Documentation Tool: TypeDoc

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Introduction

1. What is TypeDoc?

TypeDoc is a documentation generator for TypeScript and JavaScript projects. It extracts comments from your source code and creates a static website. It supports JSDoc-style comments and works great for Node.js-based backends.

2. Documentation

Click

Installation & Usage

1. How to install TypeDoc?

Click

Basic command:
npm install typedoc --save-dev

2. How to generate TypeDoc documentation?

Click

Basic usage:

```
npx typedoc src/index.ts
```

We can also create a typedoc.json file for config:
```
{
  "entryPoints": ["src/index.ts"],
  "out": "docs",
  "includeVersion": true
}
```

3.Tags

TypeDoc supports a specific set of tags. Many JSDoc tags are not supported because the TypeScript compiler can infer the same information directly from code. Any tags which are not recognized will result in a warning being emitted. TypeDoc will still parse the documentation comment, using context clues to determine the likely intended tag type.

3.1.Some Basics Tag

Defining Tags

```
{
    "$schema":
"https://developer.microsoft.com/en-us/json-schemas/tsdoc/v0/tsdoc.schema.json",
    "extends": ["typedoc/tsdoc.json"],
    "noStandardTags": false,
    "tagDefinitions": [
        {
            "tagName": "@customTag",
            "syntaxKind": "modifier"
        }
    ]
}
```

Block Tags

```
/**
 * Summary
 *
 * @remarks
 * Additional details
 *
 * @example
 * ```ts
 * factorial(3) // => 6
 * ```
 */
```

4.Source Code

src/index.ts

```
/**
 * Represents a user in the system.
 * @typedef {Object} User
 * @property {string} name - The name of the user.
 * @property {number} age - The age of the user.
 */

/**
 * Adds two numbers together.
 * @param {number} a - The first number to add.
 * @param {number} b - The second number to add.
 * @returns {number} The sum of the two numbers.
 */
function add(a: number, b: number): number {
 return a + b;
}
```

```
/**

 * Returns a greeting message.
 * @param {User} user - The user to greet.
 * @returns {string} The greeting message.
 */
function greet(user: User): string {
  return `Hello, ${user.name}! You are ${user.age} years old.`;
}

const user: User = { name: "Alice", age: 25 };
console.log(greet(user));
```

typedoc.json

```
{
  "entryPoints": ["src/index.ts"],
  "out": "docs",
  "includeVersion": true
}
```

Pros and Cons of TypeDoc

1. Advantage

- **Built for TypeScript and JavaScript**
  TypeDoc is specifically designed to work seamlessly with TypeScript and also supports JSDoc comments in JavaScript.
- **Automatic API documentation generation**
  Generates clean, structured documentation directly from your source code and comments.

- **Standard JSDoc syntax support**
  No need to learn a new syntax if you're already documenting with /** */ JSDoc comments.
- **Modular and scalable output**
  Automatically organizes your code into modules, classes, interfaces, and functions.
- **HTML and JSON output formats**
  TypeDoc can generate static HTML files for web documentation and JSON for further integration.
- **Extensible with themes and plugins**
  Developers can customize the appearance and functionality of the output using themes or custom plugins.

2. Disadvantage

- **Less effective for non-TypeScript codebases**
  Without TypeScript types, the generated documentation may lack detail and structure.
- **Limited narrative documentation support**
  TypeDoc focuses on API documentation and is not suited for writing conceptual guides or tutorials.
- **Basic default theme**
  While clean, the default styling is minimal and may require customization for professional branding.
- **Markdown support is limited in doc comments**
  Only basic Markdown is supported in comment descriptions—rich formatting options are limited.
- **Not designed for full-site documentation**
  Lacks built-in support for standalone custom pages like installation guides or contributing docs.

Despite these limitations, **TypeDoc remains a reliable and efficient tool** for generating API documentation for TypeScript and JavaScript projects.

Summary:

TypeDoc is a documentation generator designed for TypeScript and JavaScript projects. It automatically extracts comments from the source code and generates a clean, well-organized static website to showcase the project's API. The tool works seamlessly with Node.js backends and utilizes TypeScript's type system to produce detailed and accurate documentation.

TypeDoc supports JSDoc-style comments and organizes the documentation into modules, classes, functions, and interfaces for easy navigation. It generates documentation in HTML and JSON formats and allows for customization through configuration files, themes, and plugins. The tool is ideal for TypeScript developers, leveraging type information for more comprehensive documentation.