**TypeScript**

**1. What is TypeScript ?**

TypeScript is a superset of JavaScript which primarily provides optional static typing, classes and interfaces. One of the big benefits is to enable IDEs to provide a richer environment for spotting common errors as you type the code.

TypeScript doesn’t run in the browser. The code written in typescript is compiled to JavaScript, which then runs in the browser.

**2. Features of TypeScript?**

* The code written in typescript is compiled to JavaScript for the purpose of execution.
* As we already discussed, the code written in typescript is compiled to JavaScript which can reuse all of the existing JavaScript frameworks, tools, and libraries.
* As TypeScript is a superset of JavaScript so any valid .js file can be renamed to .ts and compiled with other TypeScript files.
* TypeScript is portable i.e., it can run on any environment that JavaScript runs on.
* TypeScript provides optional static typing. JavaScript is dynamically typed. This means JavaScript does not know what type a variable is until it actsually instantiated at run-time. This also means that it may be too late. TypeScript adds type support to JavaScript. TypeScript makes typing a bit easier and a lot less explicit by the usage of type inference. For example: var msg = “hello” in TypeScript is the same as var msg : string = “hello”. TLS (TypeScript Language Service) provides the facility to identify the type of the variable based on its value if it is declared with no type.
* TypeScript supports Object Oriented Programming concepts like classes, object, interfaces and inheritance etc.

**3. Basic Types:-**

## **Boolean**

The most basic datatype is the simple true/false value, which JavaScript and TypeScript call a Boolean value.

let isDone: boolean = false;

## **Number**

As in JavaScript, all numbers in TypeScript are either floating point values or Big Integers. These floating point numbers get the type number, while Big Integers get the type big int.

## **String**

Another fundamental part of creating programs in JavaScript for webpages and servers alike is working with textual data. As in other languages, we use the type string to refer to these textual datatypes. Just like JavaScript, TypeScript also uses double quotes (") or single quotes (') to surround string data.

let color: string = "blue";

color = 'red';

## **Array**

TypeScript, like JavaScript, allows you to work with arrays of values. Array types can be written in one of two ways. In the first, you use the type of the elements followed by [] to denote an array of that element type:

let list: number [] = [1, 2, 3];

## **Tuple**

Tuple types allow you to express an array with a fixed number of elements whose types are known but need not be the same. For example, you may want to represent a value as a pair of a string and a number:

let x: [string, number];

x = ["hello", 10];