TypeScript with ES6

HOW - Hands On Workshop

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About me

Vijay ShivaKumar

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Training on web and Adobe products from past 10+ years

About the Program

Prerequisites

Introduction

History

Installation and configuration

The types in TypeScript

Disclaimer

Developers are fiercely opinionated about languages, especially JavaScript.

Topics I cover may change in future with new releases

A day or two for this topic is not justified.
(I encourage keep learning after this training too…)

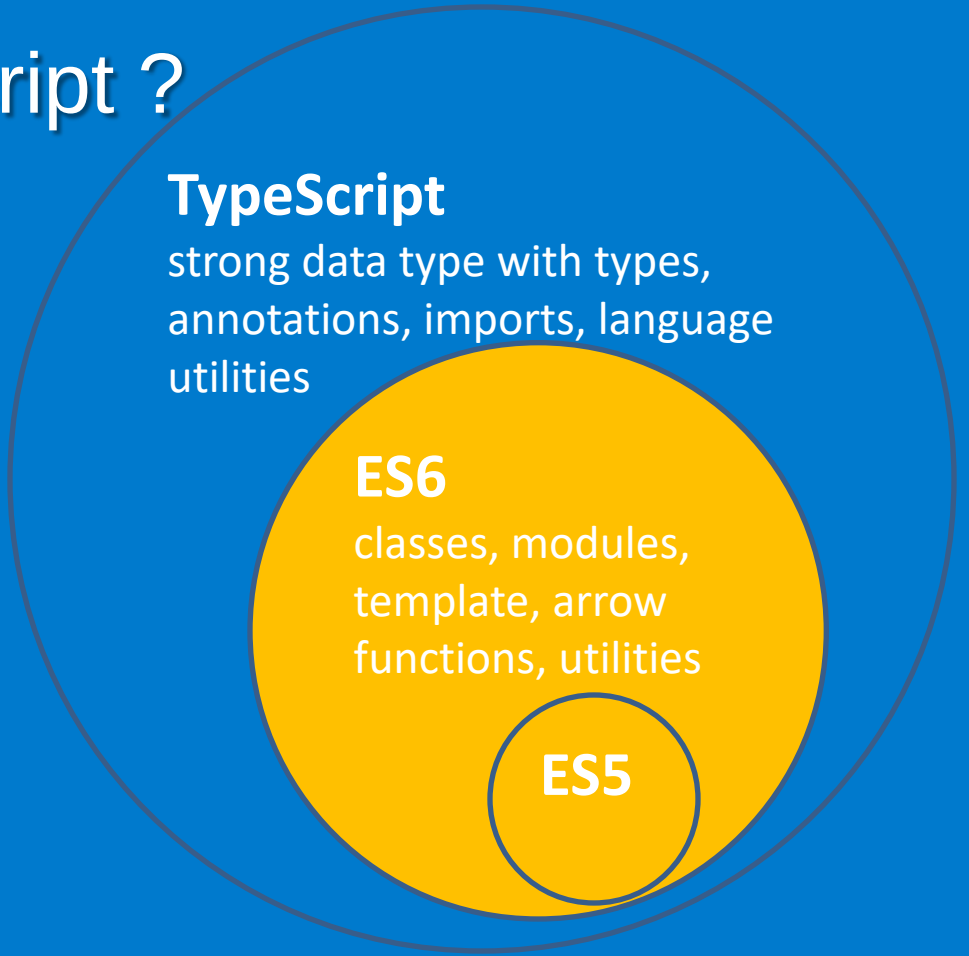
I am not going to cover every thing in the language.

I encourage you to dig the documentation rather than rely online videos or tutors
(there are chances that they are out dated)

Before we begin…

- IDE
  - Aptana Studio
  - WebStorm (Recomended)
  - Sublime
  - Visual Studio Code
- Platform
  - NodeJS
  - Typescript Module

What is TypeScript ?



History and Milestones of JavaScript

JavaScript developed by Brendan Eich in 1995

Netscape released in 1996 supporting JavaScript

Microsoft created JScript dialect in 1996

Ecma International standardized ECMA-262
to settle disputes between browser vendors

ECMA-262 standardized ECMAScript

ECMA-262 had 5 editions

ECMAScript 6 (ES6) was finalized in June 2015

About TypeScript

The TypeScript programming language was developed by Developers at Microsoft.

It is an open source programming language.

The TypeScript code is compiled into JavaScript, so we can basically

use TypeScript wherever we use JavaScript.

Anders Hejlsberg

Why TypeScript ?

- Its just a superset of JavaScript so any standard JavaScript is a valid TypeScript file
- Give Types and Safety to JavaScript
- Write error free code, faster…
- Compiles to ES5 JavaScript
- TypeScript lets you write JavaScript the way you really want to

"Microsoft's TypeScript may be the best of the many JavaScript front ends. It seems to generate the most attractive code...” - Douglas Crockford

Advantages and Disadvantages

Advantage

- More Flexible
- Independent from Developer Environment
- Easier to compile correctly

Disadvantage

- Complexity
- Setup Time

Setup : Installation / Configuration

npm install -g typescript

tsc -v	--version
tsc -h	--help
tsc -t	--target
tsc -w	--watch
tsc --outFile	concat and output to a single file
tsc --outDir	compiles containing .ts files to .js
tsc --sourceMap	generates a .map file for code assist

https://github.com/Microsoft/TypeScript/wiki/Compiler-Options

What does TypeScript bring.. ?

Types
Function
Interfaces
Classes
Modules
Namespaces
Generics
Decorators

Types

Boolean
Number
String
Array
Enum
Null
Undefined

Any
Function
Void
Object
Classes
Interfaces
Decorators

Inference of Type is default behavior

```
let username = “guest”; // will be inferred as a string

function somefun(){
    return 123
};

let someval = “string”;
someval = somefun(); // error
```

Adding Type Annotations

```
let username:string = “guest”; // will remain a string
username = 007; // error

function somefun():number{
    return 123
};

let someval:string = “string”;
someval = somefun(); // error
```

Functions in Typescript

You can add types to arguments

Make arguments optional by using “?”

Set the return type of a function.. To make function not to return set it as void

```
let myfun = function(arg1:string, arg2:number, arg3?:string):string{
        return “welcome to your life”
    }
```

Enums | Enumerations

```
enum Power {weak, recovering, strong};       // weak = 0, recovering = 1, strong = 2;
Enum Power {weak = 1, recovering, strong}; // weak = 1, recovering = 2, strong = 3;
enum Power {weak = 5, recovering, strong}; // weak = 5, recovering = 6, strong = 7;

let heroPower:Power = Power.recovering ; console.log(heroPower) // 6 as per the previous line
let powerString = Power[heroPower] ; console.log(powerString) // recovering
```

General Types

Implicit Type and Explicit Type

When to be explicit

Generics

```
function fun(arg: number): number {
    return arg;
}
function fun(arg: string): string{
    return arg;
}
function fun<T>(arg: T): T {
return arg;
}
```

Features of TypeScript

TypeScript has a structural type system.
Type-checking focuses on the 'shape' that values have.
Interfaces have no run-time representation.
Support optional parameters.
TypeScript supports ES6 for class-based OOP.
Public, protected and private members.
All properties are public in runtime.
Each member is public by default.
Static members are always public.
TypeScript does not support multiple inheritance.
TypeScript supports local types.

Thank you

please forward your comments and feedback

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