

TypeScript Mastery

A Step-by-Step Learning Experience

Presented by Sir Ameen Alam

(Part 1)



Meet Ameen Alam

An accomplished professional with extensive expertise in Cloud Computing and DevOps. He holds multiple certifications, including AWS Developer Associate and Kubernetes Application Developer, and has over 8 years of experience in the IT, finance, and banking industry. Ameen is currently the Founder & CTO at Doblier Inc.



fb.com/SheikhAmeenAlam



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yt.com/ameenalamofficial



Meet Our Faculty

Whatsapp Channel: Latest News



<https://bit.ly/49werTR>

Books

Essential TypeScript 5

Third Edition by Adam Freeman (Author)

Press F11 to exit full screen

ESSENTIAL TypeScript 5

THIRD EDITION

Adam Freeman

MANNING



Table of contents

01

Introduction to TypeScript Setting Up Your Environment

Brief overview of TypeScript

02

Setting Up Your Environment

Install Node.js, Git, TypeScript,
and VS Code

03

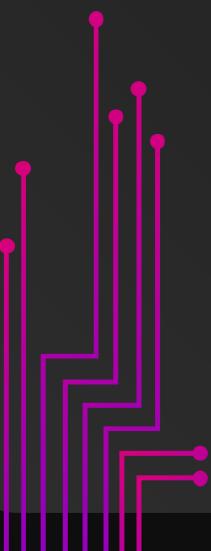
Your First TypeScript Program

Write a simple "Hello, World!"
program

04

Hands-on Exercises

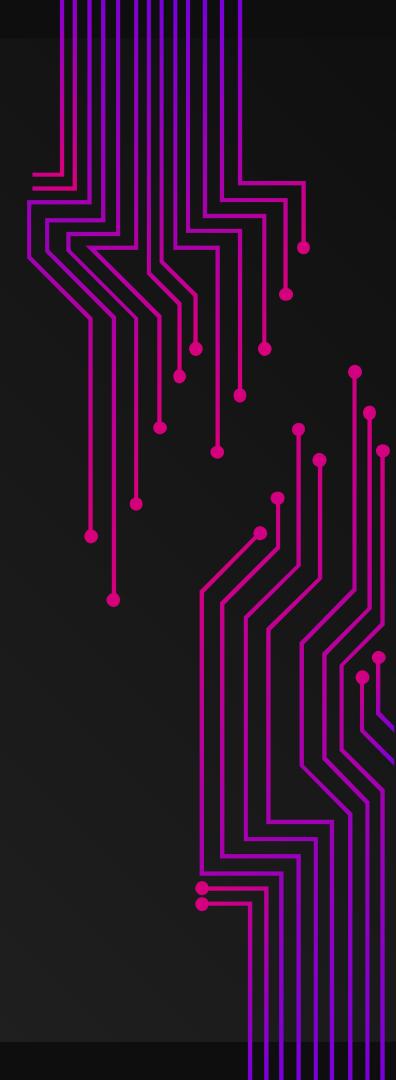
Getting Started Exercises with
TypeScript and Node.js



01

Introduction to TypeScript

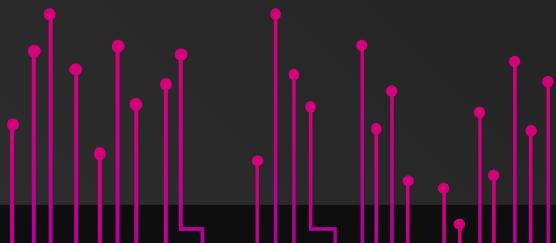
TypeScript as a statically typed superset of
JavaScript



Introduction

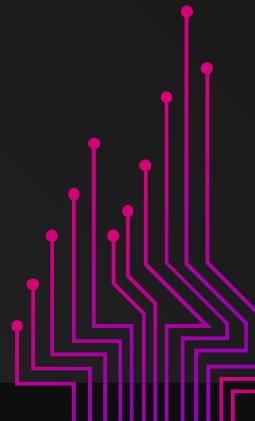
TypeScript is a superset of JavaScript that adds optional static typing to the language. This means that TypeScript code can be checked for errors during development, which can help to catch bugs early on.

TypeScript also provides other features that make it a more powerful and versatile language than JavaScript, such as generics, interfaces, and type aliases.



Understanding Programming Languages

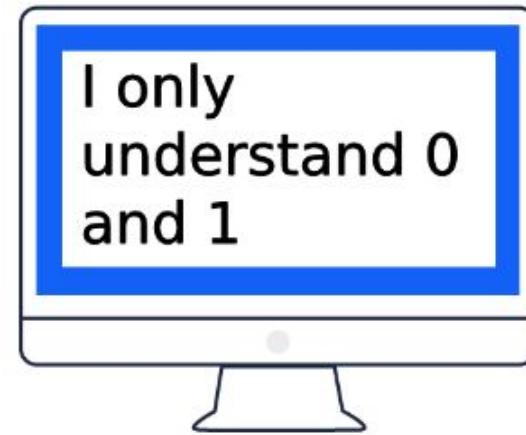
Imagine you're planning a trip. To communicate effectively with people in the places you'll visit, you might learn their languages. Similarly, programming languages are like human languages but for computers. They allow us to give instructions to computers and tell them what to do.





Hello

???????????



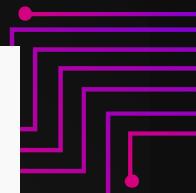


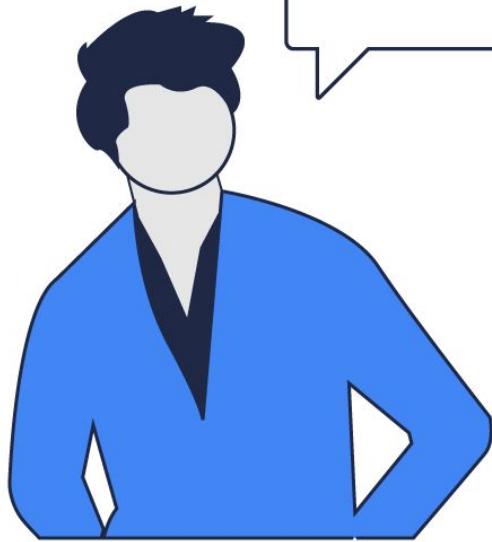
*I can not
understand the code!*

CODE IN LANGUAGE OF **LOW LEVEL**



I can!





Hello

10101100



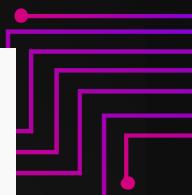


*I can
understand the code!*

CODE IN LANGUAGE OF **HIGH LEVEL**

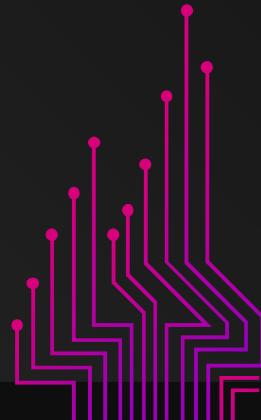
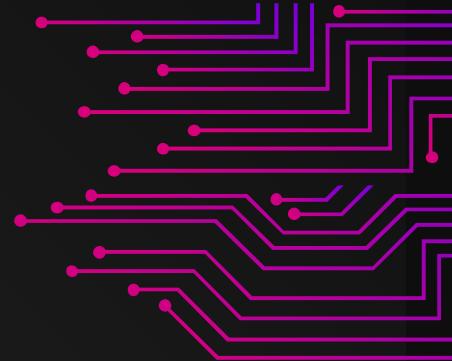


I can do it too!



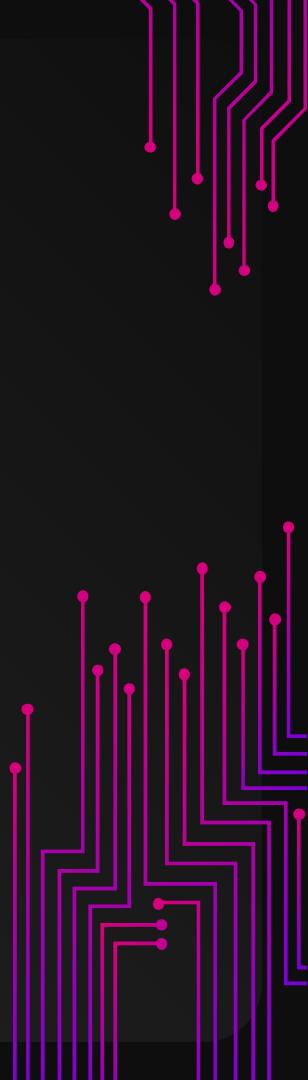
Why Learn Programming?

In today's digital world, programming skills are becoming increasingly valuable. Just like knowing English opens up opportunities in various fields, programming can lead to exciting careers in technology, web development, and software engineering. It also empowers you to create your own digital solutions and automate tasks.



Why Choose TypeScript?

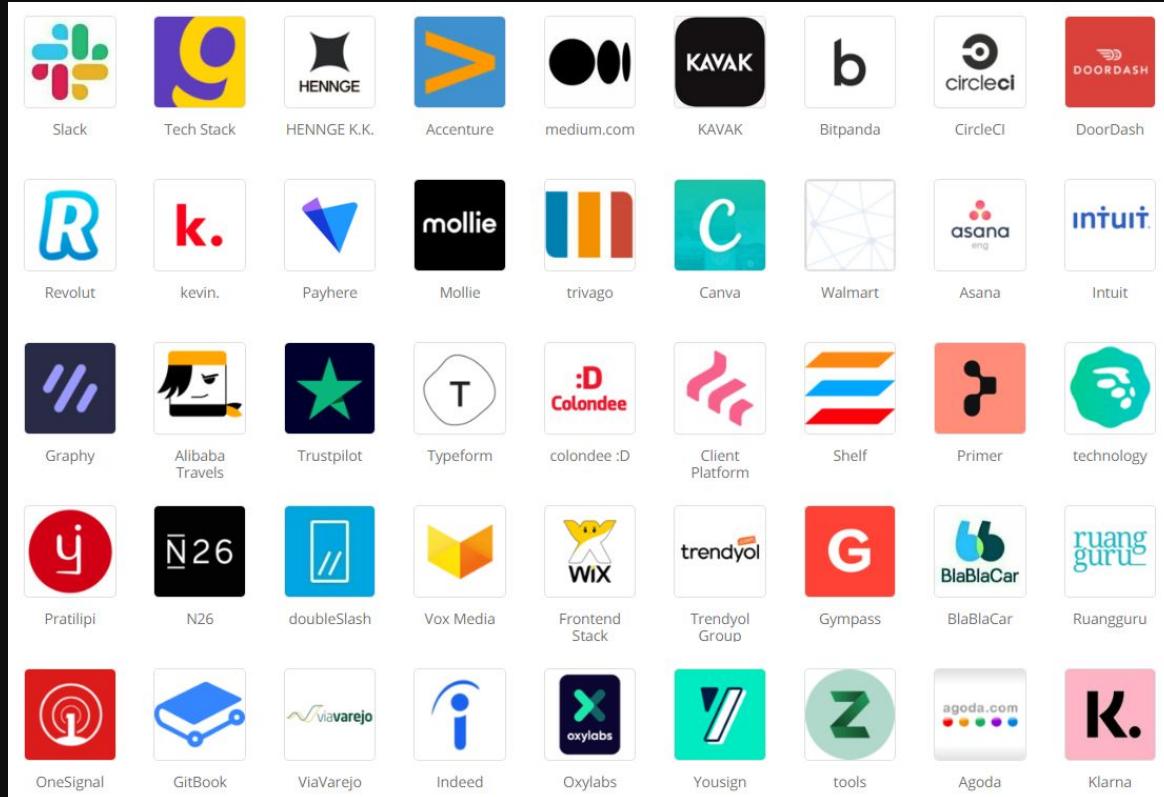
TypeScript is a powerful and versatile programming language that adds optional static typing to JavaScript, making it more reliable and maintainable. Imagine a chef using a recipe with precise measurements and instructions compared to one with vague guidelines. TypeScript is like the chef with a precise recipe, ensuring consistent and error-free outcomes.



Forbes

Programming Languages Most In Demand In 2023

Before tackling the list of the most in-demand programming languages for 2023, let's see which ones ranked first in popularity in 2022. In a list of the top programming languages used by developers in 2022, released by Statista analysts, JavaScript came in first. It was closely followed by HTML, then SQL, Python and TypeScript, in that order.



5302+ companies reportedly use TypeScript in their tech stacks

Chapter #1

Understanding

TypeScript

TypeScript's headline
features are focused on
developer productivity



Who is Developer?

Who is Developer?

Imagine you're building a house. You have architects who design the blueprint, engineers who understand how to make it structurally sound, and construction workers who put everything together. In the world of technology, developers play a similar role.

Who is Developer?

Developers are the builders of the digital world. They create the software, websites, apps, and other digital tools that we use every day.

They are the ones who?

Translate ideas into reality

Just like architects turn sketches into houses,
developers turn ideas into working software.

They use programming languages to write code
that instructs computers what to do.

Solve problems with code

Whether it's making online shopping easier or helping us navigate a new city, developers use their skills to solve problems creatively and efficiently using code.

Connect people and information

From social media platforms to online banking systems, developers build the digital infrastructure that allows us to connect with each other and access information.

There are different types of developers, each with their own specializations

Front-end developers: They focus on the visual elements and user interface of websites and apps.

Back-end developers: They work behind the scenes, building the logic and server-side functionality of software.

Full-stack developers: They have expertise in both front-end and back-end development.

You don't need a
specific degree to
be a developer

HOW TO BE SUCCESSFUL AS A SELF TAUGHT DEVELOPER



TypeScript Productivity Features

Static types

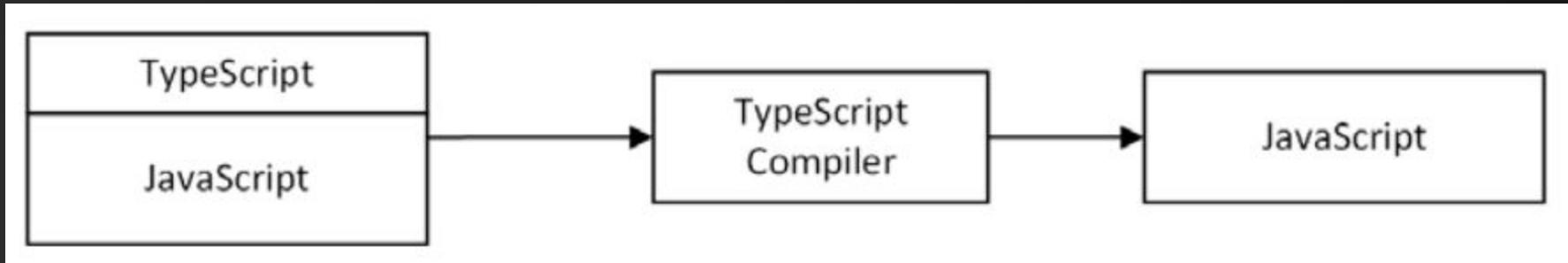
Access control keywords

Concise class constructor syntax

Help prevent common coding errors

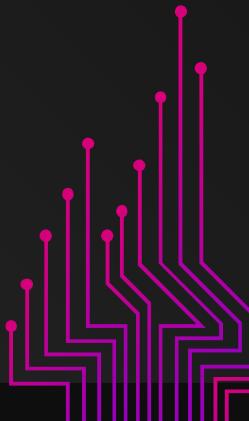
TypeScript productivity features are applied to JavaScript code.

TypeScript package includes a compiler
Compiled file can be executed by a JavaScript runtime, such as **Node.js** or a **browser**

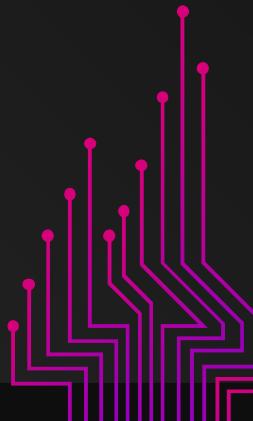


The TypeScript Transformation to JavaScript Code

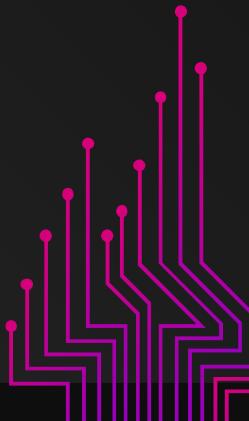
TypeScript with more focus and applying its features just to the parts of your code that are especially complex or that you expect to cause problems.



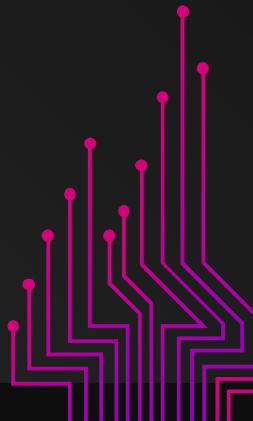
Some TypeScript features are implemented entirely by the compiler and leave no trace in the JavaScript code that is executed when the application runs.



TypeScript enhances JavaScript, but
the result is still JavaScript, and
development in a TypeScript project
is largely a process of writing
JavaScript code.



Chapters 3 and 4 describe the
JavaScript features



WHY TYPESCRIPT

MAINTAINABILITY

RICH IDE

ES6 SUPPORT

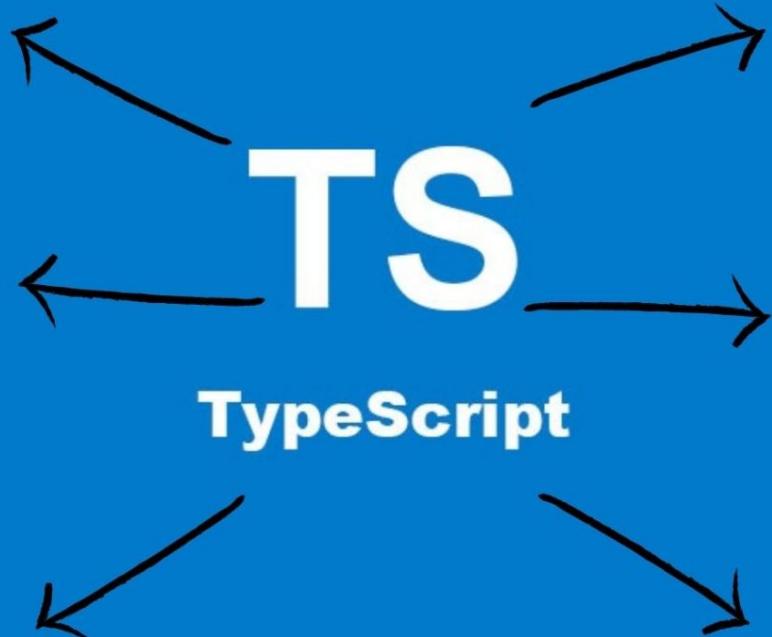
TS

TypeScript

CROSS PLATFORM

OBJECT ORIENTED
LANGUAGE

DOM
MANIPULATION



Why Use TypeScript?



www.clickittech.com

Why Choose TypeScript over JavaScript?



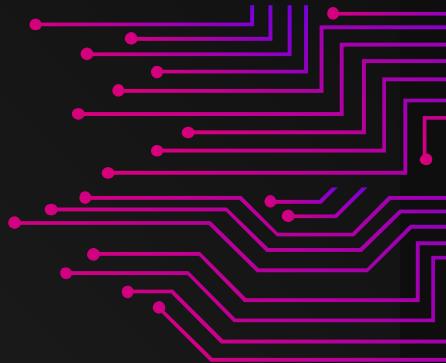
-  Optional Static Typing
-  IDE Support
-  Object Orientation
-  Readability
-  Community Support

www.clickittech.com

The logo for Next.js, consisting of the word "NEXT" in large white capital letters with a diagonal slash through it, followed by ".js" in smaller white lowercase letters.

Real-world Analogy: Baking a Cake

Think of baking a cake as an analogy for programming. The recipe is like the code, and the ingredients are like the data. Just as following a recipe with the correct ingredients leads to a delicious cake, using the right code with the appropriate data produces the desired result in programming.



Expectations



Reality



boredpanda.com

Sir Zia Khan

A beacon of knowledge and
innovation!

“TypeScript is a valuable tool for creating reliable and maintainable software applications. Its static typing, code clarity, and tooling support make it an excellent choice for beginners and experienced programmers alike. By learning TypeScript, you’ll open doors to exciting career opportunities and gain the power to create your own digital solutions.”

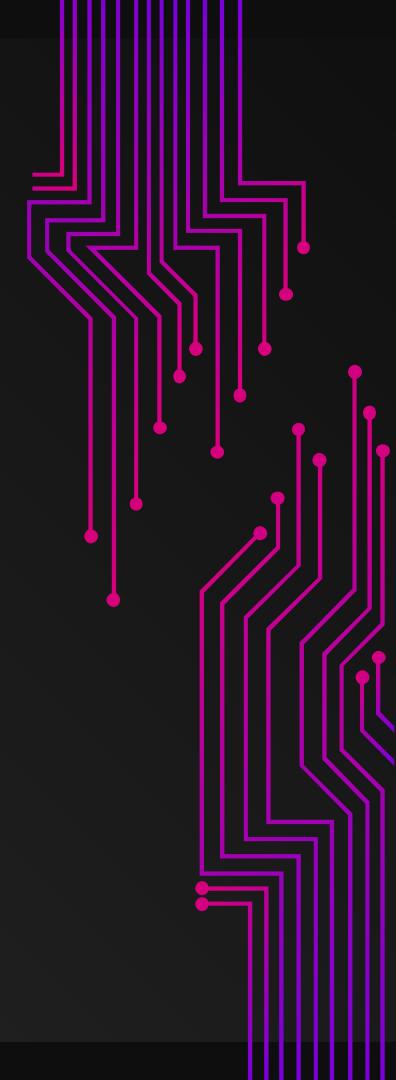
-Sir Zia Khan



02

Setting Up Your Environment

To develop TypeScript applications, you will need to install the following tools



Setting Up Your Environment



Visual Studio Code

Node.js is a runtime environment for JavaScript. It is used to run TypeScript code after it has been compiled to JavaScript.

Distributed version control system designed to handle everything from small to very large projects with speed and efficiency.

TypeScript is the compiler that converts TypeScript code to JavaScript.

VS Code is a popular code editor that has excellent support for TypeScript.

Chapter #2

Your First TypeScript
Application

NodeJS Installation

Install Node.js

Download the Node.js installer from the official website (<https://nodejs.org/en>) and run the installer.

Node.js® is an open-source, cross-platform JavaScript runtime environment.

[Download Node.js®](#)

20.10.0 LTS

Recommended For Most Users

21.2.0 Current

Latest Features

[Other Downloads](#) | [Changelog](#) | [API Docs](#)

[Other Downloads](#) | [Changelog](#) | [API Docs](#)

For information about supported releases, see the [release schedule](#).

Welcome to the Node.js Setup Wizard



The Setup Wizard will install Node.js on your computer.

Back

Next

Cancel



Installing Node.js

Please wait while the Setup Wizard installs Node.js.

Status: Generating script operations for action:



[Back](#)

[Next](#)

[Cancel](#)

Completed the Node.js Setup Wizard



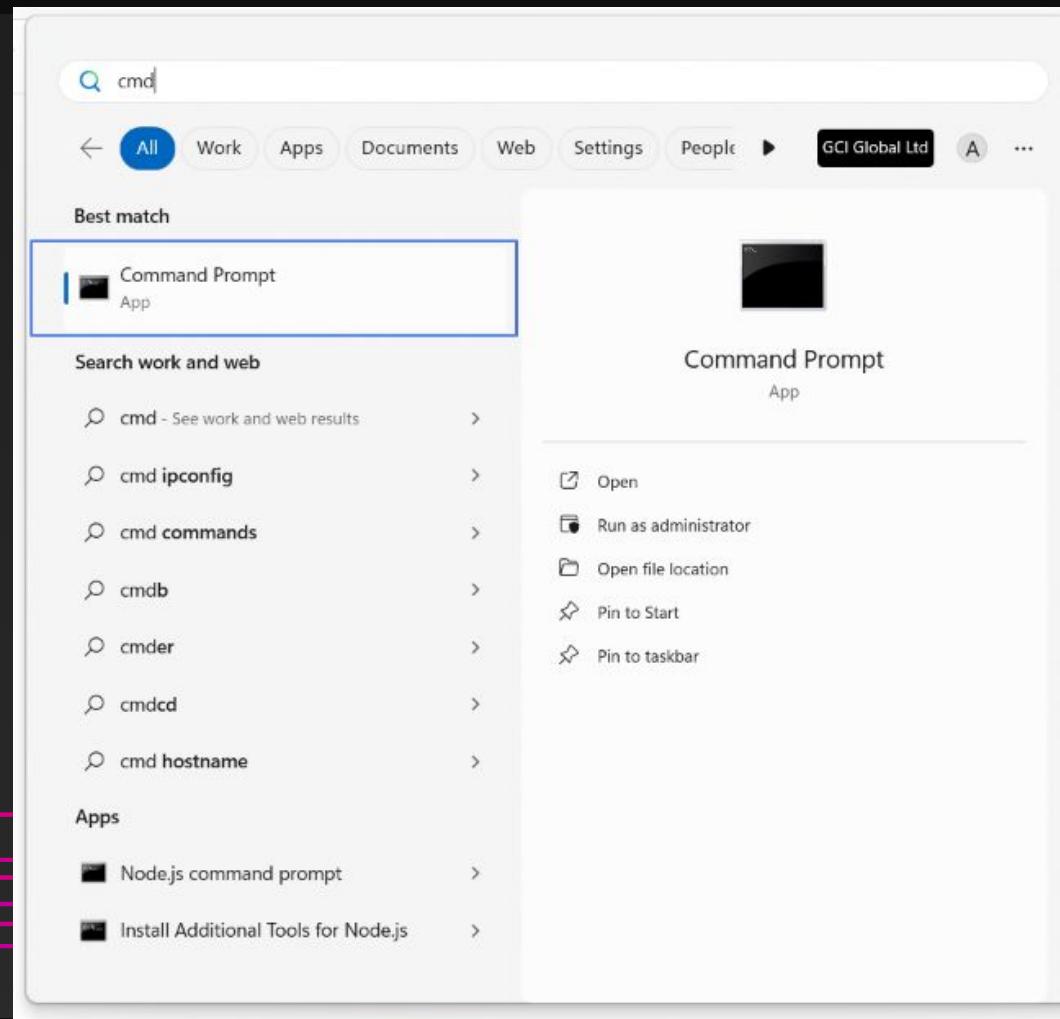
Click the Finish button to exit the Setup Wizard.

Node.js has been successfully installed.

Back

Finish

Cancel



Command Prompt

Microsoft Windows [Version 10.0.22621.2715]
(c) Microsoft Corporation. All rights reserved.

C:\Users\AmeenAlam>node -v
v20.10.0

C:\Users\AmeenAlam>npm -v
10.2.3

C:\Users\AmeenAlam>

Git Installation



Git 2.43.0 Setup

Information

Please read the following important information before continuing.



When you are ready to continue with Setup, click Next.

GNU General Public License

Version 2, June 1991

Copyright (C) 1989, 1991 Free Software Foundation, Inc.
59 Temple Place - Suite 330, Boston, MA 02111-1307, USA

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of this license document, but changing it is not allowed.

Preamble

The licenses for most software are designed to take away your
freedom to share and change it. By contrast, the GNU General Public
License is intended to guarantee your freedom to share and change

<https://gitforwindows.org/>

Next

Cancel



Git 2.43.0 Setup



Installing

Please wait while Setup installs Git on your computer.



Extracting files...

C:\Program Files\Git\mingw64\bin\git-lfs.exe



<https://gitforwindows.org/>

Cancel



Git 2.43.0 Setup



Completing the Git Setup Wizard

Setup has finished installing Git on your computer. The application may be launched by selecting the installed shortcuts.

Click Finish to exit Setup.



[Launch Git Bash](#)

View Release Notes

Finish



Administrator: Command Pro



Microsoft Windows [Version 10.0.22621.2715]
(c) Microsoft Corporation. All rights reserved.

C:\Users\Administrator>git --version
git version 2.43.0.windows.1

C:\Users\Administrator>

TypeScript

Installation

Install TypeScript

Open a command prompt or terminal and run the following command:

```
npm install --global typescript@5.0.2
```

```
tsc --version
```



Administrator: Command Pro X

+ ▾

Microsoft Windows [Version 10.0.22621.2715]
(c) Microsoft Corporation. All rights reserved.

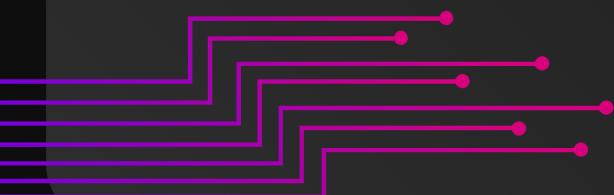
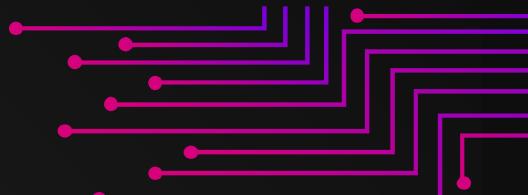
C:\Users\Administrator>git --version
git version 2.43.0.windows.1

C:\Users\Administrator>npm install --global typescript@5.0.2

added 1 package in 2s

npm notice
npm notice New patch version of npm available! 10.2.3 -> 10.2.4
npm notice Changelog: <https://github.com/npm/cli/releases/tag/v10.2.4>
npm notice Run `npm install -g npm@10.2.4` to update!
npm notice

C:\Users\Administrator>



```
Administrator: C:\WINDOWS' + ▾
Microsoft Windows [Version 10.0.22621.2715]
(c) Microsoft Corporation. All rights reserved.

C:\Users\Administrator>tsc -v
Version 5.3.2

C:\Users\Administrator>
```

VS Code

Installation

Install VS Code

Download VS Code from the official website
<https://code.visualstudio.com/download> and
install it.

[Version 1.84](#) is now available! Read about the new features and fixes from October.

Download Visual Studio Code

Free and built on open source. Integrated Git, debugging and extensions.

[↓ Windows](#)

Windows 10, 11

User Installer	x64	Arm64
System Installer	x64	Arm64
.zip	x64	Arm64
CLI	x64	Arm64

[↓ .deb](#)

Debian, Ubuntu

.deb	x64	Arm32	Arm64
.rpm	x64	Arm32	Arm64
.tar.gz	x64	Arm32	Arm64
Snap	Snap Store		
CLI	x64	Arm32	Arm64

[↓ Mac](#)

macOS 10.15+

.zip	Intel chip	Apple silicon	Universal
CLI	Intel chip	Apple silicon	



Select Additional Tasks

Which additional tasks should be performed?

Select the additional tasks you would like Setup to perform while installing Visual Studio Code, then click Next.

Additional icons:

- Create a desktop icon

Other:

- Add "Open with Code" action to Windows Explorer file context menu
- Add "Open with Code" action to Windows Explorer directory context menu
- Register Code as an editor for supported file types
- Add to PATH (requires shell restart)

< Back

Next >

Cancel



Setup - Microsoft Visual Studio Code (User)

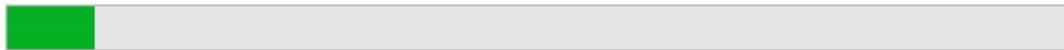


Installing

Please wait while Setup installs Visual Studio Code on your computer.

Extracting files...

C:\Users\AmeenAlam\AppData\Local\Programs\Microsoft VS Code\Code.exe



Cancel



Completing the Visual Studio Code Setup Wizard

Setup has finished installing Visual Studio Code on your computer. The application may be launched by selecting the installed shortcuts.

Click Finish to exit Setup.



Launch Visual Studio Code



Finish



◀ Welcome

⚡ Get Started with VS Code

Discover the best customizations to make VS Code yours.

Personalize your VS Code

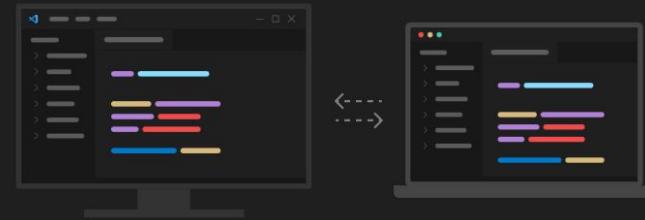
Keep your essential VS Code customizations backed up and updated across all your devices.

[Backup and Sync Settings](#)

- Choose the look you want
- One shortcut to access everything
- Rich support for all your languages
- Open up your code

[Mark Done](#)

[Next Section →](#)



0 0 0 0



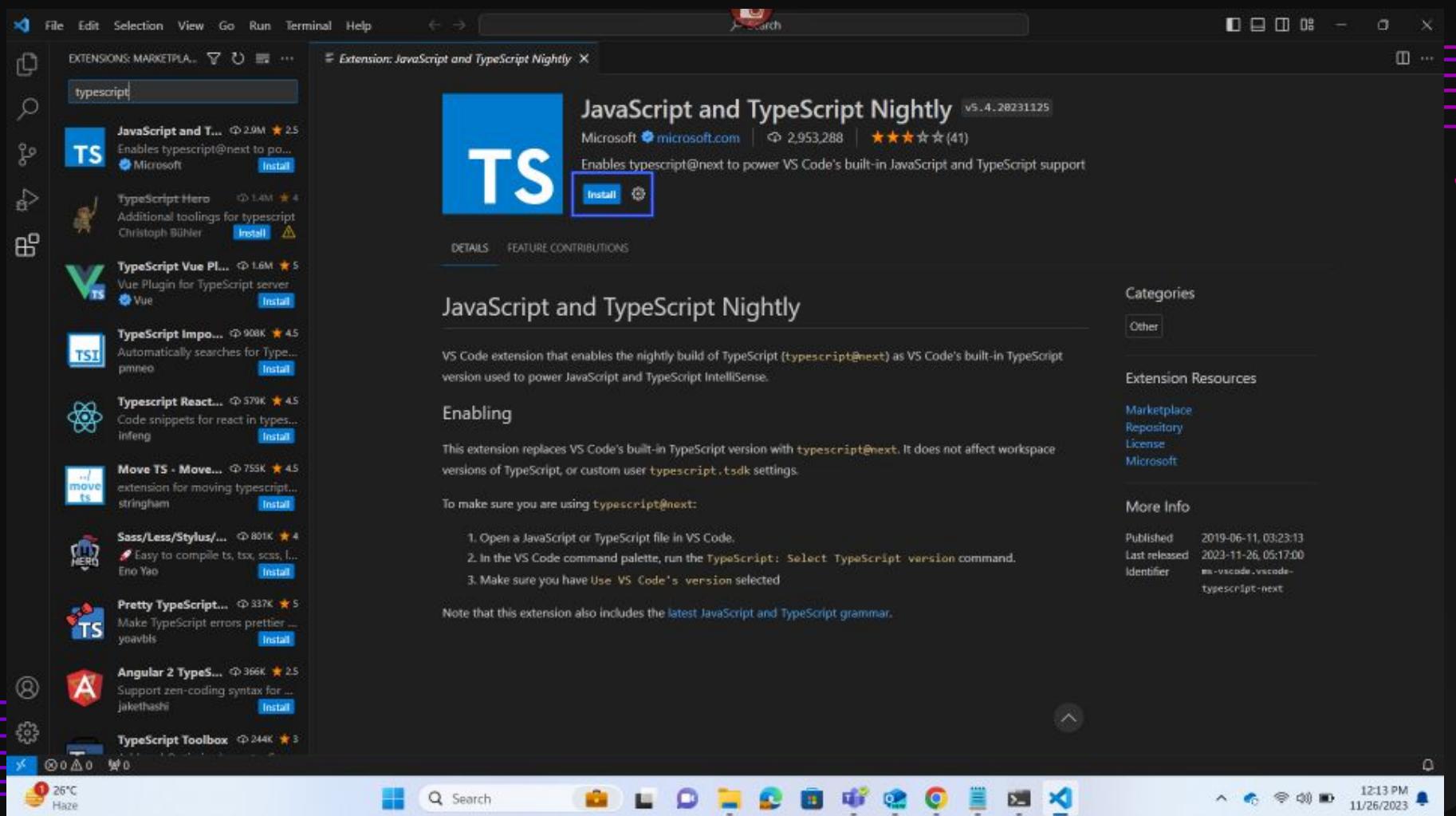
Code collects usage data. Read our [privacy statement](#) and learn how to [opt out](#).

TypeScript

Extension

Install the TypeScript extension

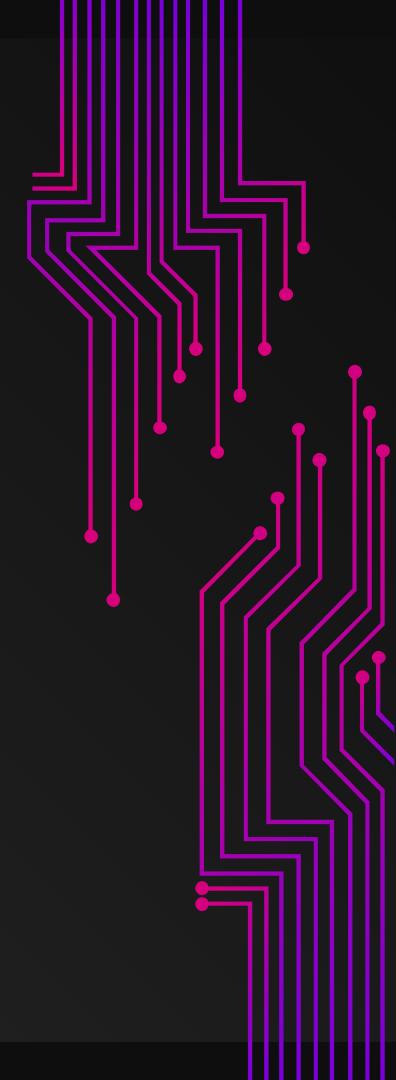
Open VS Code and go to Extensions > Search Extensions. Search for TypeScript and install the TypeScript: JavaScript with Language Features extension.



03

Your First TypeScript Program

Let's write a simple "Hello, World!" program in TypeScript.



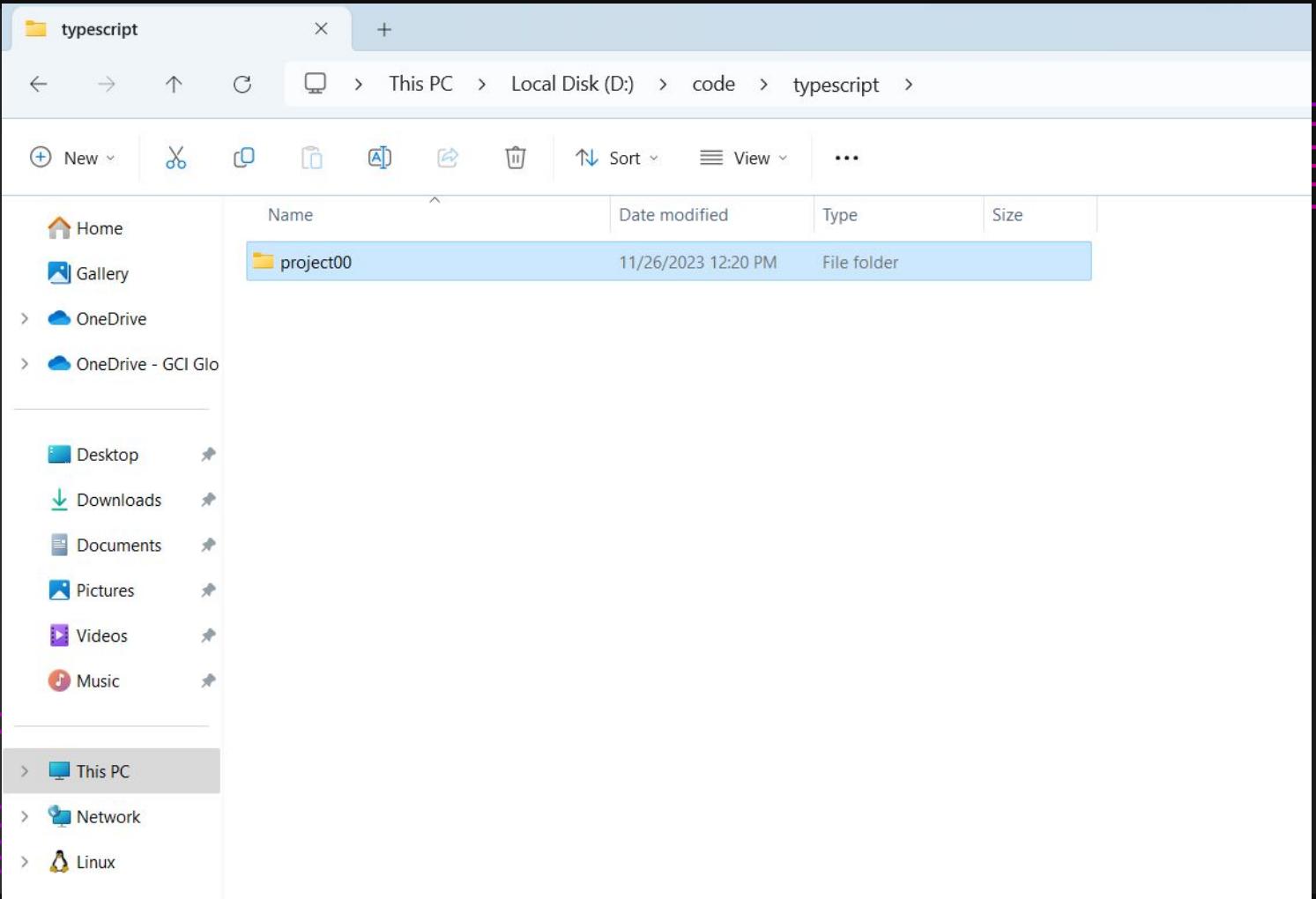
Hello World

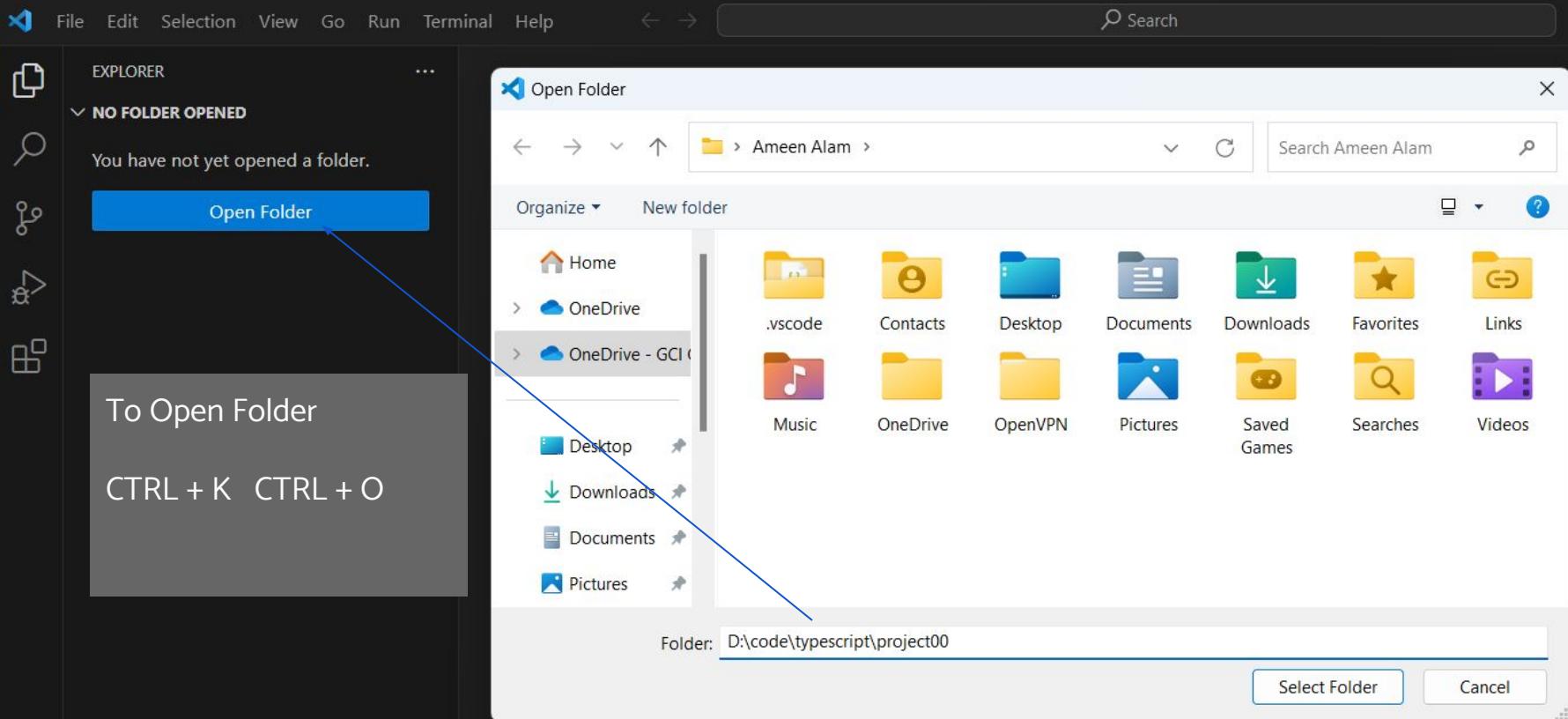
Your First TypeScript Program

Let's write a simple "Hello, World!" program in TypeScript.

```
console.log("Hello, World!");
```

This code will print the text "Hello, World!" to the console.







EXPLORER

...



PROJECT00



> OUTLINE

> TIMELINE



0 △ 0 0



Show All Commands Ctrl + Shift + P

Go to File Ctrl + P

Find in Files Ctrl + Shift + F

Toggle Full Screen F11

Show Settings Ctrl + ,

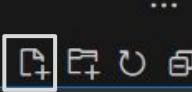
File Edit Selection View Go Run Terminal Help

← →

project00



EXPLORER



...

PROJECT00



main.ts





EXPLORER

...



PROJECT00



TS main.ts



> OUTLINE

> TIMELINE



⊗ 0 △ 0 ⚙ 0

TS main.ts X

TS main.ts

1 console.log("Hello, World!");|

...

Compile this code to JavaScript

To compile this code to JavaScript, open a command prompt or terminal and navigate to the directory where you saved the TypeScript file. Then, run the following command:

```
tsc main.ts
```



File Edit Selection View Go Run

Terminal Help



project00



EXPLORER



PROJECT00



main.ts



- New Terminal Ctrl+Shift+`
- Split Terminal Ctrl+Shift+5
- Run Task...
 `ld!");
- Run Build Task... Ctrl+Shift+B
- Run Active File
- Run Selected Text
- Show Running Tasks...
- Restart Running Task...
- Terminate Task...
- Configure Tasks...
- Configure Default Build Task...

File Edit Selection View Go Run ...

← →

project00

□ □ □ 08 - ×



EXPLORER

...



PROJECT00



main.ts



TS main.ts X

TS main.ts

```
1 console.log("Hello, World!");
```

PROBLEMS

OUTPUT

DEBUG CONSOLE

TERMINAL

PORTS

PS D:\code\typescript\project00> □



> OUTLINE

> TIMELINE



0 △ 0 0 0

- + ⌂ ⌃ ⌁
- PowerShell
- powershell
- Command Prompt
- Command Prompt
- powershell
- JavaScript Debug Terminal
- Split Terminal >
- Configure Terminal Settings
- Select Default Profile
- Run Task...
- Configure Tasks...

Ln 1, Col 50 Spaces: 4 Unit: 0 Ctrl: U TypeScript: Q



EXPLORER

⋯



PROJECT00

TS main.ts



TS main.ts X

TS main.ts

1 console.log("Hello, World!");

⋯

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS

+ ⌘ ⌘ ⌘ ⌘ ⌘ ⌘ ⌘ ⌘ ⌘

Microsoft Windows [Version 10.0.22621.2715]
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 powershell powershell cmd

D:\code\typescript\project00>tsc main.ts



> OUTLINE

> TIMELINE



0 0 △ 0 ⌘ 0

Ln 1, Col 30 Spaces: 4 UTF-8 CRLF {} TypeScript ⌘

A screenshot of the Microsoft Visual Studio Code (VS Code) interface. The window title is "project00".

Left Sidebar (Explorer):

- File
- Edit
- Selection
- View
- Go
- Run
- ...

Icons for various file types (Text, JSON, XML, etc.) are listed under "PROJECT00":

- JS main.js
- TS main.ts

Top Bar:

- Back arrow
- Forward arrow
- Search bar: project00
- Minimize, Maximize, Close buttons

Code Editor:

File: main.ts

```
1  console.log("Hello, World!");
```

Bottom Bar:

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS

Microsoft Windows [Version 10.0.22621.2715]
(c) Microsoft Corporation. All rights reserved.

D:\code\typescript\project00>tsc main.ts

D:\code\typescript\project00>

Terminal:

- + (New Terminal)
- ... (More Options)
- ^ (Copy)
- x (Close)

Checkboxes for terminal profiles:

- [] powershell
- [] powershell
- [x] cmd

Bottom Status Bar:

Ln 1, Col 30 Spaces: 4 UTF-8 CRLF {} TypeScript



EXPLORER

...

TS main.ts

JS main.js

X

...



PROJECT00

JS main.js

TS main.ts



JS main.js

1 console.log("Hello, World!");

2

PROBLEMS

OUTPUT

DEBUG CONSOLE

TERMINAL

PORTS

+ ⏪ ⏴ ⏵ ⏷ ⏸ ⏹

Microsoft Windows [Version 10.0.22621.2715]
(c) Microsoft Corporation. All rights reserved.

D:\code\typescript\project00>tsc main.ts

D:\code\typescript\project00>|

 powershell powershell cmd

> OUTLINE

> TIMELINE



0 △ 0 ⌂ 0

Ln 2, Col 1 Spaces: 4 UTF-8 LF {} JavaScript ⌂

Compiler

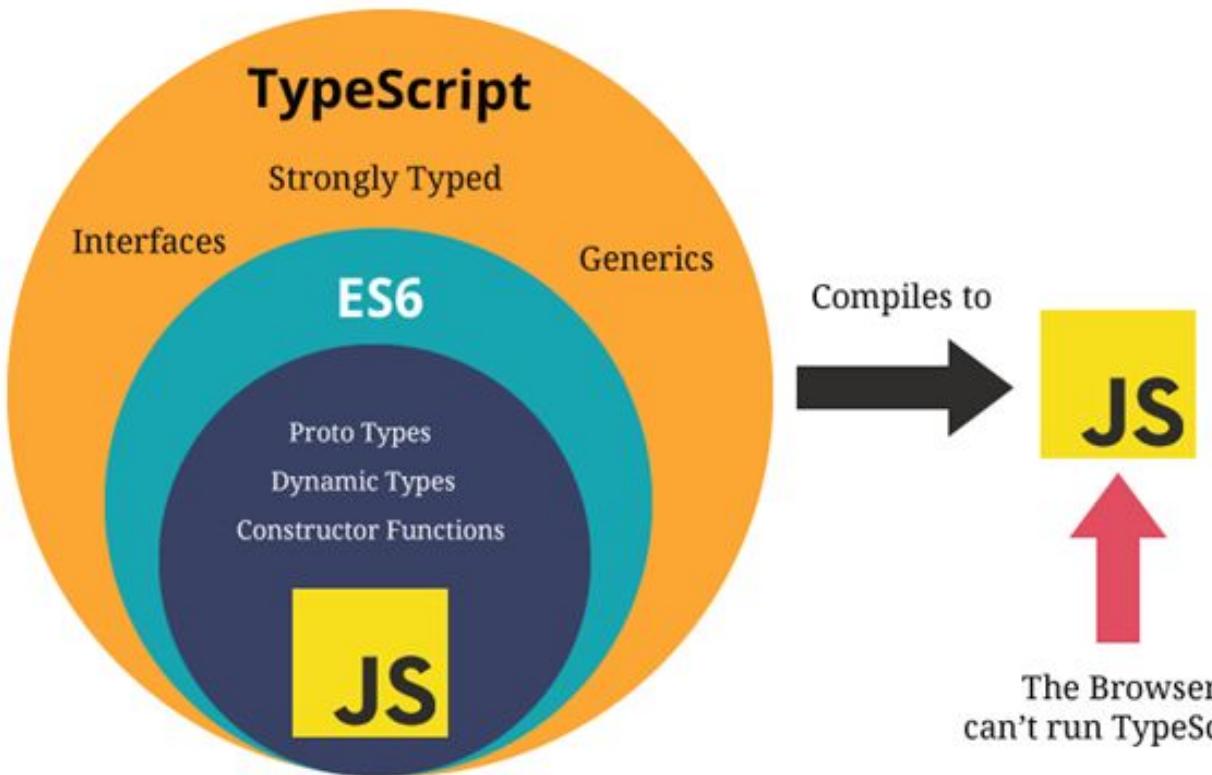
.ts



.js



Transpilation



Compile this code to JavaScript

This will create a JavaScript file named main.js in the same directory. You can then run this JavaScript file using Node.js:

```
node main.js
```

This will print the text "Hello, World!" to the console.

Congratulations



A screenshot of the Visual Studio Code interface. The title bar shows 'File Edit Selection View Go Run ...' and the search bar shows 'project00'. The Explorer sidebar on the left lists 'PROJECT00' with files 'main.js' and 'main.ts'. The main editor area has tabs for 'TS main.ts' and 'JS main.js', with 'JS main.js' active. The code in 'main.js' is: '1 console.log("Hello, World!");'. Below the editor is a terminal window showing the output of a TypeScript compilation and a Node.js execution. The terminal text is:
Microsoft Windows [Version 10.0.22621.2715]
(c) Microsoft Corporation. All rights reserved.
D:\code\typescript\project00>tsc main.ts
D:\code\typescript\project00>node main.js
Hello, World!
D:\code\typescript\project00>
The status bar at the bottom shows 'Ln 2, Col 1 Spaces: 4 UTF-8 LF {} JavaScript'.

```
1 console.log("Hello, World!");
```

```
Microsoft Windows [Version 10.0.22621.2715]
(c) Microsoft Corporation. All rights reserved.

D:\code\typescript\project00>tsc main.ts
D:\code\typescript\project00>node main.js
Hello, World!
D:\code\typescript\project00>
```

Ln 2, Col 1 Spaces: 4 UTF-8 LF {} JavaScript



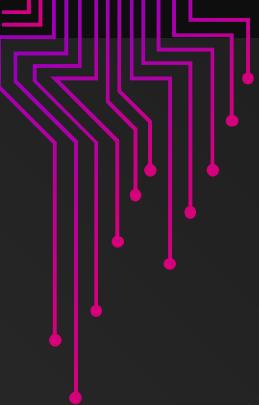
I'M A Programmer

I'M A Programmer



Problem-Solving Power15

We'll dedicate 15 minutes to a focused
question-and-answer session.



Problem-Solving Power15

Bring your specific problems and questions to the table.

Receive personalized guidance and feedback from experienced faculty.

Collaborate with fellow students and learn from their inquiries.

Gain valuable insights and sharpen your troubleshooting skills.





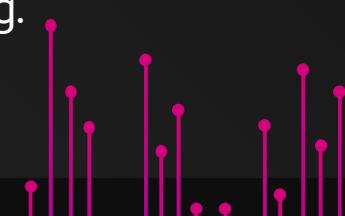
Benefits of attending

Boost your problem-solving expertise: Develop a structured approach to analyzing and solving programming challenges.

Sharpen your coding skills: Practice writing efficient and effective code through engaging exercises.

Enhance your understanding: Gain deeper insights into key programming concepts and applications.

Build your confidence: Feel empowered to tackle complex tasks and independent learning.





PanaVerse

Learn TypeScript

Learn TypeScript 5.0+ in Baby Steps

<https://github.com/panaverse/learn-typescript>

The screenshot shows the GitHub organization page for 'panaverse'. The page includes a profile picture, follower count (1.2k), and links to the organization's website and social media. Below this, there are sections for 'Popular repositories' and two specific repositories: 'learn-typescript' and 'learn-nextjs'. Both repositories are marked as 'Public' and have detailed descriptions, star counts, and commit counts.

Repository	Description	Language	Stars	Commits
learn-typescript	Learning TypeScript in Baby Steps	TypeScript	636	366
learn-nextjs	Learn Modern Full Stack Web 2 and Web 3 Development using Typescript, Next.js 13 Apps, Tailwind CSS, Shadcn UI, Neon, Drizzle ORM, and Sanity	TypeScript	407	207

panaverse/learn-typescript: Learn TypeScript in Baby Steps

github.com/panaverse/learn-typescript

panaverse / learn-typescript

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Code Issues 4 Pull requests 9 Actions Projects Wiki Security Insights

learn-typescript Public

Watch 101 Fork 366 Star 636

master 2 branches 0 tags Go to file Add file Code

ziaukhan add node projects fcd5595 on Aug 24 204 commits

NODE_PROJECTS	add node projects	3 months ago
step00_helloworld	update	last year
step00a_json_objects	add links	last year
step00b_syntax_error	update step 00	last year
step00c_type_error	update step 00	last year
step00d_assignability_error	update step 00	last year
step01_strong_typing	add step 00 a b c	last year
step02_const_let	update step 02	last year
step03a_modules	add step 03	last year
step03b_native_ECMAScript_modules	add video	last year
step03c_import_inquirer_ECMAScript...	add 3c	last year
step03d_chalk	add firequiz	last year

About

Learning TypeScript in Baby Steps

typescript learning-typescript

Readme MIT license Activity 636 stars 101 watching 366 forks Report repository

Releases

No releases published

Packages

No packages published

19°C Smoke

Search

File Explorer Task Manager Task View File Home Back Forward Stop Refresh

5:13 AM 11/27/2023

learn-typescript/step00_helloworld

github.com/panaverse/learn-typescript/tree/master/step00_helloworld

panaverse / learn-typescript

Code Issues 4 Pull requests 9 Actions Projects Wiki Security Insights

Add file ...

Files

master

Go to file t

NODE_PROJECTS

step00_helloworld

- .gitignore
- app.ts
- package-lock.json
- package.json
- readme.md
- tsconfig.json

step00a_json_objects

step00b_syntax_error

step00c_type_error

step00d_assignability_error

step01_strong_typing

step02_const_let

step03a_modules

learn-typescript / step00_helloworld /

ziaukhan update 4335518 · last year History

Name	Last commit message	Last commit date
..		
.gitignore	update	last year
app.ts	add step 00 a b c	last year
package-lock.json	update	last year
package.json	update	last year
readme.md	update	last year
tsconfig.json	updated helloworld steps	last year

readme.md

For the latest docs

Hello World Steps:

learn-typescript/step00_helloworld

github.com/panaverse/learn-typescript/blob/master/step00_helloworld/app.ts

panaverse / learn-typescript

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Files

master

Go to file

NODE_PROJECTS

step00_helloworld

.gitignore

app.ts

package-lock.json

package.json

readme.md

tsconfig.json

step00a_json_objects

step00b_syntax_error

step00c_type_error

step00d_assignability_error

step01_strong_typing

step02_const_let

step03a_modules

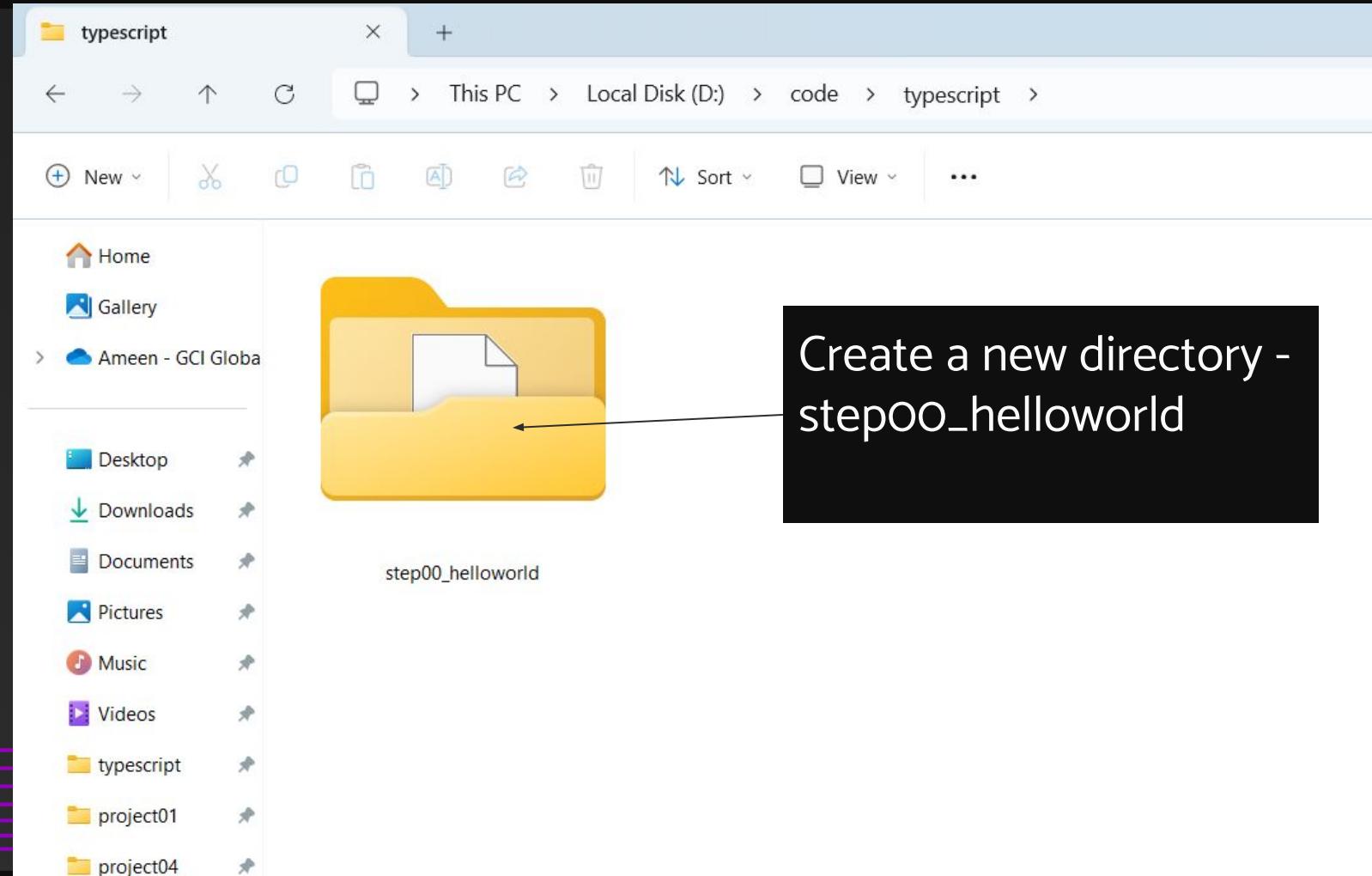
learn-typescript / step00_helloworld / app.ts

ziaukhan add step 00 a b c 538041f · last year History

Code Blame 4 lines (3 loc) · 147 Bytes

```
1 let message = "Hello World"; // Infering Types,  
2 //take your cursor on the variable name  
3 console.log(message);  
4
```

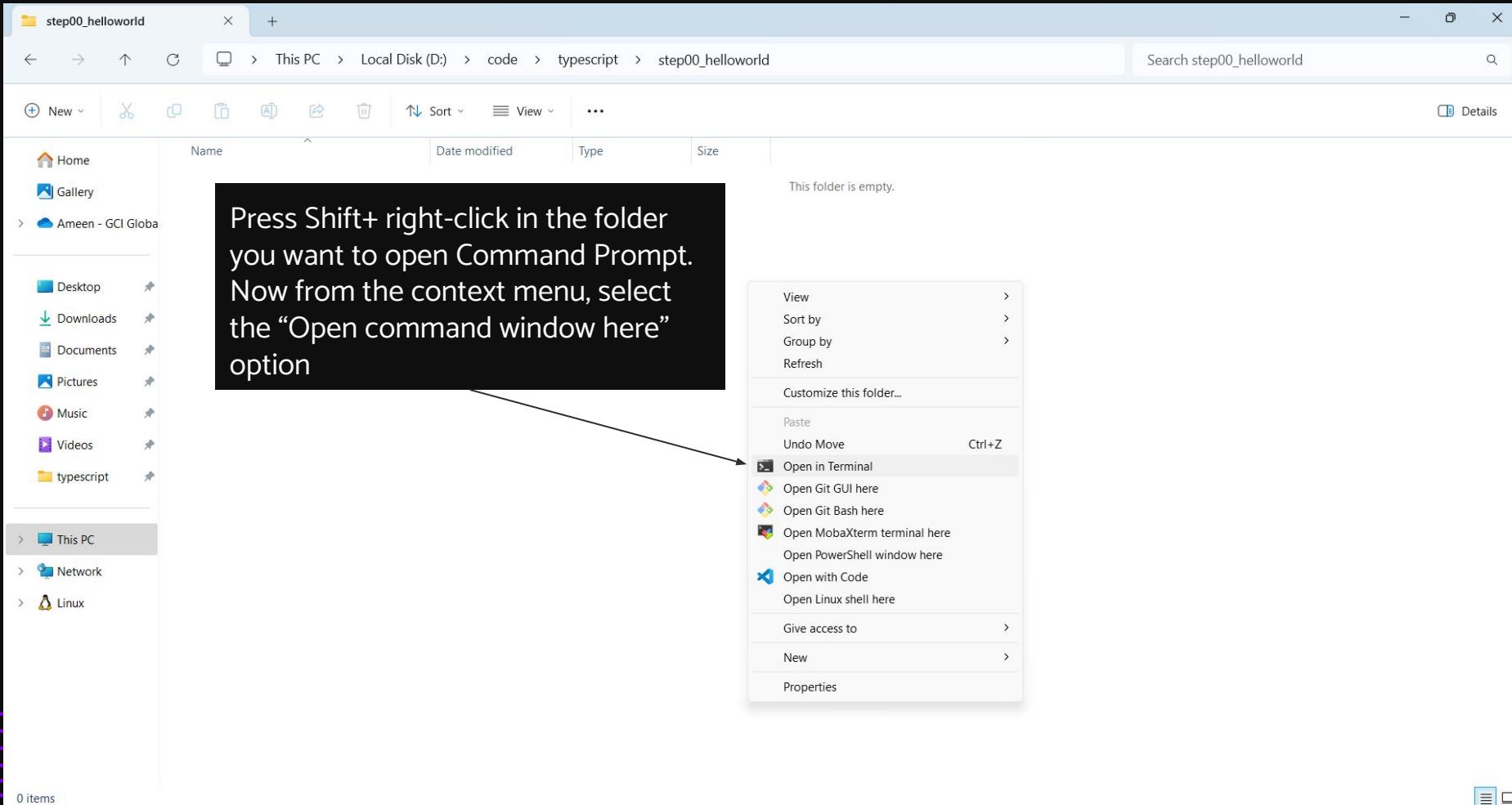
Step00_helloworld

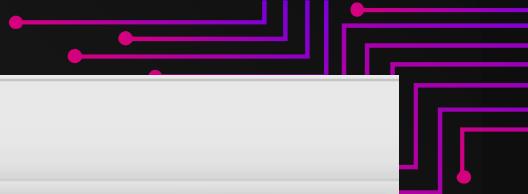


Generate tsconfig.json by giving this command:

Press Shift+ right-click in the folder you want to open Command Prompt. Now from the context menu, select the “Open command window here” option.

`tsc --init`





step00_helloworld X +

Administrator: C:\Windows\S

```
Microsoft Windows [Version 10.0.22621.2715]
(c) Microsoft Corporation. All rights reserved.

D:\code\typescript\step00_helloworld>tsc --init|
```

File Edit Selection View Go Run ... 🔍 step00_helloworld [Administrator] ⚡

EXPLORER ... tsconfig.json X

STEP00_HELLOWORLD tsconfig.json > ...

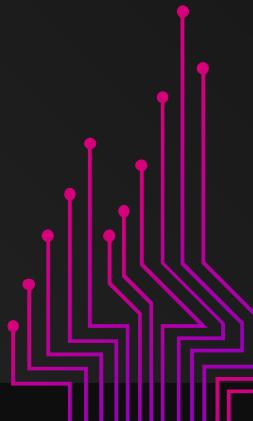
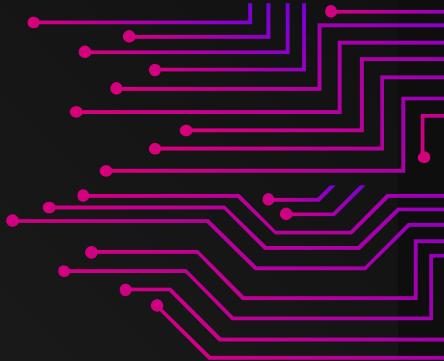
```
1  [
2    "compilerOptions": {
3      /* Visit https://aka.ms/tsconfig to read more about this file */
4
5      /* Projects */
6      // "incremental": true,                                /* Save .tsbuildinfo files to allow for incremental builds */
7      // "composite": true,                                 /* Enable constraints that allow a TypeScript project to reference other projects */
8      // "tsBuildInfoFile": "./.tsbuildinfo",               /* Specify the path to .tsbuildinfo incremental compilation files */
9      // "disableSourceOfProjectReferenceRedirect": true,   /* Disable preferring source files instead of declaration files for project references */
10     // "disableSolutionSearching": true,                  /* Opt a project out of multi-project reference checking */
11     // "disableReferencedProjectLoad": true,              /* Reduce the number of projects loaded automatically */
12
13     /* Language and Environment */
14     "target": "es2016",                                  /* Set the JavaScript language version for emit */
15     // "lib": [],                                       /* Specify a set of bundled library declaration files */
16     // "jsx": "preserve",                               /* Specify what JSX code is generated */
17     // "experimentalDecorators": true,                 /* Enable experimental support for legacy experimental decorators */
18     // "emitDecoratorMetadata": true,                  /* Emit design-type metadata for decorated declarations */
19     // "jsxFactory": "",                            /* Specify the JSX factory function used when target is es2015 or lower */
20     // "jsxFragmentFactory": "",                      /* Specify the JSX Fragment reference used for fragments */
21     // "jsxImportSource": "",                         /* Specify module specifier used to import the JSX runtime */
22     // "reactNamespace": "",                          /* Specify the object invoked for 'createElement' */
23     // "noLib": true,                                 /* Disable including any library files, including Node.js */
24     // "useDefineForClassFields": true,                /* Emit ECMAScript-standard-compliant class field definitions */
25     // "moduleDetection": "auto",                     /* Control what method is used to detect module-f
26
27     /* Modules */
28     "module": "commonjs",                            /* Specify what module code is generated */
29     // "rootDir": "./",                           /* Specify the root folder within your source files */
30     // "moduleResolution": "node10",                /* Specify how TypeScript looks up a file from a module reference */
```

Ln 1, Col 1 Spaces: 2 UTF-8 CRLF {} JSON with Comments

Creating the compiler configuration file - TypeScript

To define the configuration for
the TypeScript compiler, create a file called
`tsconfig.json`

I describe the TypeScript
compiler in chapter 5





```
Microsoft Windows [Version 10.0.22621.2715]
(c) Microsoft Corporation. All rights reserved.
```

```
D:\code\typescript\step00_helloworld>tsc --init
```

```
Created a new tsconfig.json with:
```

```
target: es2016
module: commonjs
strict: true
esModuleInterop: true
skipLibCheck: true
forceConsistentCasingInFileNames: true
```

```
You can learn more at https://aka.ms/tsconfig
```

```
D:\code\typescript\step00_helloworld>npm init -y
```

Make it a Node.js project by giving the following command:

`npm init -y`

```
Administrator: C:\WINDOWS' X + ^
```

```
Microsoft Windows [Version 10.0.22621.2715]
(c) Microsoft Corporation. All rights reserved.
```

```
D:\code\typescript\step00_helloworld>tsc --init
```

```
Created a new tsconfig.json with:
```

```
target: es2016
module: commonjs
strict: true
esModuleInterop: true
skipLibCheck: true
forceConsistentCasingInFileNames: true
```

```
You can learn more at https://aka.ms/tsconfig
```

```
D:\code\typescript\step00_helloworld>npm init -y
Wrote to D:\code\typescript\step00_helloworld\package.json:
```

```
{
  "name": "step00_helloworld",
  "version": "1.0.0",
  "description": "",
  "main": "index.js",
  "scripts": {
    "test": "echo \\\"Error: no test specified\\\" && exit 1"
  },
  "keywords": [],
  "author": "",
  "license": "ISC"
}
```

```
D:\code\typescript\step00_helloworld>
```

Initializing The Project Folder - NodeJS

The npm init command creates a package.json file, which is used to keep track of the packages required by the project and also to configure the development tools.

```
D:\code\typescript\step00_helloworld>npm i @types/node -D  
added 2 packages, and audited 3 packages in 2s  
found 0 vulnerabilities  
D:\code\typescript\step00_helloworld>
```

Install types for Node.js

npm i @types/node -D

File Edit Selection View Go Run ...

← →

step00_helloworld [Administrator]



EXPLORER

...

STEP00_HELLOWORLD

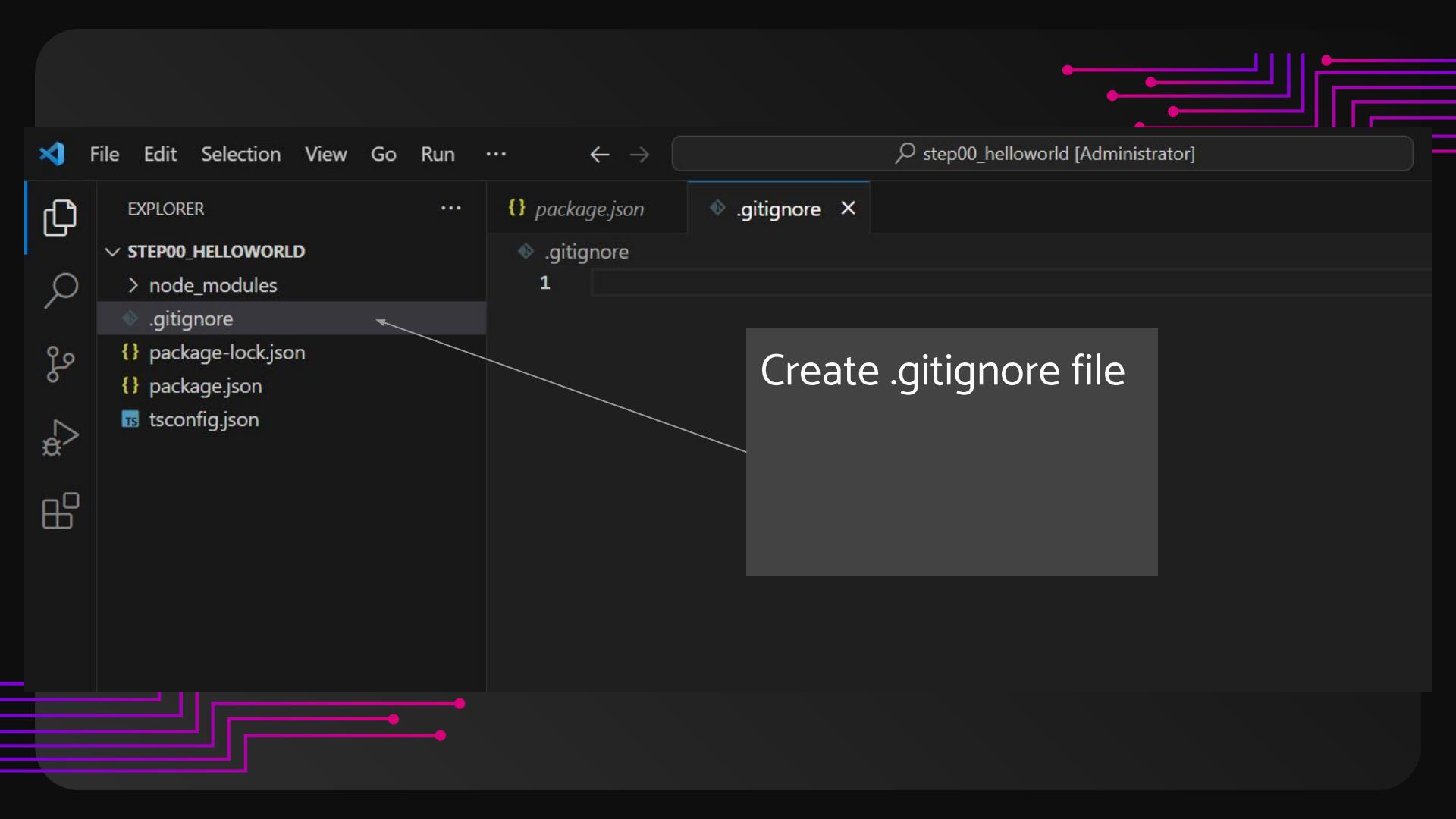
- > node_modules
- { package-lock.json
- { package.json
- tsconfig.json



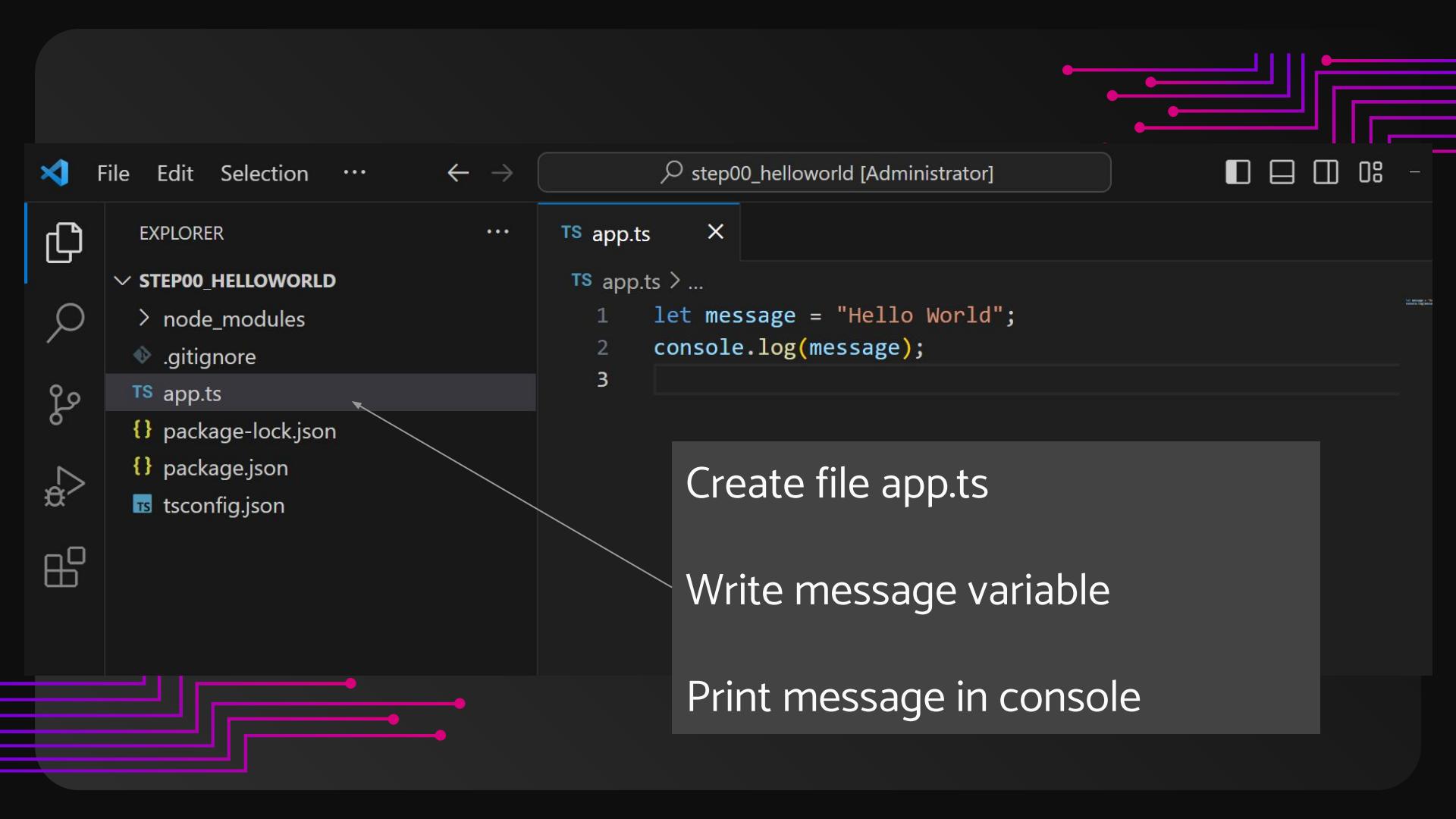
{ package.json X

{ package.json > ...

```
1  {
2    "name": "step00_helloworld",
3    "version": "1.0.0",
4    "description": "",
5    "main": "index.js",
6    ▶ Debug
7    "scripts": {
8      "test": "echo \\\"Error: no test specified\\\" && exit 1"
9    },
10   "keywords": [],
11   "author": "",
12   "license": "ISC",
13   "devDependencies": {
14     "@types/node": "^20.10.1"
15   }
16 }
```



Create .gitignore file



EXPLORER

STEP00_HELLOWORLD

> node_modules

.gitignore

TS app.ts

{ package-lock.json

{ package.json

tsconfig.json

TS app.ts

TS app.ts > ...

```
1 let message = "Hello World";
2 console.log(message);
3
```

Create file app.ts

Write message variable

Print message in console



Administrator: C:\WINDOWS' X



```
D:\code\typescript\step00_helloworld>tsc
```

```
D:\code\typescript\step00_helloworld>
```

Running the compiler
Transpile typescript
to javascript



File Edit Selection ...

← →

🔍 step00_helloworld [Administrator]



EXPLORER

...

TS app.ts

JS app.js

X

JS app.js > ...

```
1  "use strict";
2  let message = "Hello World";
3  console.log(message);
4  |
```



STEP00_HELLOWORLD

> node_modules

↳ .gitignore

JS app.js

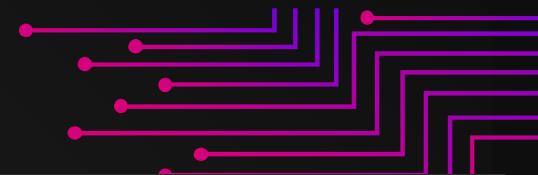
TS app.ts

{ } package-lock.json

{ } package.json

TS tsconfig.json

Compiling and Executing



Administrator: C:\WINDOWS' + v

```
D:\code\typescript\step00 hello-world>tsc
```

```
D:\code\typescript\Hello World app
```

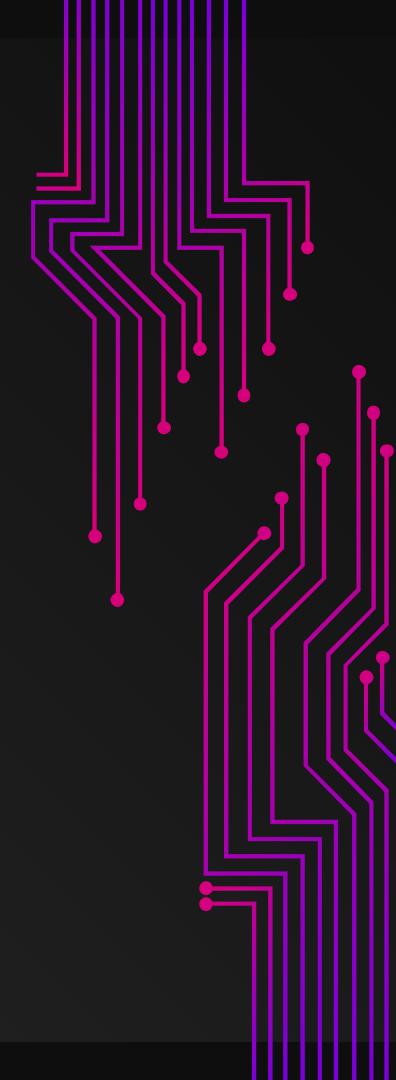
```
D:\code\typescript\st
```

Congratulations

04

Hands-on Exercises

Getting Started Exercises with TypeScript and Node.js



Getting Started Exercises with TypeScript and Node.js

Note: Try these short programs to get some firsthand experience with TypeScript and Node.js. You might want to create a new folder for each exercise to keep them organized. Create a single Github repository to commit the code for these exercises and once finished submit the URL of the repo.

Assignment

Competition

Getting Started Exercises with TypeScript and Node.js

Who will be the first to complete TypeScript and Node.js exercises ?

https://github.com/panaverse/learn-typescript/blob/master/NODE_PROJECTS/getting-started-exercises.md

learn-typescript/NODE_PROJECT x +

github.com/panaverse/learn-typescript/blob/master/NODE_PROJECTS/getting-started-exercises.md

panaverse / learn-typescript

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Files

master +

Go to file t

NODE_PROJECTS

step00_helloworld

step00a_json_objects

step00b_syntax_error

step00c_type_error

step00d_assignability_error

step01_strong_typing

step02_const_let

step03a_modules

step03b_native_ECMAScript_mo...

step03c_import_inquirer_ECMAS...

step03d_chalk

step04_unions_literals

step05a_objects

step05b_object_aliased

step05c_structural_typing_object...

learn-typescript / NODE_PROJECTS / getting-started-exercises.md

ziaukhan add node projects fcd5595 · 3 months ago History

Preview Code Blame 333 lines (202 loc) · 16.7 KB Raw

Getting Started Exercises with TypeScript and Node.js

Note: Try these short programs to get some firsthand experience with TypeScript and Node.js. You might want to create a new folder for each exercise to keep them organized. Create a single Github repository to commit the code for these exercises and once finished submit the URL of the repo.

1. Install [Node.js](#), [TypeScript](#) and [VS Code](#) on your computer.
2. Personal Message: Store a person's name in a variable, and print a message to that person. Your message should be simple, such as, "Hello Eric, would you like to learn some Python today?"
3. Name Cases: Store a person's name in a variable, and then print that person's name in lowercase, uppercase, and titlecase.
4. Famous Quote: Find a quote from a famous person you admire. Print the quote and the name of its author. Your output should look something like the following, including the quotation marks:

Albert Einstein once said, "A person who never made a mistake never tried anything new."
5. Famous Quote 2: Repeat Exercise 4, but this time store the famous person's name in a variable called `famous_person`. Then compose your message and store it in a new variable called `message`. Print your message.

Project competition

TypeScript Node Projects

Who will be the first to complete TypeScript Node Projects ?

[https://github.com/panaverse/learn-typescript/tree/
master/NODE_PROJECTS](https://github.com/panaverse/learn-typescript/tree/master/NODE_PROJECTS)

Files

master



Go to file

NODE_PROJECTS

- > step00_helloworld
- > step00a_json_objects
- > step00b_syntax_error
- > step00c_type_error
- > step00d_assignability_error
- > step01_strong_typing
- > step02_const_let
- > step03a_modules
- > step03b_native_ECMAScript_mo...
- > step03c_import_inquirer_ECMAS...
- > step03d_chalk
- > step04_unions_literals
- > step05a_objects
- > step05b_object_aliased
- > step05c_structural_typing_object...
- > step05d_nested_objects
- > step05e_intersection_types

learn-typescript / NODE_PROJECTS /

Add file



ziaukhan add node projects

fcd5595 · 3 months ago

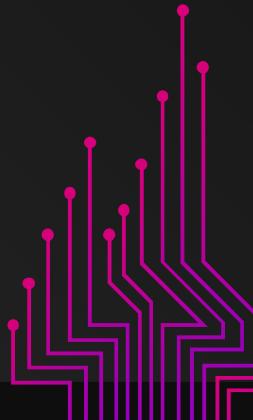
History

Name	Last commit message	Last commit date
..		
project00_calculator	add node projects	3 months ago
project01_number_guessing-game	add node projects	3 months ago
project02_atm	add node projects	3 months ago
project03_todo_list	add node projects	3 months ago
project04_currency_converter	add node projects	3 months ago
project05_word_counter	add node projects	3 months ago
project06_student_management_system	add node projects	3 months ago
project07_adventure_game	add node projects	3 months ago
project08_quiz	add node projects	3 months ago
project09_countdown_timer	add node projects	3 months ago
project10_oop	add node projects	3 months ago
project11_oop_mybank	add node projects	3 months ago
LICENSE	add node projects	3 months ago

Submit your projects here

TypeScript Project Submission Form

We'll share the link with you later.



Documentation



TypeScript Documentation

Get Started

Quick introductions based on your background or preference.

[TS for the New Programmer](#)

[TypeScript for JS Programmers](#)

[TS for Java/C# Programmers](#)

[TS for Functional Programmers](#)

[TypeScript Tooling in 5 minutes](#)

Handbook

A great first read for your daily TS work.

[The TypeScript Handbook](#)

[The Basics](#)

[Everyday Types](#)

[Narrowing](#)

[More on Functions](#)

[Object Types](#)

Type Manipulation

[Creating Types from Types](#)

[Generics](#)

[Keyof Type Operator](#)

[Typeof Type Operator](#)

[Indexed Access Types](#)

Reference

Deep dive reference materials.

[Utility Types](#)

[Cheat Sheets](#)

[Decorators](#)

[Declaration Merging](#)

[Enums](#)

[Iterators and Generators](#)

[JSX](#)

[Mixins](#)

[Namespaces](#)

[Namespaces and Modules](#)

[Symbols](#)

[Triple-Slash Directives](#)

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