

Generate Docs for your SAS Project using VS Code, SASjs and Doxygen

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ABSTRACT

With the rise of Visual Code Studio (VS Code) usage within the SAS ecosystem, where SAS Institute has created an extension for SAS coders back in 2022, and SAS® Viya® Workbench providing SAS source-code editor based on VS Code, this paper will illustrate the single click SAS code documentation generation feature of the SASjs Framework via its VS Code extension and Doxygen.

INTRODUCTION

The goal of documentation is to provide an organized collection of programs and macros and exposing what they do, the parameters they use and more. Overtime the documentation is prone to get out of date and unrepresentative of the latest version of the code! That's where Doxygen comes into play.

[Doxygen](#) is free open-source software, released under the terms of the GNU public license version 2, and can run under Linux, MacOS or Windows, just like VS Code.

[SASjs](#) is an MIT open source, free for commercial use, opinionated “batteries included” framework when it comes to building, linting, deploying, testing and documenting SAS projects and programs.

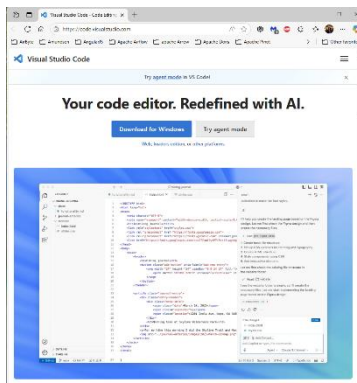
This paper will focus on SASjs's ability to generate HTML documentation from SAS program headers, via using [SASjs VS Code extension](#).

INSTALLING DOXYGEN

The first step is to install Doxygen by visiting the <https://www.doxygen.nl/download.html> page for installation on your platform. For this paper, I'm using version 1.12.0 (released August 07, 2024). From the downloads page, select the appropriate installer format for your platform.

INSTALLING VISUAL STUDIO CODE (VS CODE)

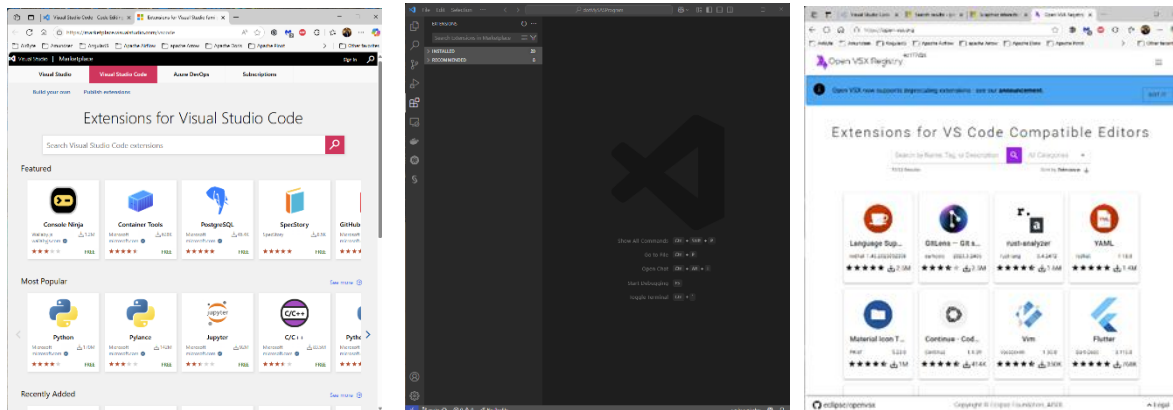
You can download it from here <https://code.visualstudio.com/> or you can follow whatever official rout your organization dictates for installing open-source software.



INSTALLING VS CODE EXTENSION

You can install VS Code extensions via two possible ways, Extension Marketplace (<https://marketplace.visualstudio.com/vscode>) Or from the Extensions viewer within VS Code.

Note: The Open VSX Registry (<https://open-vsx.org/>) provides the ability to physically download the *.vsix file to your machine to allow for “Installing from the VSIX...” within VS Code. Useful when you have VS Code installed on host without external internet connection!



You'll need to search and install [SASjs VS Code extension](#)

CUSTOMIZE YOUR SAS PROGRAMS AND MACROS TO ADOPT REQUIRED DOXYGEN HEADER COMMENTS BLOCK

To enable automatic documentation generation, you'll need to add at minimum, the following header comment block to the top of your current SAS programs and macros.

```
/**
@file
@brief one line description of the job
@details Multiline description of the job.
You can write markdown here and it will be properly rendered in the HTML docs.

    data code must be;
        indented = 4 * spaces;
    run;

<h4> SAS Macros </h4>
@li example.sas

<h4> SAS Includes </h4>
@li someprogram.sas MYREF

<h4> Data Inputs </h4>
@li somelib.ds1
@li somelib.ds2

<h4> Data Outputs </h4>
@li tgtlib.bigmuvsads
**/
```

Note: make sure the value you specify for the “@file” taken 100% matches the value and casing of physical SAS filename.

For a longer, better description of Doxygen, please see Paper 1077-2021 (Introduction to Doxygen) by Tom Bellmer.

For more extensive header comment block examples, you may want to check out the following locations

- <https://core.sasjs.io/>
- <https://github.com/philipmason/Wood-Street-Consultants/tree/main/Doxygen/Samples>

CREATE A PACKAGE.JSON FILE WITHIN YOUR SAS PROJECT FOLDER

You'll need to create a **package.json** file within your SAS project folder

```
{
  "name": "Project Name"
  ,"description": "Project description"
  ,"keywords": ["<KW1>","<KW2>","<KW3>"]
  ,"author": "Name <email>"
  ,"publishConfig": {"access": "public"}
  ,"homepage": "https://<Server hosting the docs files>"
  ,"main": "index.html"
}
```

Figure 1. Template package.json

Modify/update the values of the named items within the **package.json** file to reflect your SAS project.

When attempting to generate the HTML documentation, SASjs will take metadata from the package.json file, use the README.md file, if exists, as a homepage, and even generate a data lineage GRAPHVIZ diagram using the defined “Data Inputs” and “Data Outputs” in your program headers.

CREATE SASJS FOLDER, IF IT DOES NOT EXIST, WITHIN YOUR SAS PROJECT FOLDER

You'll need to create a SASJS directory/folder within your SAS project folder

CREATE/EDIT THE SASJSCONFIG.JSON FILE WITHIN THE SASJS FOLDER UNDER YOUR SAS PROJECT FOLDER

```
{
  "$schema": "https://raw.githubusercontent.com/sasjs/utils/main/src/types/sasjsconfig-
  schema.json",
  "docConfig": {
    "displayMacroCore": false,
    "outDirectory": "drive:\\\\folder\\docs\\code",
    "enableLineage": true,
    "doxyContent": {
      "favicon": "favicon.ico", ← You can customize this and replace it with your own *.ico file
      "footer": "new_footer.html",
      "header": "new_header.html",
      "layout": "DoxygenLayout.xml",
      "logo": "logo.png", ← You can customize this and replace it with your own logo.png file
      "stylesheet": "new_stylesheet.css",
      "path": "sasjs/doxy"
    }
  },
  "jobConfig": { "jobFolders": ["<SubFolder1>", "<SubFolder2>"] }, ← You can customize this list and
  specify your own folders list
  "defaultTarget": "sasjsdoc",
  "targets": [
    { "name": "sasjsdoc",
      "serverUrl": "",
      "serverType": "SASJS",
      "appLoc": "/Public/app/docs"
    }
  ]
}
```

Figure 2. Template sasjsconfig.json

Note: Highlighted fields are for you to customize/modify as you see fit.


For more information about the SASjs config (sasjsconfig.json) file, check out this link
<https://cli.sasjs.io/sasjsconfig.html>

PRESS THE BUTTON/ICON TO CREATE THE HTML DOCUMENTATION

You'll need to follow these steps to properly create the HTML documentation for your SAS programs and macros by pressing a button/icon from within VS Code

1. Go to the SAS code directory

```
C:\> cd <SAS code directory>
$ cd <SAS code directory>
```
2. Open VS code in that directory

```
c:\> code .
$ code .
```
3. Open a *.sas file to activate the SASjs extension
4. Click on the Docs icon ()
5. Open the index.html file from within your <docs> destination folder

Once your documentation files has been created, you can publish/share/upload it to wherever you deem usable.

CONCLUSION

Combining open-source software and tools with SAS gives you the ability to enhance/increase your productivity with very little programming and time on multiple operating system platforms.

With a little effort and time spent to add header comment block to your SAS programs and macros, you get the ability to refresh your code documentation by a press of a button/icon whenever you need to.

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