



KIDS & TEENS FREELANCING TRAINING INSTITUTE

TypeScript Course Outline

Module 1: What is TypeScript?

- Introduction to TypeScript as a superset of JavaScript
 - Real-life example: Making a large app safer and more maintainable
 - Key benefits: type safety, better tooling, fewer bugs
 - Installing TypeScript and setting up a basic project
 - Activity: Create and compile your first TypeScript file
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Module 2: Type Annotations & Variables

- Understanding type annotations for variables
 - Declaring basic types: string, number, boolean, any
 - Real-life example: Validating user input with correct types
 - Activity: Build a form with typed fields and validation
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Module 3: Functions and Custom Types

- Writing typed functions with return types and parameters
 - Creating custom types using `type` and `interface`
 - Real-life example: A function that calculates invoice totals
 - Activity: Define and use custom types in a sample project
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Module 4: Classes and Object-Oriented Programming

- Defining classes, constructors, and properties
- Using inheritance and access modifiers (`public`, `private`)
- Real-life example: Creating a `User` or `Product` class
- Activity: Build and extend a class for an online store

Module 5: Arrays, Tuples & Enums

- Typed arrays and using generic types like `Array<string>`
- Introduction to tuples and enum types for fixed options
- Real-life example: Managing product categories or user roles
- Activity: Create a shopping cart using arrays, enums, and tuples

Module 6: Advanced Types and Utility Types

- Working with union, intersection, and literal types
- Using utility types: `Partial`, `Readonly`, `Pick`, `Record`
- Real-life example: Flexible APIs with optional fields
- Activity: Create complex data models for an app

Module 7: Modules and Namespaces

- Organizing code using ES modules and namespaces
- Importing and exporting TypeScript components
- Real-life example: Separating user logic and product logic in files
- Activity: Break your code into modules and connect them

Module 8: TypeScript with Frameworks

- Using TypeScript with React, Node.js, or Angular
- Setting up a TypeScript + Webpack project
- Real-life example: TypeScript in a frontend or backend project
- Activity: Build a small app using TypeScript + a framework

Bonus Materials

- TypeScript cheat sheet and quick reference
- Mini projects: Contact manager, Calculator, Blog post editor
- Practice exercises with type challenges
- Certificate of Completion for TypeScript Mastery

