

JavaScript Roadmap

PHASE 1: Fundamentals

Basic Syntax & Structure

- Comments
- Variables (var, let, const)
- Data Types (String, Number, Boolean, Null, Undefined, Object, Array)

Operators

- Arithmetic
- Comparison
- Logical
- Assignment

Control Structures

- If Else
- Switch

Loops

- for
- while
- do-while
- for-in
- for-of

Functions

- Function Declaration
- Function Expression
- Arrow Function
- Anonymous Function
- IIFE (Immediately Invoked Function Expression)
- Four Ways to Write Functions
- Default Parameters
- Return Statement
- Parameters & Arguments

Arrays

- Creating & Accessing Arrays
- Utility Functions: Array.isArray(), Array.to(), Array.from()
- Array Methods: push, pop, shift, unshift, slice, splice, join, forEach, map, filter, reduce, etc.

Objects

- Creating Objects
- Accessing Properties & Methods

- Nested Objects
- Utility Functions: Object.keys(), Object.values(), Object.entries(), Object.assign(), Object.freeze(), Object.seal()

Basic DOM Manipulation

Error Handling

- try, catch, finally
- Custom Errors

Now Ready for Mini Projects & React/Next.js

PHASE 2: Built-in Objects

Math Object

- Math.round()
- Math.floor()
- Math.ceil()
- Math.random()
- Math.max()
- Math.min()
- Math.pow()
- Math.sqrt()
- Math.abs()

Date Object

- new Date()
- Date.now()
- getFullYear()
- getMonth()
- getDate()
- getDay()
- setFullYear()
- setHours()

Date Formatting & Time Difference Logic

JSON

- JSON.stringify()
- JSON.parse()

Global Functions

- parseInt()
- parseFloat()
- isNaN()
- isFinite()

- encodeURIComponent()
- decodeURIComponent()

PHASE 3: Core Concepts

Basics

- let vs const vs var
- Pass by Value vs Pass by Reference
- Truthy vs Falsy
- Export/Import

Modern JavaScript

- ECMAScript
- Symbols
- BigInt
- Sets
- Maps
- Iterators & Generators
- Proxy & Reflect
- Spread, Rest, Destructuring, Nullish Coalescing, Optional Chaining, Modules
- WeakMap & WeakSet
- Dynamic Imports
- Top-level Await

Advanced JavaScript

- Hoisting
- Closures
- Type Equality & Coercion
- Short Circuit Evaluation
- Callbacks
- Constructor Functions
- Objects & Prototypes
- Classes & Inheritance
- Functional Programming
- Object Oriented Programming
- Autoboxing & Primitive Wrappers

PHASE 4: Web Development & Async

Web APIs & Browser

- Node.js vs Browser
- Global Object
- DOM Manipulation
- Event Propagation & Handling
- Form Handling
- LocalStorage, SessionStorage, IndexedDB
- Service Workers
- Web Workers
- WebSockets

- WebGL & Canvas
- Accessibility (a11y) Basics

Asynchronous Programming

- Sync vs Async
- JS Engine & Environment
- Timers
- Call Stack
- Event Loop
- Task Queue & Microtask Queue
- Callback Hell
- Promises
- Async/Await
- AbortController
- Concurrency vs Parallelism

PHASE 5: Interviews & Professional JS

Interview Prep

- Execution Context
- this keyword, call/apply/bind
- Static vs Dynamic Typing
- Intro to TypeScript
- JIT Compilation
- WASM Integration
- Memory Management
- Event Propagation & Delegation
- Memory Leaks & Garbage Collection
- Event Loop Phases
- Deep vs Shallow Copy

Professional JavaScript

- Design Patterns
- Advanced Debugging
- Best Practices & Code Quality
- Unit Testing
- Deploying Applications
- Git & GitHub for Version Control

PHASE 6: Projects

Projects

- Portfolio Website
- To-do App (LocalStorage/IndexedDB)
- Real-time Chat App (WebSockets + Service Workers)
- E-commerce Mini App