# TypeScript Fundamentals

Olgun DUTKAN – UI / UX Team in HAVELSAN

odutkan@havelsan.com.tr

```
console.info(`Hello, I am Olgun DUTKAN`)
// Hello, I am Olgun DUTKAN
```

# Agenda

1. Introduction to Typescript
2. Setting up Typescript Development Environment
3. Typescript latest features-concepts

# What is TypeScript?

- The TypeScript programming language is a superset of JavaScript that adds types to JavaScript using a set of tools called a type system.



# What is TypeScript?

- It was designed and developed by Anders Hejlsberg (designer of C#) at Microsoft
- First, we write TypeScript code in files with the extension .ts.
- The developer can Identify mistakes during development/compilation step (scope of the variable, function parameter, variable datatype mismatch, etc.)
- We run our code through the TypeScript transpiler. The transpiler will check that the code adheres to TypeScript's standards, and it will display errors when it does not.
- If the TypeScript code can be converted into working JavaScript, the transpiler will output a JavaScript version of the file (.js).

# A brief history of TypeScript

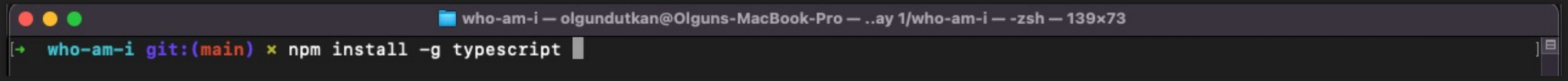
# Why TypeScript?

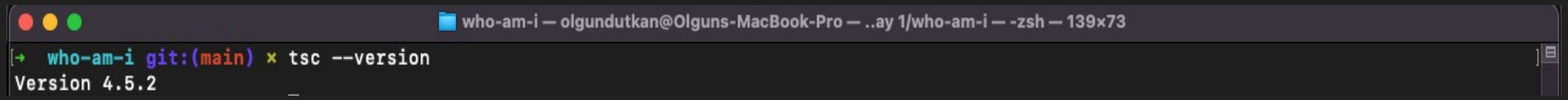
- Types are documentation
- You're not locked in
- We're all processing our JavaScript before running it anyway
- Interfaces let you remove data clumps
- It makes the tooling better

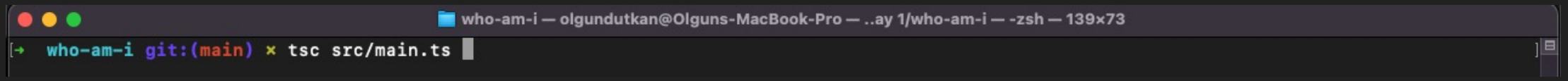
# Components of TypeScript

- Language – syntax, keywords, and type annotations
- TSC TypeScript Compiler – converts TypeScript to JavaScript equivalent
- TLS TypeScript Language Service – Supports editor operations like static typing and type inference system, statement completion, code formatting, etc.

# Development Environment Setup

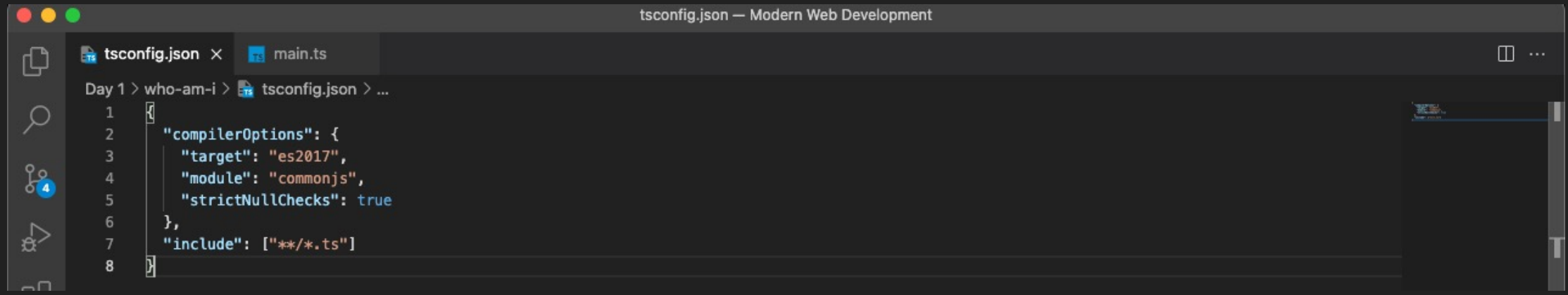


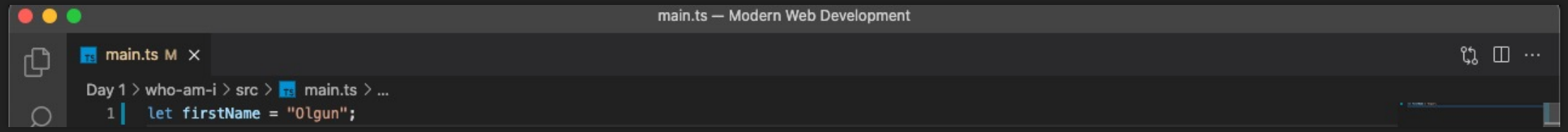



# The tsconfig.json file

- The **tsconfig.json** file is always placed in the root of your project and you can customize what rules you want the TypeScript compiler to enforce.



# What TypeScript code looks like?




# TypeScript Playground

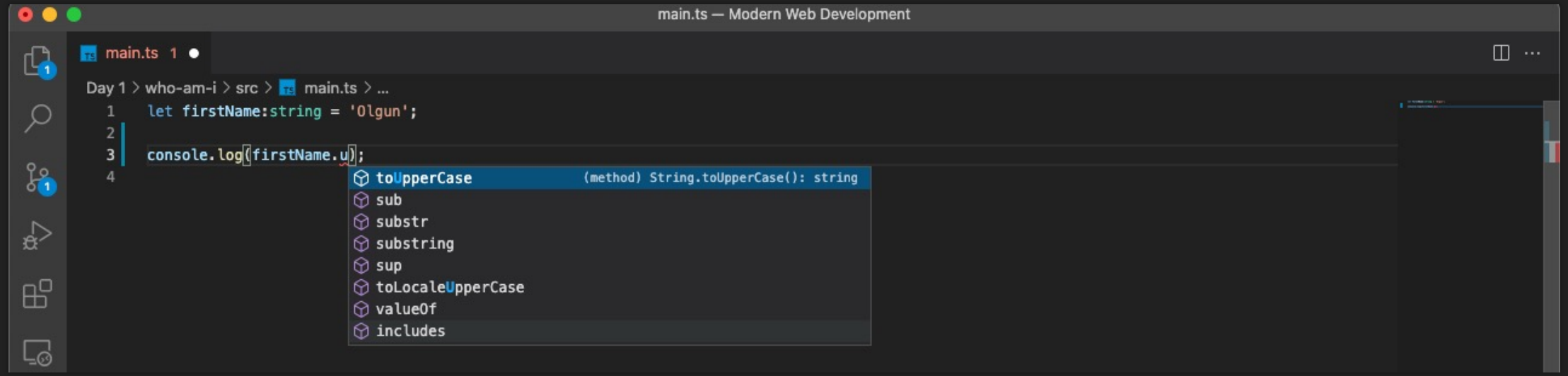
- Write and test Typescript without download or install anything:

  https://www.typescriptlang.org/play

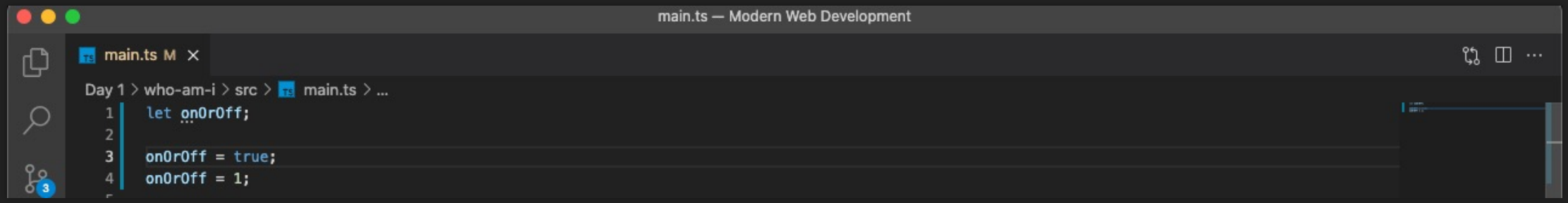
# Type Inferences

- boolean
- number
- null
- string
- undefined

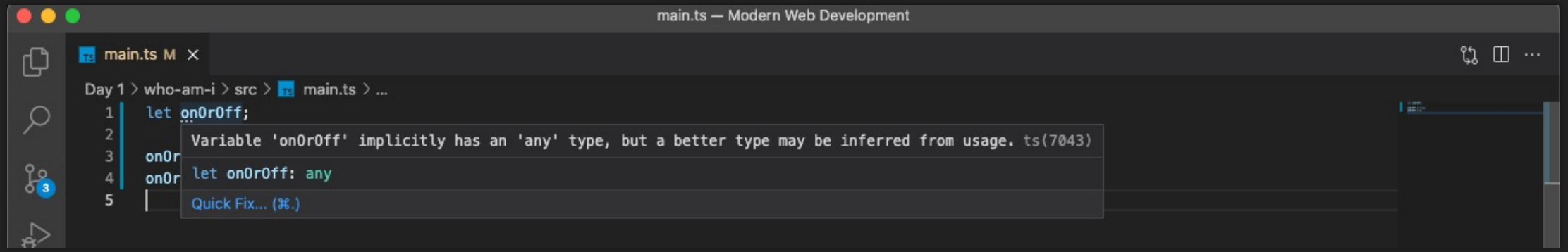
# Type Shapes


main.ts — Modern Web Development
main.ts 1
Day 1 > who-am-i > src > main.ts > ...
1 let firstName:string = 'Olgun';
2
3 console.log(firstName.u);
4
toUpperCase (method) String.toUpperCase(): string
sub
substr
substring
sup
toLocaleUpperCase
valueOf
includes

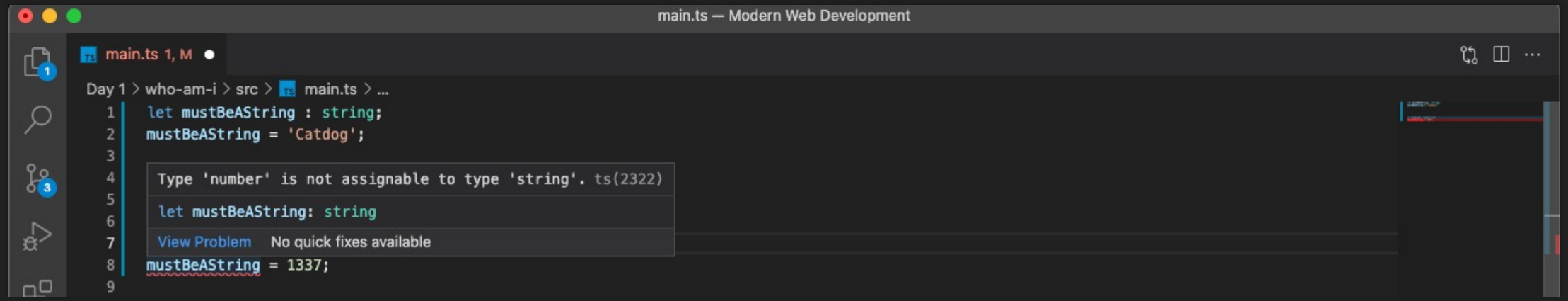
# Type Any


main.ts — Modern Web Development
main.ts M
Day 1 > who-am-i > src > main.ts > ...
1 let onOrOff;
2
3 onOrOff = true;
4 onOrOff = 1;

# Type Any

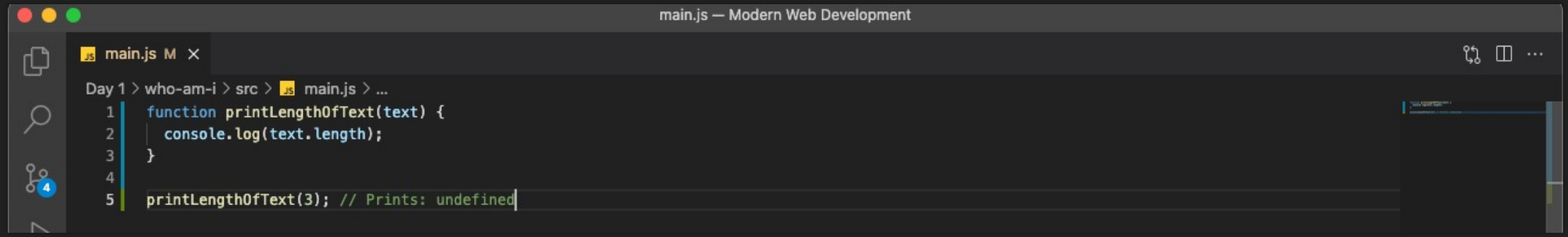

main.ts — Modern Web Development
main.ts M
Day 1 > who-am-i > src > main.ts > ...
1 let onOrOff;
2
3 onOr
4 onOr
5
Variable 'onOrOff' implicitly has an 'any' type, but a better type may be inferred from usage. ts(7043)
let onOrOff: any
Quick Fix... (⌘.)

# Variable Type Annotations

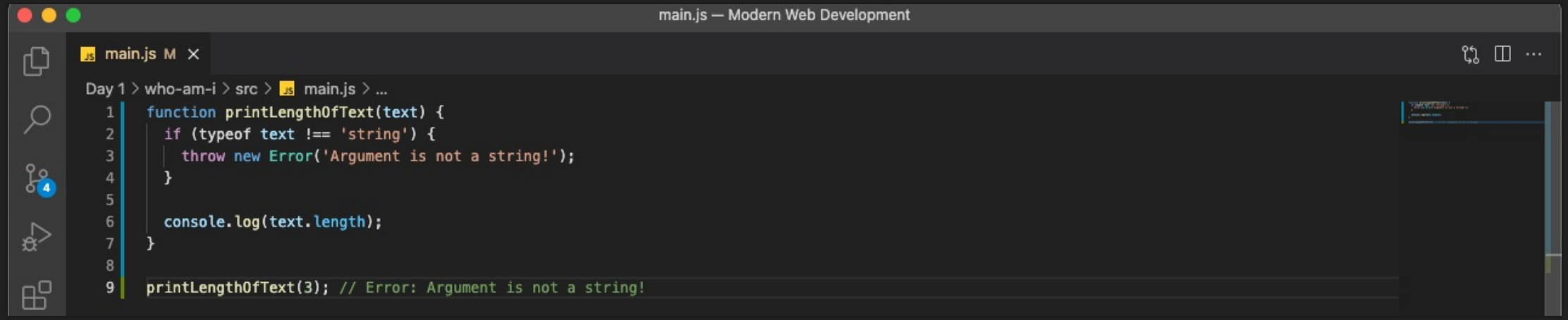


```
console.info(`Review`)
// Review
```

# Functions

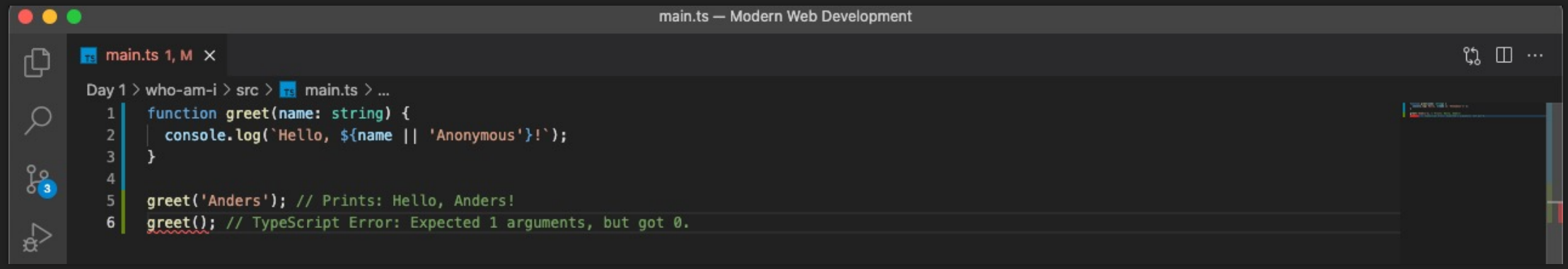

main.js — Modern Web Development
main.js M
Day 1 > who-am-i > src > main.js > ...
1 function printLengthOfText(text) {
2 console.log(text.length);
3 }
4
5 printLengthOfText(3); // Prints: undefined

# Functions

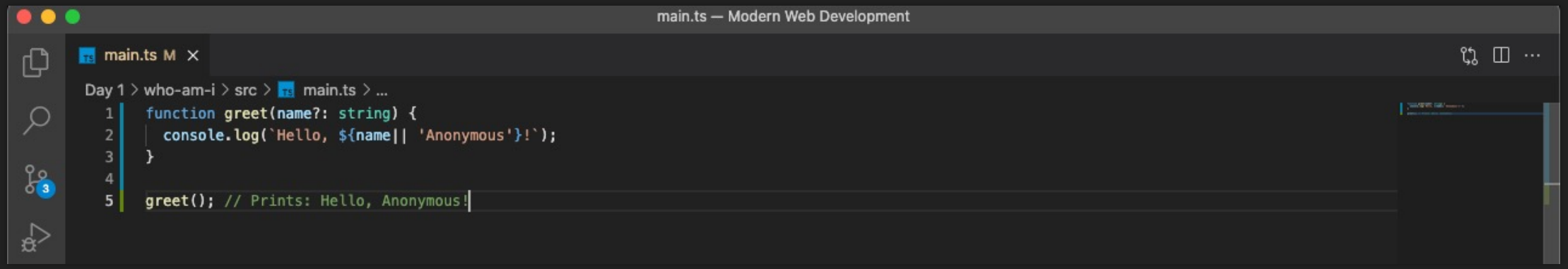

main.js — Modern Web Development
main.js M
Day 1 > who-am-i > src > main.js > ...
1 function printLengthOfText(text) {
2 if (typeof text !== 'string') {
3 throw new Error('Argument is not a string!');
4 }
5
6 console.log(text.length);
7 }
8
9 printLengthOfText(3); // Error: Argument is not a string!

# Parameter Type Annotations

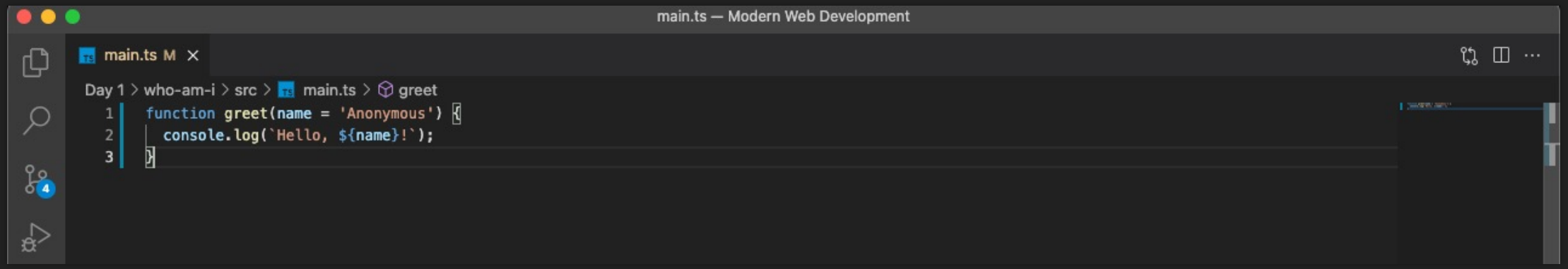
# Optional Parameters



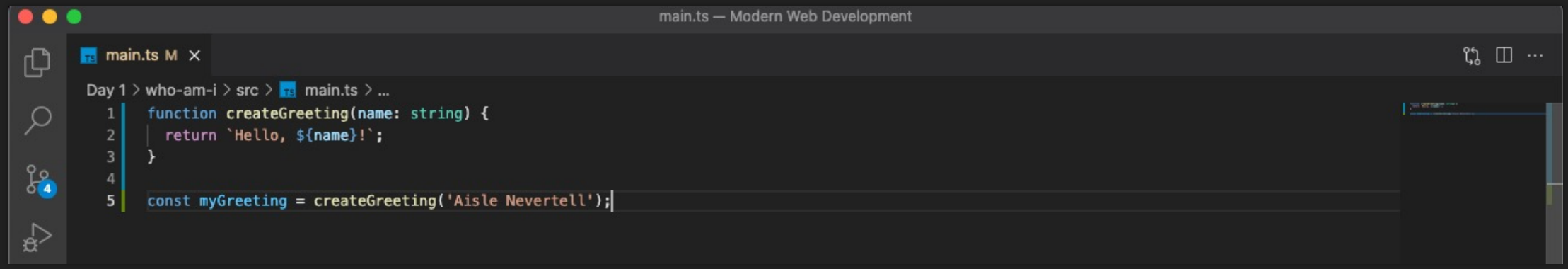
# Optional Parameters



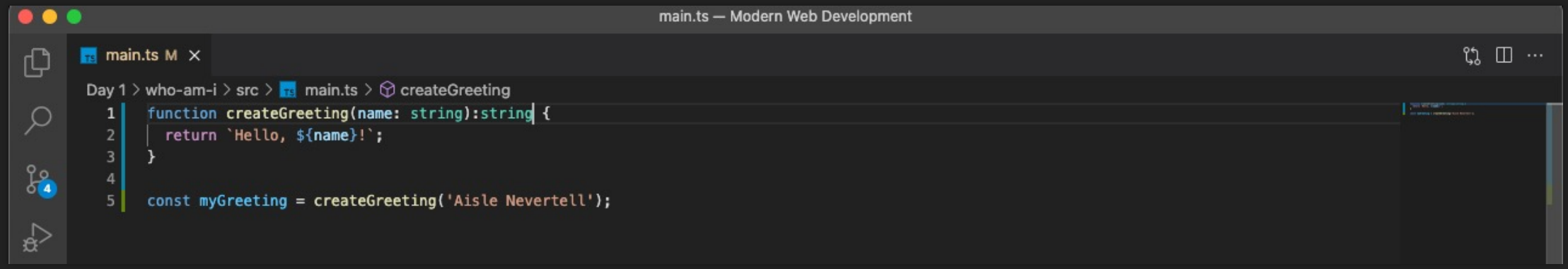
# Default Parameters



# Inferring Return Types

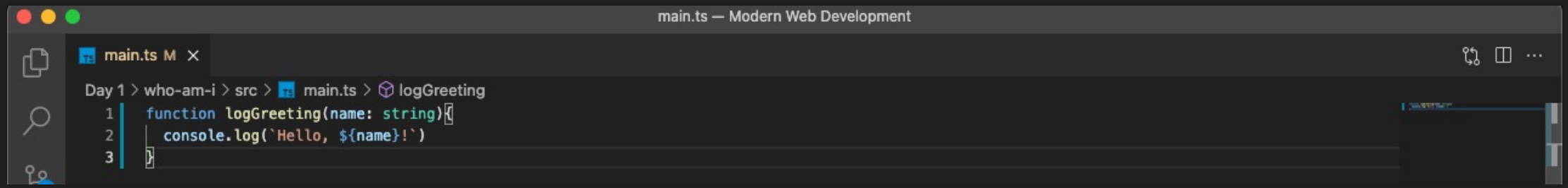


# Explicit Return Types

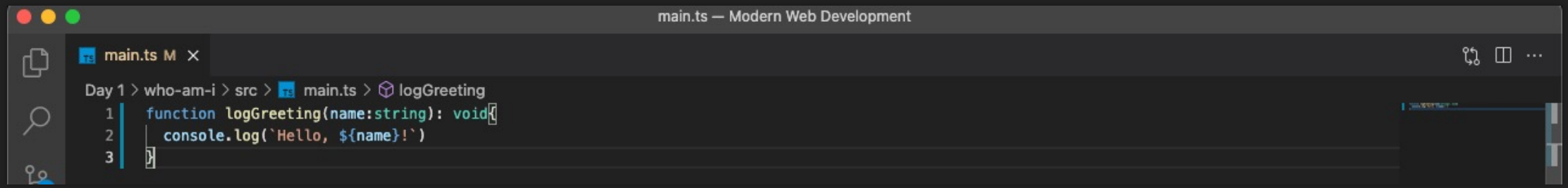


# Explicit Return Types

# Void Return Type



# Void Return Type



```
console.info(`Review`)
// Review
```

# Array Type Annotations

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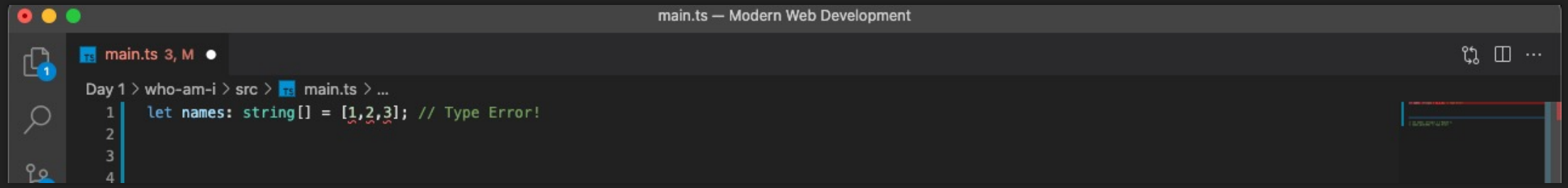
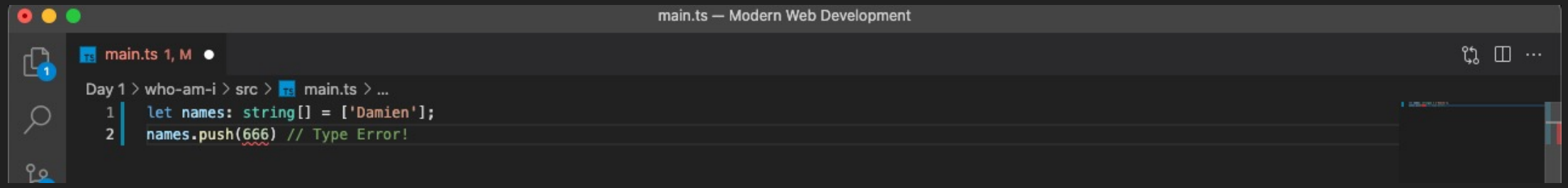
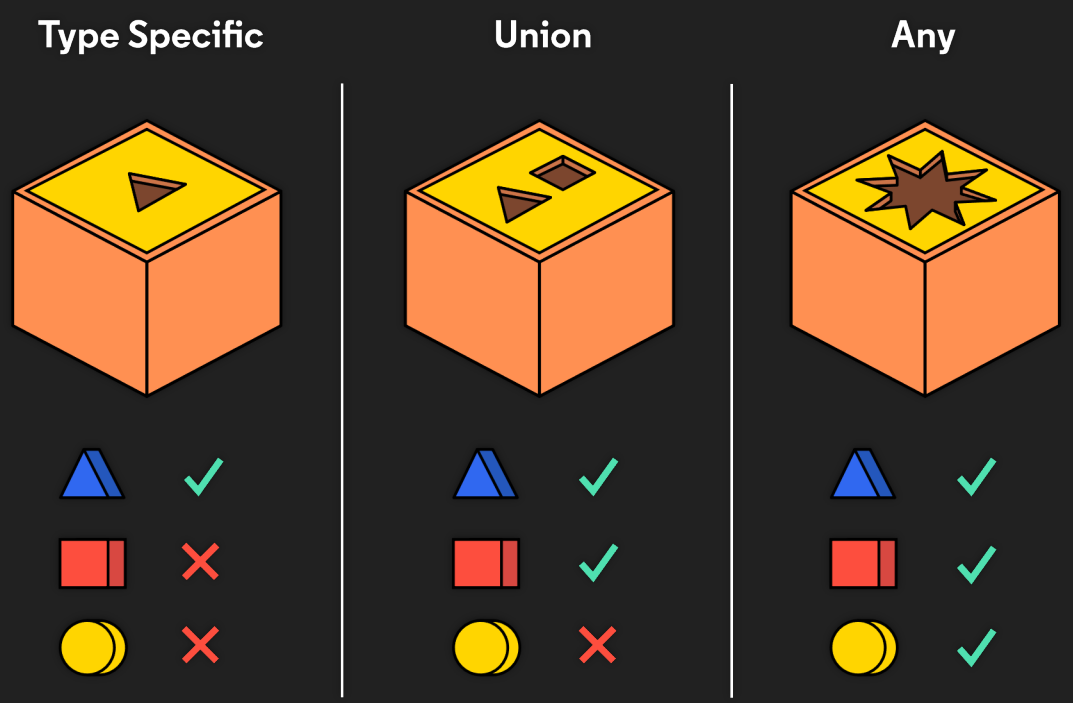
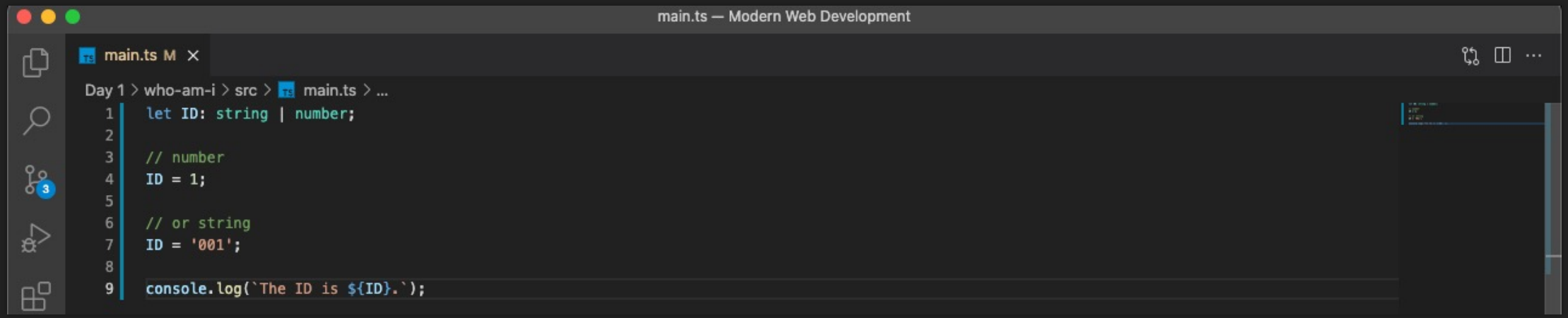


# Union Types



# Union Types


main.ts — Modern Web Development
main.ts M
Day 1 > who-am-i > src > main.ts > ...
1 let ID: string | number;
2
3 // number
4 ID = 1;
5
6 // or string
7 ID = '001';
8
9 console.log(`The ID is ${ID}.`);

# References


- https://www.codecademy.com/learn/learn-typescript
- https://www.tutorialspoint.com/typescript/index.htm

# Thanks for listening…