

ADVANCED JAVASCRIPT**1. JavaScript Basics**

- Introduction to JavaScript
- Variables (var, let, const)
- Data Types (String, Number, Boolean, Undefined, Null, Symbol, BigInt)
- Operators (Arithmetic, Assignment, Comparison, Logical, Bitwise, Ternary)
- Type Conversion & Type Coercion
- Template Literals & String Manipulation
- Comments in JavaScript

2. Control Flow & Loops

- Conditional Statements (if, else, switch)
- Loops (for, while, do-while, for-in, for-of)
- break and continue
- Error Handling (try, catch, finally, throw)

3. Functions in JavaScript

- Function Declaration & Expression
- Arrow Functions / Default & Rest Parameters
- Callback Functions
- Immediately Invoked Function Expressions (IIFE) / Higher-Order Functions
- Function Scope & Closures / Recursion

4. Objects & Arrays

- Object Properties & Methods
- Object Destructuring
- Object Iteration (Object.keys(), Object.values(), Object.entries()) / Getters & Setters
- Prototypes & Prototype Chain / this Keyword
- Object-Oriented Programming (OOP)
- Class & Constructor Functions /
- Arrays & Array Methods (map, filter, reduce, forEach, some, every, find, sort, splice, slice)
- Array Destructuring / Nested Objects & Arrays

5. Advanced JavaScript Concepts

- Execution Context & Call Stack
- Hoisting / Event Loop & Callback Queue
- Asynchronous JavaScript (Callbacks, Promises, Async/Await)
- setTimeout() & setInterval()
- Debouncing & Throttling / call(), apply(), bind()
- Currying / Memoization
- Web APIs (DOM, BOM, Fetch API, localStorage, sessionStorage)
- ES6+ Features (Spread & Rest Operator, Optional Chaining, Nullish Coalescing)

6. JavaScript Modules & Patterns

- ES6 Modules (import, export)
- CommonJS & AMD

- Design Patterns (Module Pattern, Singleton, Factory, Observer, MVC)
- Event-Driven Programming

7. JavaScript & The Browser

- DOM (Document Object Model)
- Selecting Elements (getElementById, querySelector, querySelectorAll)
- Event Handling (addEventListener, Event Bubbling & Capturing)
- Form Validation
- Browser Storage (Cookies, localStorage, sessionStorage, indexedDB)
- Fetch API & AJAX / JSON & API Handling

8. JavaScript & Asynchronous Programming

- Understanding the Event Loop
- Promises & Error Handling
- Async/Await with Try/Catch
- Fetch API with Async/Await
- Working with APIs (RESTful APIs & GraphQL)
- WebSockets & Real-Time Data

9. JavaScript in Modern Development

- Package Managers (npm, yarn)
- JavaScript Build Tools (Webpack, Parcel, Babel)
- Testing with Jest, Mocha, Chai
- Linting & Formatting (ESLint, Prettier)
- Performance Optimization (Minification, Code Splitting, Lazy Loading)

10. JavaScript Frameworks & Libraries

- Introduction to Frontend Frameworks (React, Angular, Vue.js)
- Introduction to Backend with Node.js & Express.js
- Introduction to Working with Databases (MongoDB, MySQL, PostgreSQL)
- Introduction to State Management (Redux, Context API, Zustand)

11. Advanced JavaScript Topics

- Web Workers & Service Workers
- Progressive Web Apps (PWA)
- Server-Side Rendering (SSR) vs. Client-Side Rendering (CSR)
- Web Components / Introduction to TypeScript

12. JavaScript Project Development

- Building Real-World Applications
- Best Practices in JavaScript
- Security in JavaScript Applications
- Debugging & Performance Optimization