

TypeScript



e-Learning Course

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COURSE MODULES

Introduction to TypeScript

- What is TypeScript?
- Benefits of using TypeScript
- TypeScript vs JavaScript
- Setting up a TypeScript environment
- Installing TypeScript & compiling .ts files
- Running TypeScript in the browser & Node.js

TypeScript Basics

- Understanding Type Annotations
- Basic Types:
 - string, number, boolean
 - any, unknown, void, never
 - null & undefined
- Type Inference & Type Assertions
- Working with let, const, and var

Advanced Types

- Union & Intersection Types
- Literal Types
- Enums (Numeric & String enums)
- Tuples & their use cases
- Interfaces vs Types
- Mapped Types & Conditional Types

Functions in TypeScript

- Function Return Types
- Optional & Default Parameters
- Function Overloading
- Arrow Functions & this in TypeScript

Object-Oriented Programming in TypeScript

- Classes & Objects
- Access Modifiers (public, private, protected)
- Read-only properties
- Getters & Setters
- Static Methods & Properties
- Inheritance & Polymorphism
- Abstract Classes & Interfaces

Working with Modules & Namespaces

- Importing & Exporting Modules
- Default vs Named Exports
- Using TypeScript with ES Modules

Generics in TypeScript

- Why use Generics?
- Generic Functions & Constraints
- Generic Classes & Interfaces
- Using keyof with Generics

Working with TypeScript and DOM

- TypeScript and the Document Object Model (DOM)
- Selecting & Manipulating Elements (querySelector, getElementById)
- Handling Events with TypeScript

TypeScript and Asynchronous Programming

- Callbacks, Promises, and Async/Await
- Using fetch API with TypeScript
- Handling API Responses & Error Handling

TypeScript with Popular Frameworks

- Using TypeScript with React
- TypeScript in Node.js
- TypeScript with Express.js
- TypeScript and Angular Basics

Configuration & Tooling

- Understanding tsconfig.json
- Compiler Options (strict, noImplicitAny, etc.)
- Debugging TypeScript Code
- Integrating TypeScript with Webpack & Babel

Testing & Best Practices

- Writing Unit Tests with Jest & TypeScript
- Linting with ESLint & Prettier
- TypeScript Best Practices
- Common Mistakes to Avoid