**TypeScript**

* TypeScript is a Superset of JavaScript-> A language building up on JavaScript by adding new features + Advantages to JavaScript.
* Browser can’t directly execute TypeScript
* TypeScript is a tool which compiles TypeScript code into JavaScript code.
* TypeScript will check error during the compilation process, that’s why compile time error will not generated on directly browser
* TypeScript is a powerful, open-source programming language. It built on JavaScript by adding static type definition, making it a superset of JavaScript.
* TypeScript enhances the development experience by enabling developers to catch errors early through the type checking and it facilitates the development of large-scale applications with improved code quality and maintainability.

A diagram of a computer program

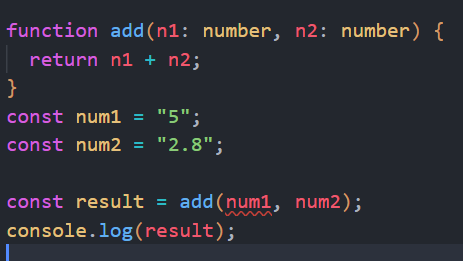
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* **Key Features of TypeScript:**

1. **Static Typing:**

* TypeScript’s type system helps catch errors at compile time, reducing runtime errors and improving code reliability.



1. **Better Code Readability and Maintainability:**

* Type definition and interface make the code more understandable and easier to maintain.

1. **Adding Non-JavaScript Features like interface or Generics**
2. **It also gives Meta-programming Feature like Decorators**
3. **Rich configuration Options.**

* **Data Types:**

1. **Number:**

* All numbers, no differentiation between integers or float
* 1, 5.3, -10

1. **String:**

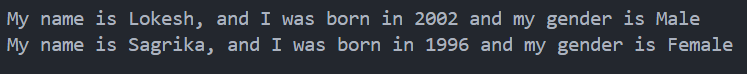
* All text values

1. **Boolean:**

* Just these two, no “truthy” or “falsy” values
* True or false

**A computer screen shot of text

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* **JavaScript vs TypeScript:**

|  |  |
| --- | --- |
| **TypeScript** | **JavaScript** |
| 1. TypeScript is a superset of JavaScript | 1. JavaScript is a subset of TypeScript |
| 1. Ts provide static typing | 1. Js provide dynamically typed |
| 1. Syntax is similar to JS with additional features | 1. Standard JavaScript syntax |
| 1. Stronger typing can help identify errors | 1. May require more debugging and testing |
| 1. Adding non-js feature like interface or generics | 1. Interface or generics are not present in js. |
| 1. In TS Error will identify during compilation phase | 1. In JS error will identify during runtime phase |

* **Type Assignment & type inference:**

**A screenshot of a computer program

Description automatically generated**

* If we assign variable with value at a time of declaration, then no need to explicitly mention **type** for that variable.
* If we only declare variable without value and we want to initialize value later then we should mention **type** for that variable.