Test DOM interactions.
- Mock API requests.
- Automate testing with GitHub Actions.
- Deploy JS apps on Netlify or Vercel.

☐ **Capstone Projects**

- Create a To-Do List App with LocalStorage.
- Build a Calculator using classes.
- Develop a Quiz App with live scoring.
- Design a Currency Converter with API integration.
- Construct a Portfolio Website with interactive sections.

☐ **Tools & Ecosystem**



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- Vanilla JavaScript (ES6+)
- Jest, ESLint, Prettier
- Webpack/Vite
- Fetch API, LocalStorage
- DevTools, Lighthouse