Developing WinCC Unified JavaScript code and checking style guide with Visual Studio Code

WinCC Unified V17 / V18, Scripting

https://support.industry.siemens.com/cs/ww/en/view/109801600

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1 Introduction

1.1 Overview

Visual Studio Code is a powerful code editor offering a comprehensive auto-completion function.

Furthermore, Visual Studio Code can use the style guide configuration (ESLinter[1]) that we supply to offer verification and automatic correction of programming style guides.

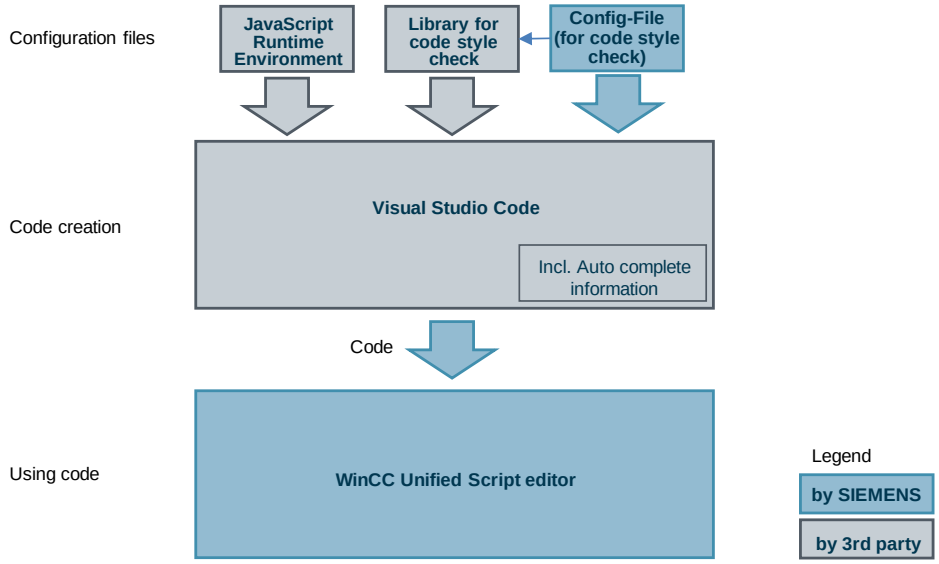
The application example will demonstrate how to use the advantages of a source text editor with Visual Studio Code. This will help you write clean and legible code.

If multiple developers are working on scripts, they will create uniform code.

1.2 Principle of operation

Visual Studio Code is used together with configuration files as an environment for writing code. This code can then be copied into the TIA Portal development environment. This ensures that the code in TIA Portal is legible and uniform.

Figure 1-1



[1] ES stands for Ecmascript, essentially JavaScript standardization. Linter is a code analysis tool.

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1.3 Components used

The following hardware and software components were used to create this application example:

Table 1-1

Component	Quantity	Item number	Note
WinCC Unified Engineering V17	1	6AV2153-....1-7	
WinCC Unified Engineering V18	1	6AV2153-....1-8	
Visual Studio Code	1	https://code.visualstudio.com/Download	
Node.js	1	https://nodejs.org/en/download/	

This application example consists of the following components:

Table 1-2

Component	File name	Note
Documentation	Autocomplete in Visual Studio Code and scripting style guide.pdf	This document
Styleguide configuration for Visual Studio Code	Styleguide_Configuration_V18.zip Styleguide_Configuration_V17.zip	

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2 Setting up the development environment

2.1 Installing Visual Studio Code

Microsoft's Visual Studio Code will be used as a development environment here.
Visual Studio Code is open source and can be downloaded from the following link:
https://code.visualstudio.com/Download

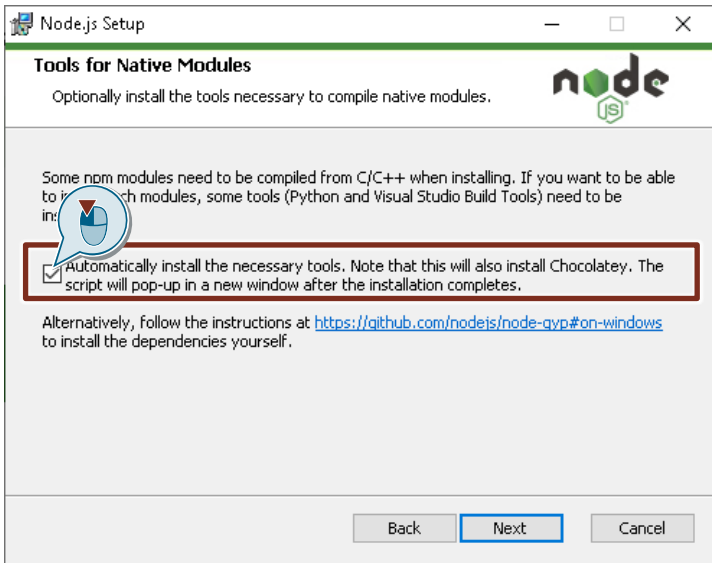
1. Download the program. Make sure to choose the installation file that matches your operating system.
2. Install Visual Studio Code.
   You do not need to launch Visual Studio Code.

2.2 Installing Node.js

You can download Node.js at the following link:
https://nodejs.org/en/download/

1. Download the program. Make sure to choose the installation file that matches your operating system.
2. Start the installation.
3. In the installation step shown below, select the highlighted option.

Figure 2-1



4. Continue the installation steps.
   At the end, a PowerShell instance will open and the final installation steps will be performed.

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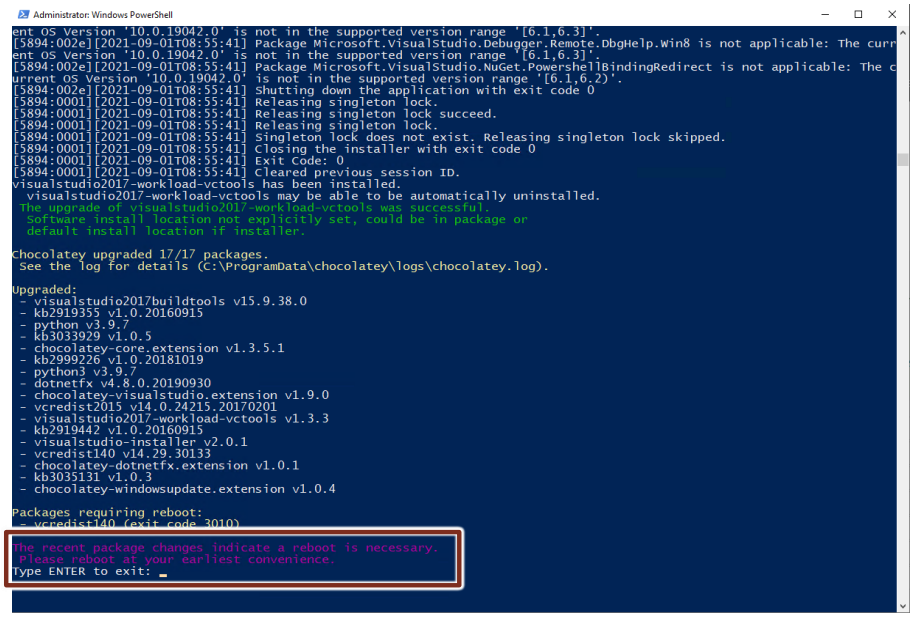
5. In the PowerShell window, confirm the completion of the installation with "Enter".

Figure 2-2



6. Restart your computer.

2.3 Opening the configuration files

1. Download the file "Styleguide_Configuration_Vxx.zip" that matches your TIA Portal version and extract it.

Note

Note the following procedure if you have installed Visual Studio Code with a configuration file for older TIA Portal versions:

- After upgrading TIA Portal to a newer version (e.g. from V17 to V18), delete the old configuration files.
- Download the "Styleguide_Configuration_Vxx.zip" file for your TIA Portal version and extract it. (A new installation of Visual Studio Code is not necessary.)

2. Start Visual Studio Code
(if you have already launched Visual Studio Code, restart the program after installing Node.js).
3. Open your extracted folder, "Styleguide Configuration_Vxx" (see Step 1).
To do this, click "File > Open folder" or click on "Open folder in Visual Studio Code start screen".

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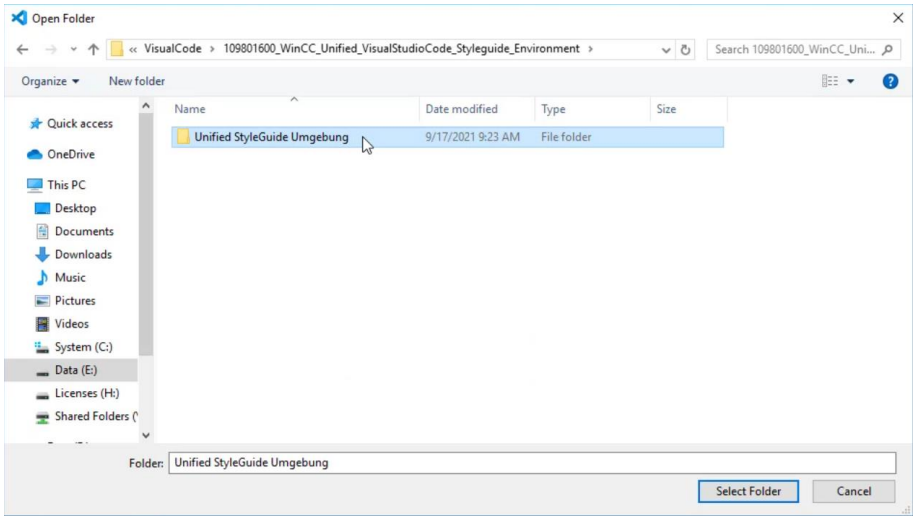
Figure 2-3: Visual Studio Code welcome screen

4. Navigate to your folder (see Step 1) and then click on "Select folder".

Figure 2-4: Open folder



The File Explorer in Visual Studio Code contains the files from Figure 2-4.

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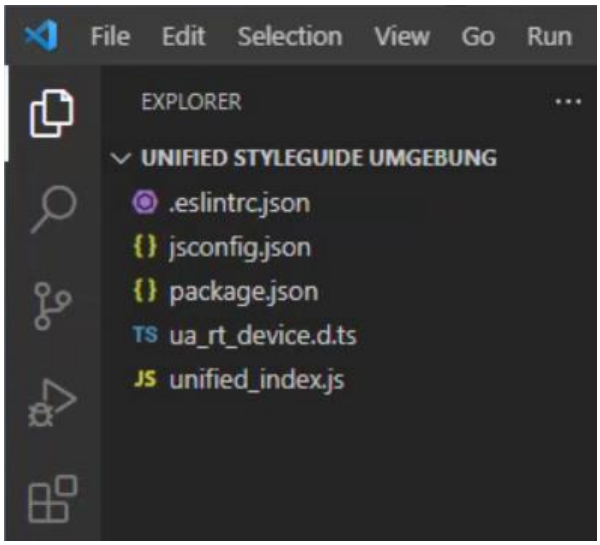
Figure 2-5: Visual Studio Code folder structure



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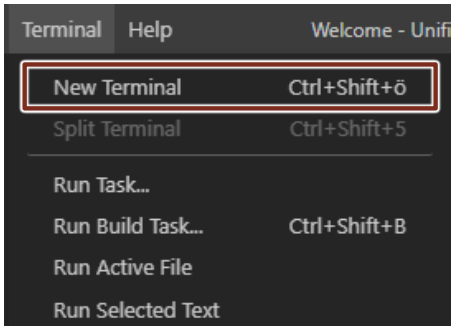
2.4 Installing additional packages

1. Open a new terminal in Visual Studio Code.

   Figure 2-6

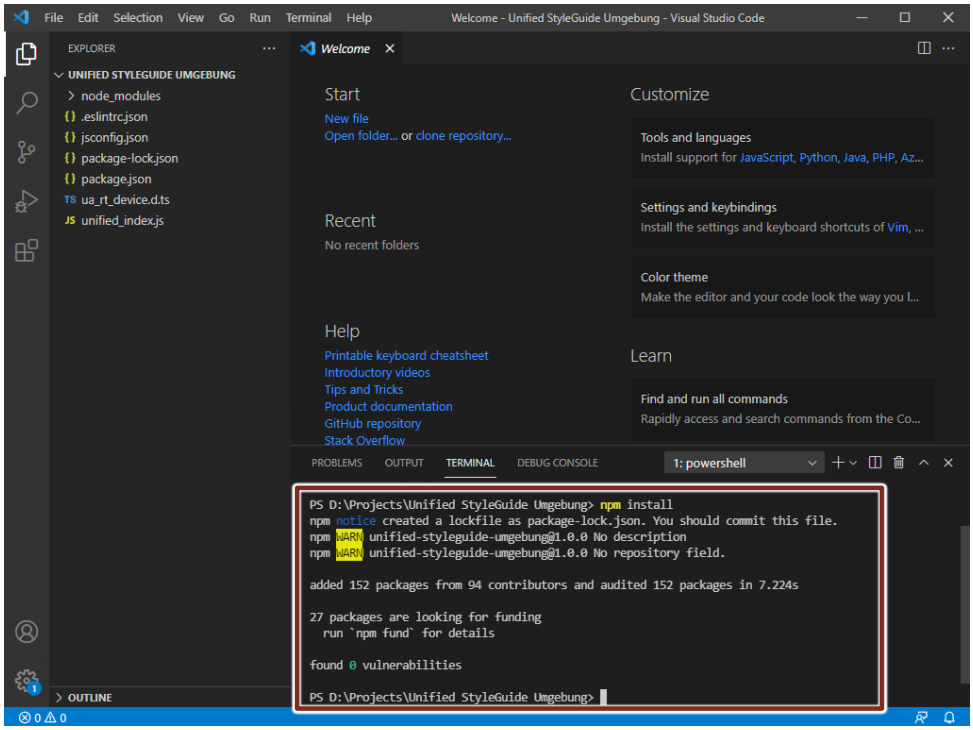


2. Here, enter the following command to install the packages required for the project:

```
npm install
```

The installation is complete.

Figure 2-7



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2.5 Installing the ESLint extension

Figure 2-8

1. In Visual Studio Code, click on Extensions.
2. Search for the "ESLint" extension.
3. Install the extension by clicking "Install". After installation, the extension “ESLint” is automatically enabled.

Your development environment is now set up.

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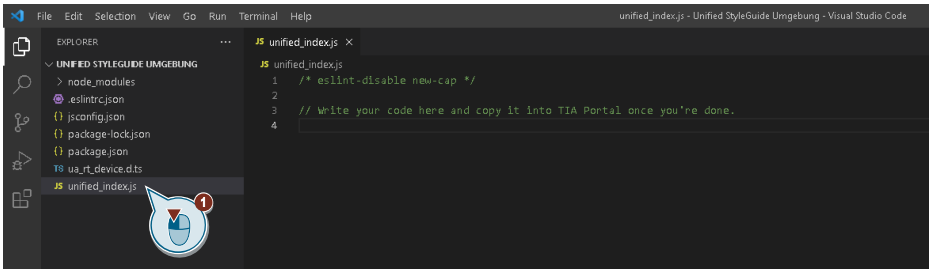
3 Examples

3.1 Using the development environment

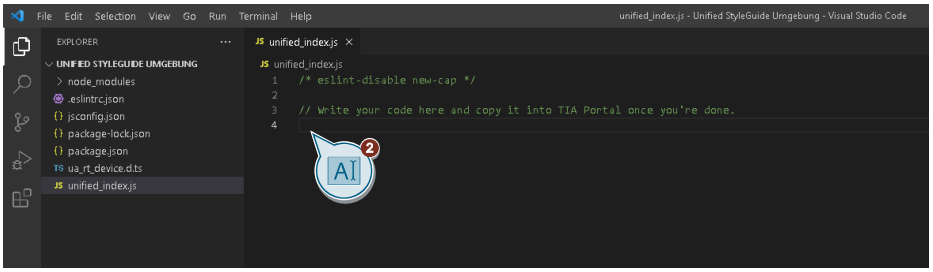
1. In your project folder in Visual Studio Code, open the file "unified_index.js" (see Figure 3-1).

Figure 3-1: unified_index.js



2. This is where you can write code for your Unified project with autocomplete and autocorrect.

Figure 3-2: unified_index.js



3. When the code is complete and the format finalized, copy it to TIA Portal with the clipboard.

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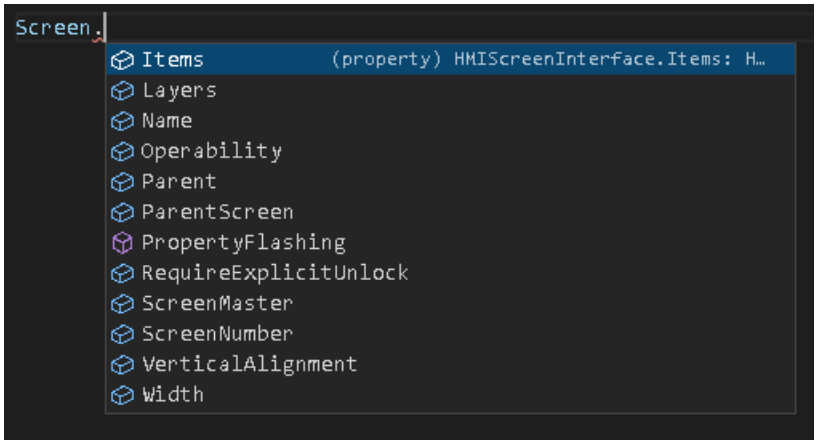
3.2 Autocomplete

When you enter a defined object, Visual Studio Code will offer autocomplete (see Figure 3-2).

Figure 3-3: Autocomplete



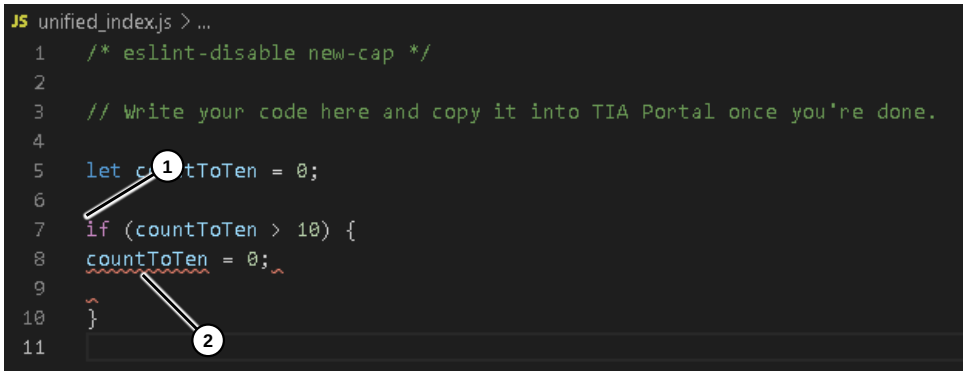
3.3 Autocorrect

Using autocorrect, you can create uniformly formatted code for your Unified project.

Example 1

1. In Figure 3-3, the content of the **if** block (lines 8-9) is not indented according to the Unified Style Guide.
2. The error is underlined in red.

Figure 3-4



Move the mouse cursor over it and click "Quick Fix..." to apply a solution for the problem (see Figure 3-4, Figure 3-5 and Figure 3-6).

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Figure 3-5: Autocorrect popup

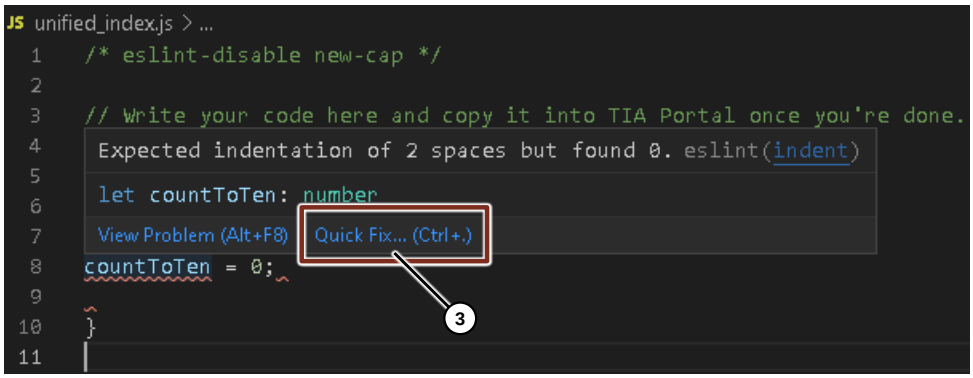


Figure 3-6: Autocorrect suggested solutions

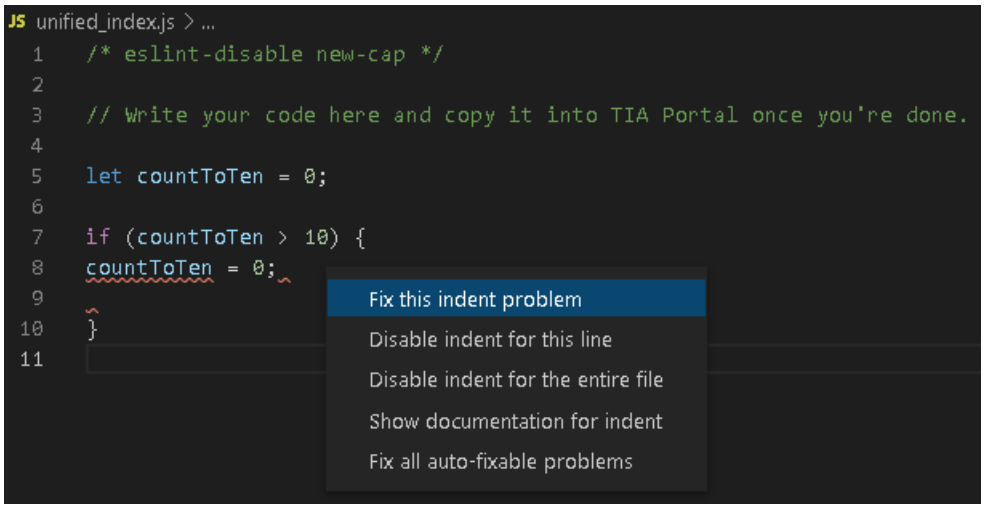
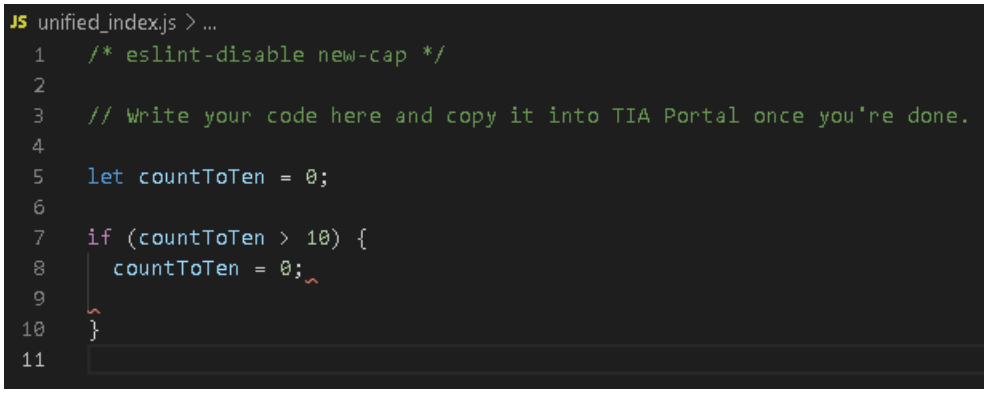


Figure 3-7: Corrected code



The formatting error is automatically fixed.

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Example 2

The formatting error in line 9 (empty line in the **if** block) can also be corrected in a similar manner (result in Figure 3-8).

Figure 3-8

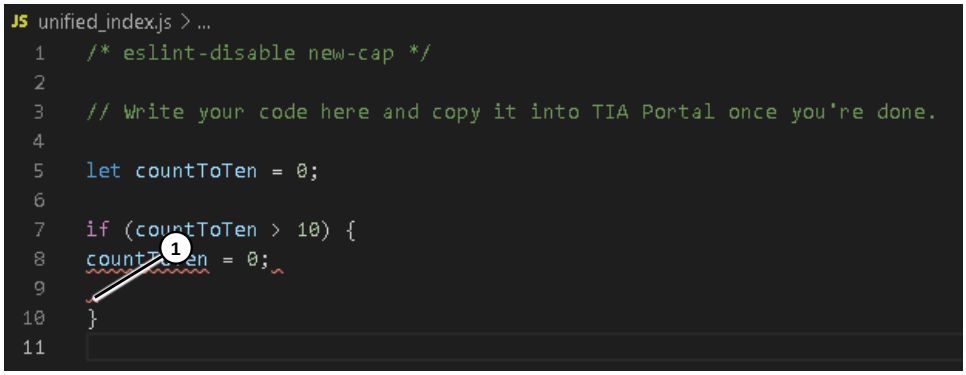

Figure 3-9: Fully formatted code

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4 Useful information

4.1 Visual Studio Code

Visual Studio Code is a lean, powerful code editor.

It supports JavaScript, TypeScript and Node.js, and by using extensions it can support virtually any programming language and framework.

The Visual Studio Code documentation can be found here:

https://code.visualstudio.com/docs

4.2 Node.js

Node.js is a JavaScript runtime environment.

The Node.js documentation can be found at the following link:

https://nodejs.org/en/docs/

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5 Appendix

5.1 Service and support

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5.3 Links and literature

Table 5-1

No.	Subject
\1\	Siemens Industry Online Support https://support.industry.siemens.com
\2\	Link to the article page of the application example https://support.industry.siemens.com/cs/ww/en/view/109801600
\3\	Visual Studio Code https://code.visualstudio.com/Download
\4\	Node.js runtime environment for JavaScript https://nodejs.org/en/download/

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5.4 Change documentation

Table 5-2

Version	Date	Change
V1.0	10/2021	First edition
V1.1	01/2023	Update of V18 and Visual Studio Code V2.2.6