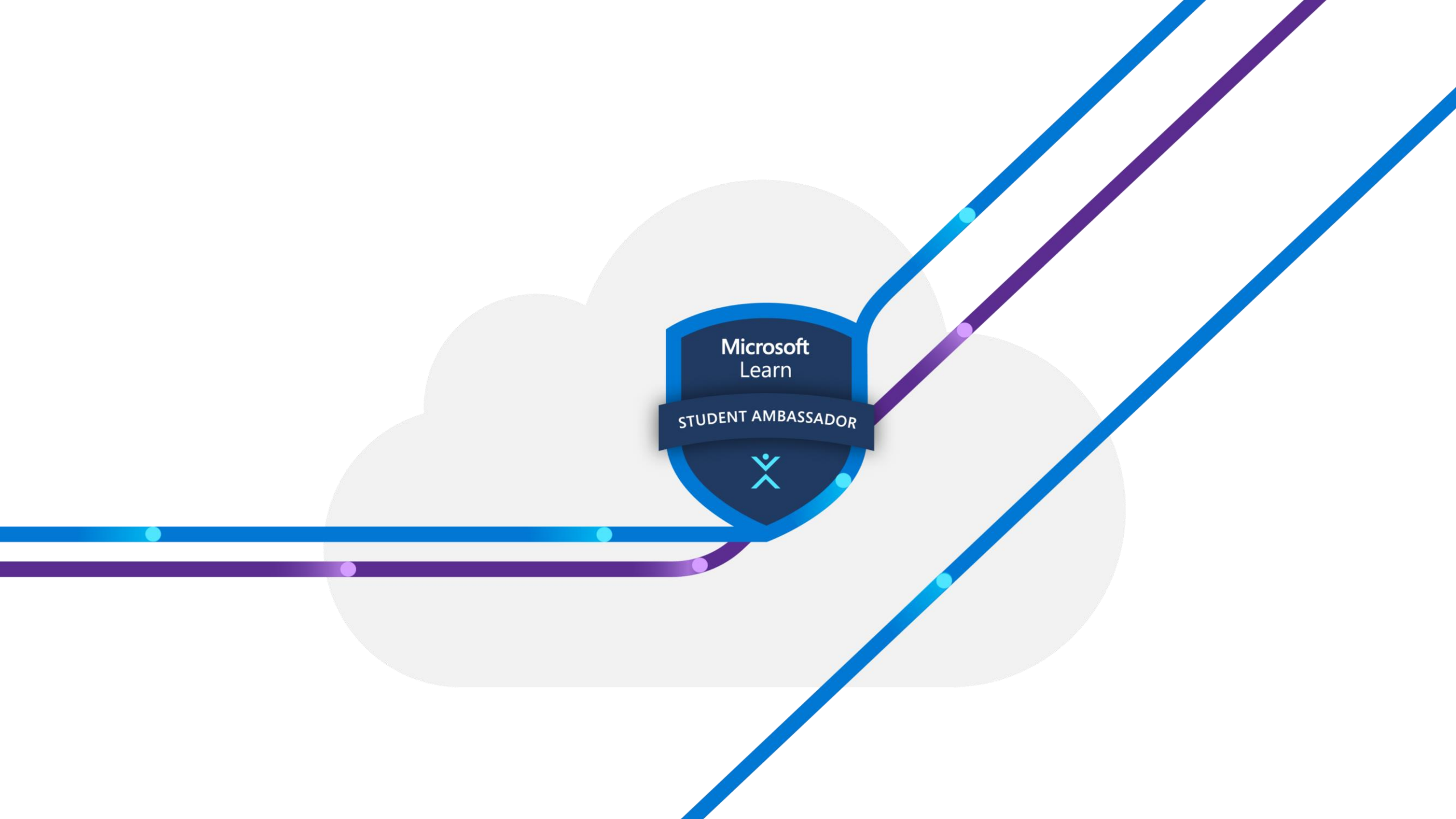
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Typing With TypeScript

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About the Speakers:

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Microsoft Learn Student Ambassadors Program (MLSA)

"Empower every person and every organization on the planet to achieve more."

A community of like-minded people aiming to learn new skills, solve real-world problems, and build communities across the globe.

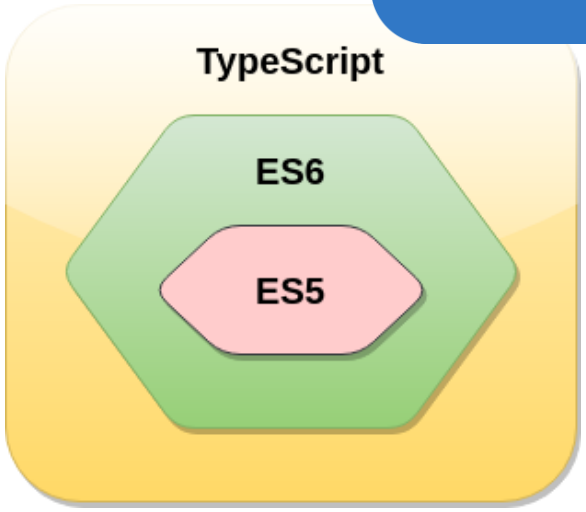
What is TypeScript

- TypeScript is an **open-source**, object-oriented programing language, which is developed and maintained by **Microsoft.**

- TypeScript is designed for the development of large applications.

- Superset of the JavaScript language

- TypeScript is the ES6 version of JavaScript with some additional features.



Why TypeScript

- Simplifies JavaScript code
- Syntax Similarity to Backend Languages like Java, Scala.
- Can be used anywhere: both the **frontend** and the **backend**.
- Designed for large-scale JavaScript application development
- 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.

Future Scope

It provides great development experience

Doesn't have much competition

Enjoys high adoption rates among (especially new) open-source projects.

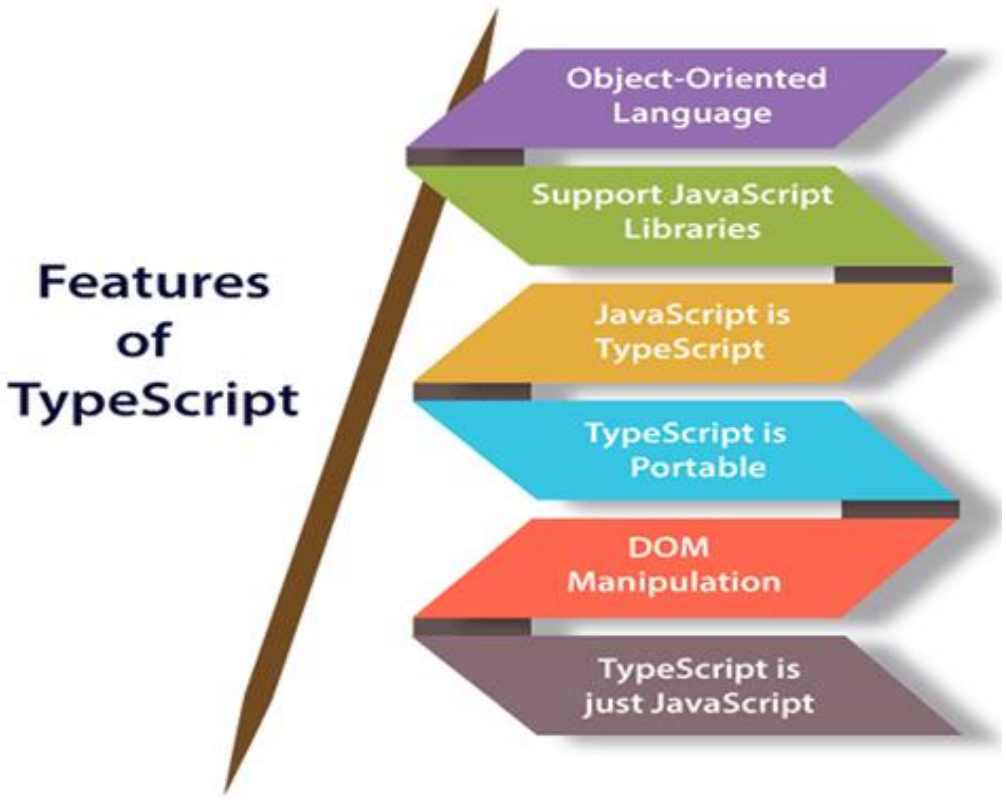
With nearly 400 contributors and 50,000 stargazers on GitHub, **TypeScript** clearly enjoys significant community momentum as well.

Difference between JavaScript and TypeScript

TypeScript	JavaScript
Object oriented programming language	Scripting language
Static typing	Do not support static typing
It compiles the code and highlighted errors during the development time	Interpreted language i.e. errors are highlighted at runtime.
Support modules and generics	Doesn't support modules and generics.

Features

- Object-Oriented language
- TypeScript supports JavaScript libraries
- Portable
- Use TypeScript anywhere
- DOM (Document object model) Manipulation
- Trans-piled

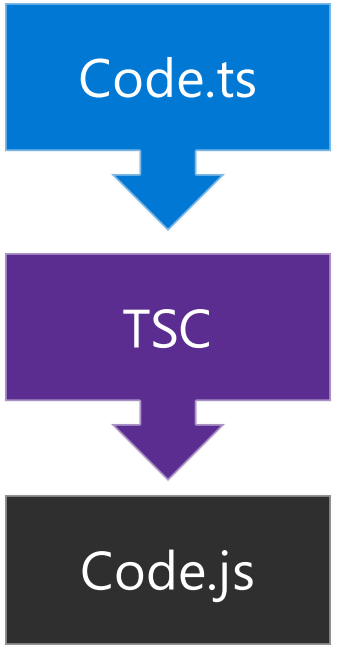


Components of TypeScript

1. Language

- TypeScript language elements
  - Syntax
  - Keywords
  - Type annotations

2. TypeScript Compiler



3. Language Services

- Information to editors for extra features like:
  - IntelliSense
  - Statement Completion
  - Automated refactoring
  - Colorization

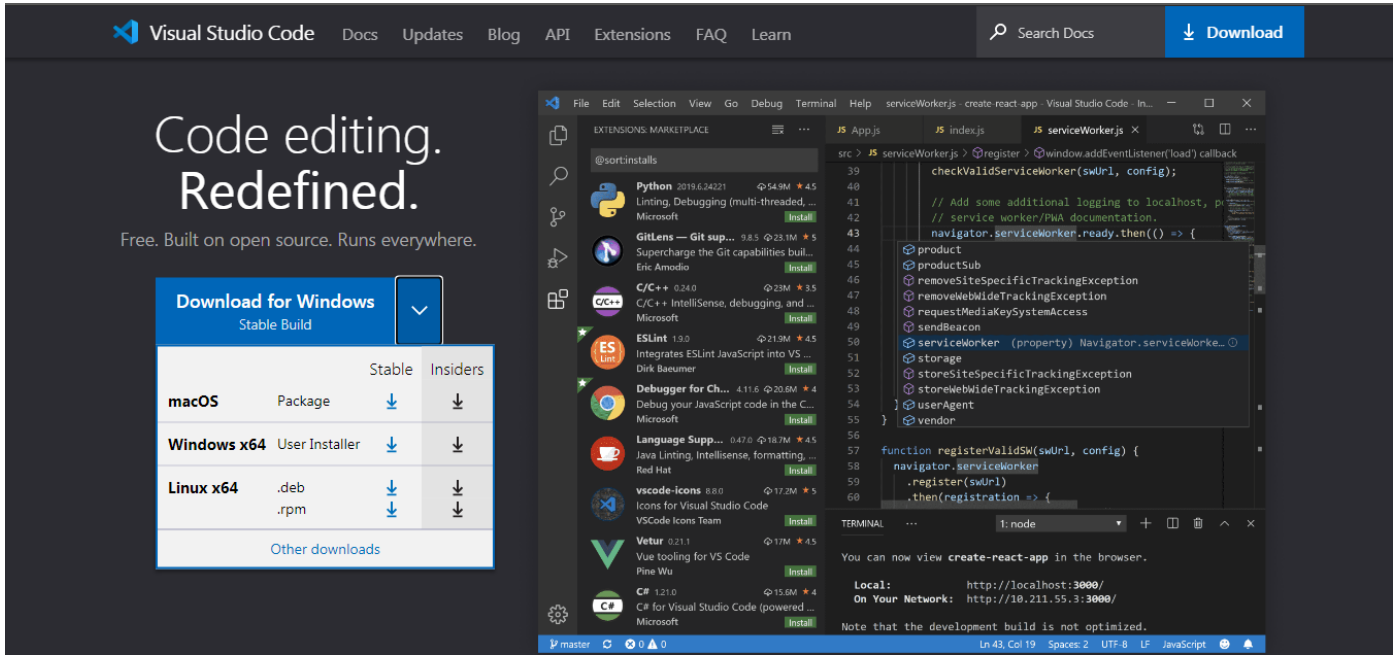
ES ECMAScript

- Specification for interpretation of code and languages like JavaScript.
- Browsers and other tools use ECMAScript to interpret JavaScript.
- Need transpilers like Babel to convert modern code to old ECMAScript convention.

Installation and Set-up

Visual Studio Code

- Free source code editor by Microsoft for Windows, Linux and macOS.
- Features:
  - Syntax Highlighting
  - Debugging
  - IntelliSense
  - Embedded Git



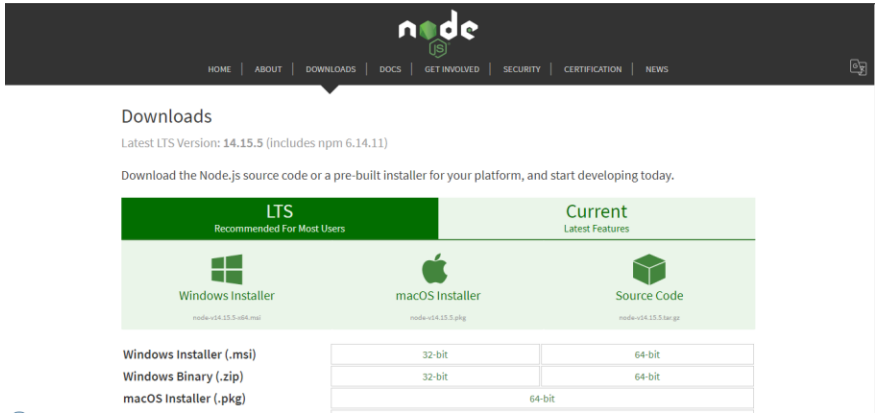
Download and install from https://code.visualstudio.com/

Installing TypeScript (via npm)

Requires Node.js (JavaScript Runtime)

Installing Node.js:

https://nodejs.org/en/download/



Installing TS:

npm install -g typescript

Setting up in Visual Studio Code

Compiling:

```
tsc <file_path>
```

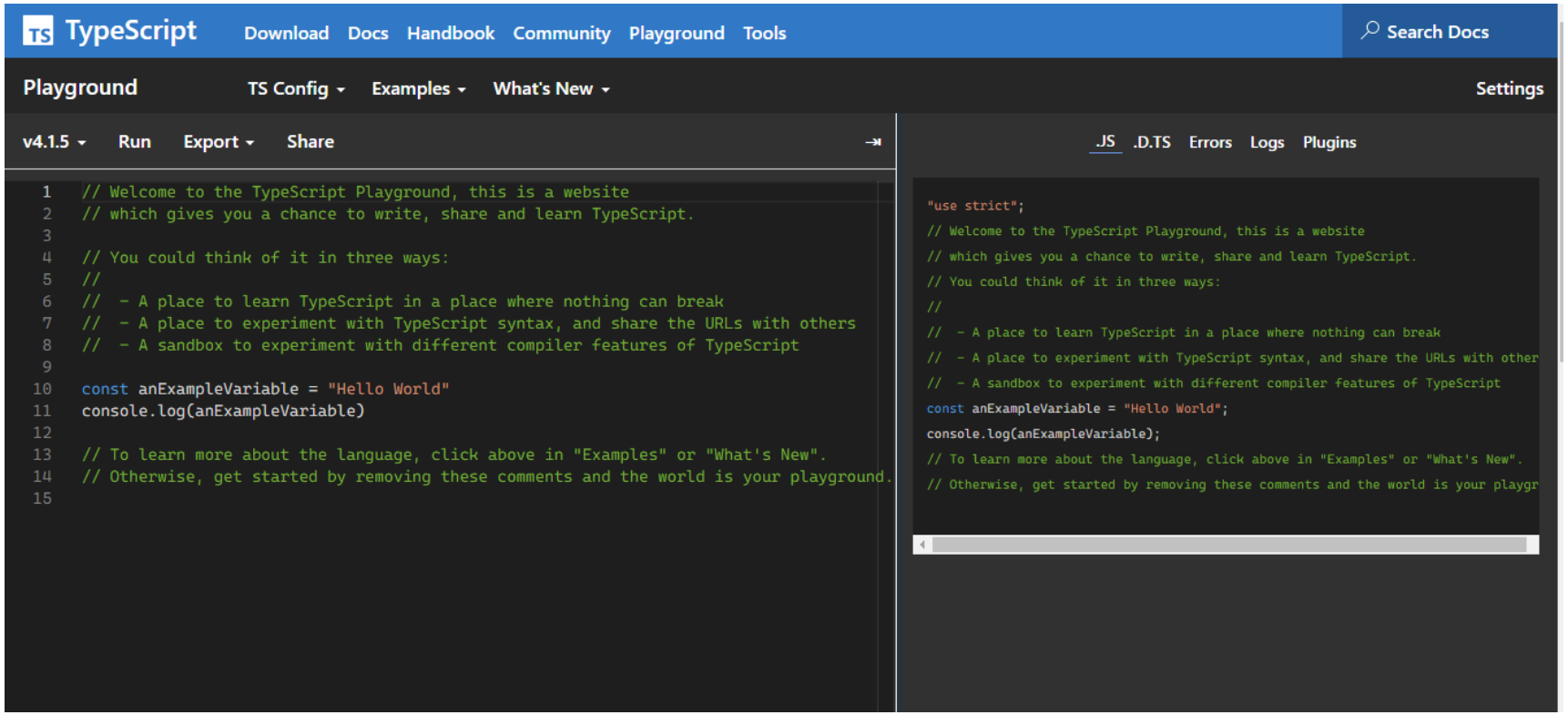
Automated compilation:

```
tsc -w <file_path>
```

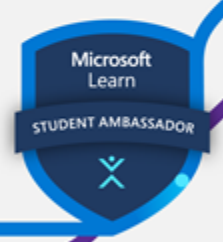
`tsconfig.json` file:

Online Compiler

https://www.typescriptlang.org/play



Getting Started

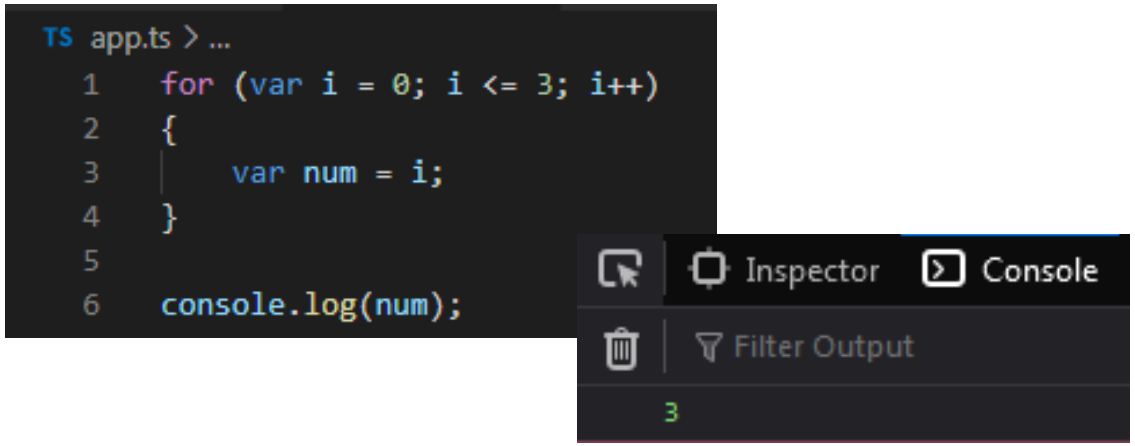


Variables

`var`

i. Global scope

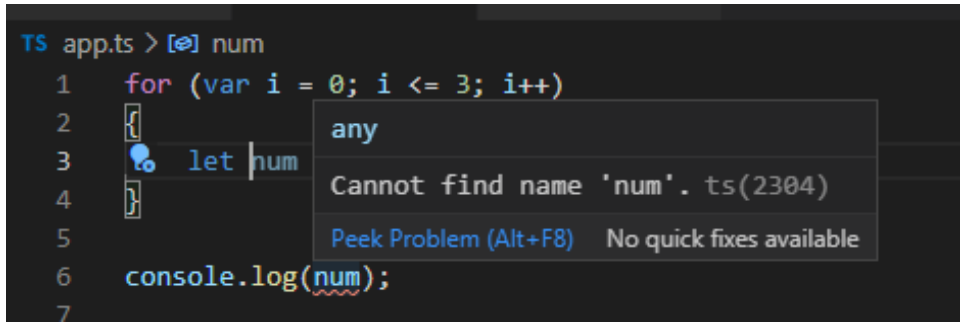
ii. Variable can be redeclared



`let`

i. Limited to block scope

ii. Variable cannot be redeclared



Variables

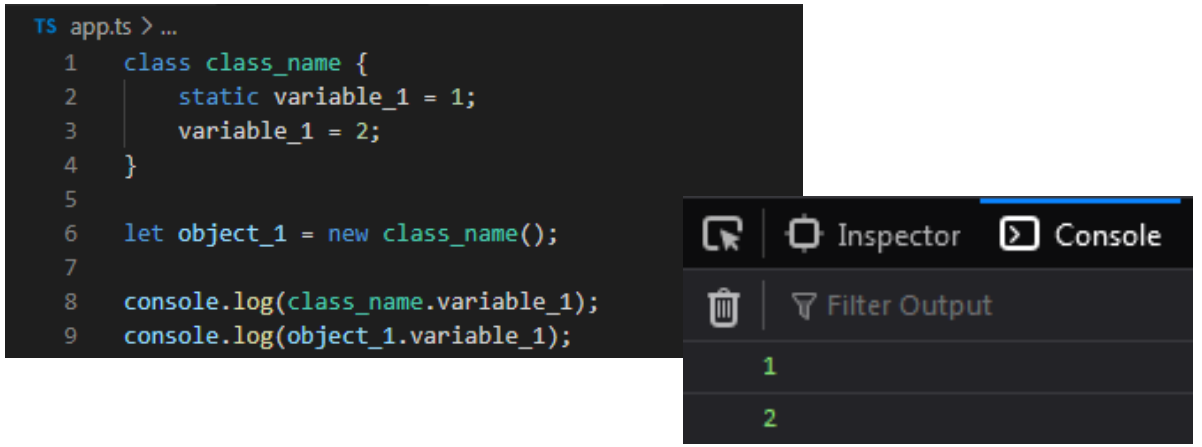
`const`

i. Once declared, its value cannot be changed

`static`

i. Associated with a class and not with the object

ii. Value can be accessed only when called on a class



QnA

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