



1. Introduction

1.1 What is TypeDoc?

TypeDoc is a documentation generator specifically designed for **TypeScript projects**. It reads the TypeScript source code and produces a structured HTML documentation website. Unlike JSDoc, which requires writing explicit comment tags for types, TypeDoc automatically extracts type information directly from the TypeScript compiler, making documentation easier, more accurate, and consistent.

1.2 Basic Syntax

TypeDoc supports documentation through **TSDoc-style comments** (similar to JSDoc). These comments are placed above code blocks such as functions, classes, and variables.

Example:

```
/**
 * Adds two numbers together.
 * @param a First number
 * @param b Second number
 * @returns Sum of a and b
 */
export function add(a: number, b: number): number {
  return a + b;
}

/**
 * Multiplies two numbers.
 * @param a First number
 * @param b Second number
 * @returns Product of a and b
 */
export function multiply(a: number, b: number): number {
  return a * b;
}
```

1.3 Tags and Types

1.3.1 Function & Parameter Related

- @param – Describes a function parameter
- @returns – Describes the return value

Example:

```
/**
 * Calculates area of a rectangle.
 * @param length - The length of the rectangle
 * @param width - The width of the rectangle
 * @returns Area as number
 */
function area(length: number, width: number): number {
  return length * width;
}
```

1.3.2 Variable & Type Related

- `@type` – Specifies the type of a variable
- `@defaultValue` – Notes the default value

Example:

```
/**
 * Counter variable
 * @type {number}
 * @defaultValue 0
 */
let counter: number = 0;
```

1.3.3 Class & Object Related

- `@class` – Describes a class
- `@property` – Documents class properties
- `@method` – Documents class methods

2. Installation

2.1 Prerequisites

- **Node.js** and **npm** must be installed
- A **TypeScript project** should already exist

2.2 Installation Steps

2.2.1 Opened terminal in project root.

Run: *npm install --save-dev typedoc*

2.2.2 Verify installation with:

npx typedoc --version

3. Usage

Generate documentation with:

```
npx typedoc --out docs src
```

3.1 docs/ → output folder containing HTML docs

src/ → your source code folder

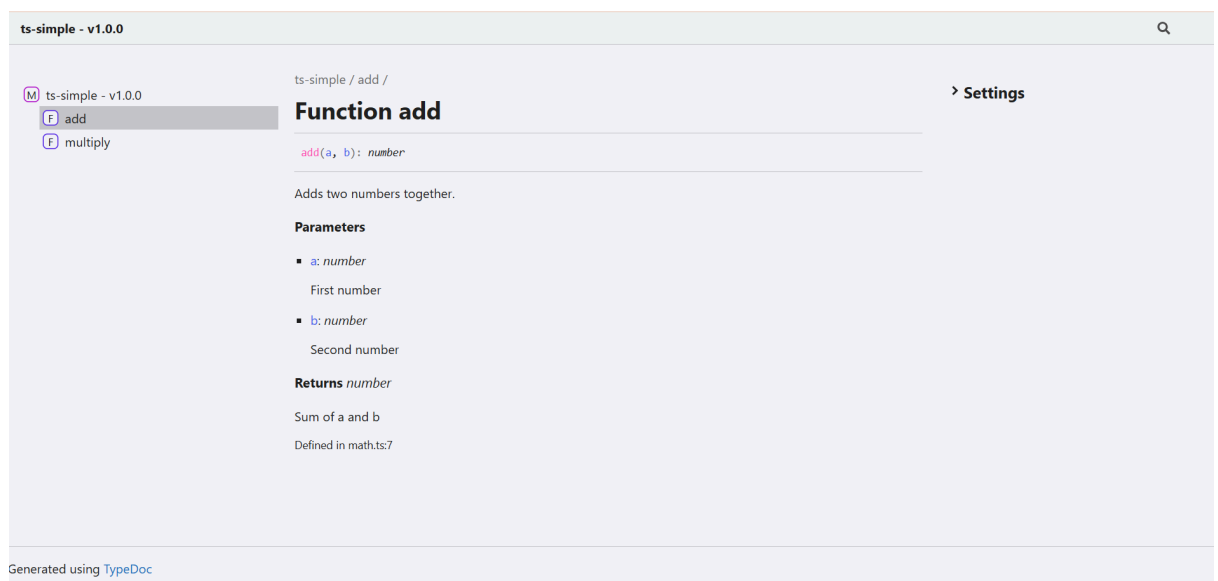
3.2 Open [docs/index.html](#) in a browser to view documentation.

Optional: Add a script in [package.json](#):

```
{
  "scripts": {
    "docs": "typedoc --out docs src"
  }
}
```

Now, can run:

```
npm run docs
```



4. Advantages and Disadvantages of TypeDoc

4.1 Advantages

- Automatically extracts types from TypeScript (less manual work)

- Generates clear, professional API documentation
- Supports custom themes and plugins
- Easy integration with CI/CD pipelines
- Keeps docs consistent with code, reducing human error

4.2 Disadvantages

- Works only with TypeScript (not plain JavaScript)
- Large projects may generate heavy docs
- Requires good TypeScript knowledge for best results
- Limited styling options compared to full static site generators like Docusaurus

5. Conclusion

TypeDoc is a powerful and reliable documentation tool tailored for TypeScript projects. By leveraging TypeScript's type system, it minimizes manual effort while ensuring accurate and up-to-date documentation. It is especially useful for projects that need to share code libraries, APIs, or SDKs with other developers. Although it may not be as flexible as full-fledged documentation site generators, for TypeScript-based applications it provides an efficient balance between automation and clarity.