

JavaScript with Typescript Programming

Prerequisites: Knowledge of Any Programming Language and Web Application

Module 1: Core JavaScript Fundamentals and ES6+ Features

Data Types and Type Casting

- Primitive and reference data types
- Type checking and type conversion (implicit and explicit)

Loops and Iteration

- for, while, do-while, forEach, and for...of loops

Introduction to ES6 (ECMAScript 6)

- Key features: let, const, arrow functions, template literals
- Destructuring assignments and spread/rest operators

Functions

- Synchronous functions, arrow functions, and asynchronous functions (async/await)
- Understanding higher-order functions and callback patterns

Event Loop and Promises

- How JavaScript handles asynchronous operations with the Event Loop
- Promises: Creation, chaining, error handling

JSON and Data Handling

- Working with JSON: Parsing and stringifying data
- Fetching and storing JSON data using the Fetch API

Classes and Object-Oriented Programming

- Creating classes, constructors, inheritance, and polymorphism in JavaScript
- Interfaces and prototype-based inheritance

Closures and Scope

- Understanding closures, lexical scoping, and their importance
- Use cases for closures in JavaScript applications

Module 2: Advanced JavaScript Concepts and Web APIs

Basic JavaScript Data Structures (DS)

- Arrays, objects, sets, and maps

- Basic algorithms and DS manipulation (e.g., searching, sorting)

Modules and Code Organization

- Importing and exporting modules in ES6
- Organizing JavaScript projects with modules

Events and DOM Manipulation

- Working with the Document object: Selecting, modifying, and creating DOM elements
- Handling form control and events (e.g., click, submit, input)

Storing Data in Browsers

- Using localStorage, sessionStorage, and cookies
- Storing and retrieving data persistently across sessions

Regular Expressions

- Basics of Regular Expressions (RegExp) and pattern matching

Files, BSON, and Streams

- Handling files in JavaScript: Reading and writing
- Introduction to BSON and working with streams

Mutation Observers and the Window Object

- Understanding the MutationObserver API for monitoring DOM changes
- Working with the Window object, global variables, and frames

Module 3: Typescript

- Typescript installation
- TypeScript vs. JavaScript
- Creating Classes and class properties
- Methods
- Access Modifiers
- Constructor
- Getters and Setters
- Inheritance