Week 3 – TypeScript Fundamentals

🎯 Learning Objectives

By the end of Week 3, students will be able to:

- Understand why **TypeScript** is used in modern web development.

- Work with TypeScript types, interfaces, and generics.

- Use type inference and type assertions effectively.

- Integrate TypeScript into a JavaScript project.

- Gain confidence writing strongly typed code for scalability.

📌 Weekly To-Do

- **Introduction to TypeScript**

  Learn how TypeScript extends JavaScript with static typing.

- **Basic Types & Interfaces**

  Practice with string, number, boolean, arrays, tuples, and object types.

- **Functions & Generics**

  Write typed functions, explore optional/readonly parameters, and understand generics.

- **Type Assertions & Inference**

  Learn how TypeScript infers types automatically and when to use type assertions.

- **Configuring a TS Project**

  Initialize a project with `tsconfig.json` and compile TypeScript to JavaScript.

- **Progress Sharing**

Share project learnings, GitHub repo link, and deployed app with a LinkedIn post.

🛠️ Tools & Technologies

- **Language:** TypeScript

- **Editor:** VS Code

- **Version Control:** Git, GitHub

📌 Week 3 Project – *Type-Safe To-Do List*

- Upgrade the **Interactive To-Do List** project from Week 2:

  - Convert JavaScript codebase to TypeScript.

  - Add strong typing for tasks, functions, and components.

  - Ensure type safety for localStorage interactions.

- Deploy updated TypeScript version on GitHub Pages.

Deliverables:

- GitHub repo link

- Live deployment link

- LinkedIn post showcasing TypeScript migration journey

📚 Suggested Resources

- Typescript Crash Course

- Typescript w3