TypeScript for JS developers

Duration: 32 hours (4 hours x 8 sessions, 2 sessions per week)

**Introduction to TypeScript**

Topics:

* Introduction to TypeScript and its benefits
* Setting up TypeScript in a project
* Basic types and type annotations
* Type inference
* Functions and interfaces in TypeScript

**Advanced Type System**

Topics:

* Union and intersection types
* Type aliases and type assertions
* Literal types and type guards
* Nullish Coalescing and Optional Chaining

**Working with Classes and Generics**

Topics:

* Object-oriented programming in TypeScript
* Class inheritance and access modifiers
* Abstract classes and interfaces
* Introduction to generics

**Asynchronous Programming and Modules**

Topics:

* Promises and async/await in TypeScript
* Working with asynchronous APIs
* Introduction to modules and namespaces
* Module resolution strategies

**Advanced Type Techniques**

Topics:

* Mapped types and utility types
* Conditional types
* Infer keyword and type inference with generics
* Using type predicates for complex type narrowing

**Decorators and Advanced Patterns**

Topics:

* Introduction to decorators and their use cases
* Custom decorators and decorator factories
* Applying decorators to classes, methods, and properties
* Exploring advanced design patterns in TypeScript

**Tooling and Build Process**

Topics:

* TypeScript configuration options
* Integrating TypeScript with build tools (Webpack, Rollup)
* Debugging TypeScript applications
* Using type definition files and third-party libraries

**Advanced Topics and Real-world Applications**

Topics:

* Advanced type constraints and conditional logic
* Writing type-safe APIs
* Integrating TypeScript into a modern web framework (e.g., React, Angular)
* Best practices for maintaining large TypeScript codebases