TypeScript

Introduction

- TypeScript is an Open Source Object Oriented programming language developed and maintained by Microsoft Corporation.
- TypeScript is a strongly typed language and its first version was introduced in 2012.
- It was designed by **Anders Hejlsberg** (designer of C#) at Microsoft.
- It is a strongly typed superset of JavaScript which compiles to plain JavaScript.
- It contains all elements of the JavaScript.
- It is a language designed for large-scale JavaScript application development, which can be executed on any browser, any Host, and any Operating System.
- The TypeScript is a language as well as a set of tools.
- TypeScript is the ES6 version of JavaScript with some additional features.

TypeScript Compiler (tsc)

- TypeScript Code cannot be interpreted by the Browser directly so there is a need to compile the TypeScript code into plain JavaScript Code, for this purpose we need the TypeScript Compiler (tsc).
- **TypeScript Compiler (tsc)**
- Written in TypeScript itself.
- Compiles .ts files to .js files.
- Installed as an NPM package (NodeJS).
- Supports ES6 syntax.

Features of TypeScript

- **Object-Oriented language**
- **TypeScript is just JavaScript**.
- **TypeScript supports other JS libraries**.
- **JavaScript is TypeScript**
- **TypeScript is portable**
- **DOM Manipulation**

Difference

TypeScript	JavaScript
It is an Object Oriented Language (Class based)	It is an Object Based Language (Prototype based)
Statically Typed language	Dynamically Typed language
Supports Modules	Does not Support Modules
Provides Errors at Compile time / during development	Doesn’t provide Compile time errors
Takes more time as the code needs to be Compiled	No need of compilation

Benefits

- TypeScript supports Static typing, Strongly type, Modules, Optional Parameters, etc.
- TypeScript supports object-oriented programming features such as classes, interfaces, inheritance, etc.
- TypeScript is fast, simple, and most importantly, easy to learn.
- TypeScript provides the error-checking feature at compilation time. It will compile the code, and if any error found, then it highlighted the mistakes before the script is run.
- TypeScript supports all JavaScript libraries because it is the superset of JavaScript.

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- TypeScript support reusability because of the inheritance.
- TypeScript make app development quick and easy as possible, and the tooling support of TypeScript gives us autocompletion, type checking, and source documentation.
- TypeScript has a definition file with .d.ts extension to provide a definition for external JavaScript libraries.
- TypeScript supports the latest JavaScript features, including ECMAScript 2015.
- TypeScript gives all the benefits of ES6 plus more productivity.
- Developers can save a lot of time with TypeScript.