

**Student ID:** 41047035S  
**Student Name:** 林昕銳  
**Teacher Name:** 紀博文  
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# Doxygen for the beginner

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## What is Doxygen?

### Generate documentation from source code

Doxygen is the de facto standard tool for generating documentation from annotated C++ sources, but it also supports other popular programming languages such as C, Objective-C, C#, PHP, Java, Python, IDL (Corba, Microsoft, and UNO/OpenOffice flavors), Fortran, and to some extent D. Doxygen also supports the hardware description language VHDL.

[Doxygen-offical-website](#)

## How to download Doxygen

Make sure your os environment. Following the step below:

- Windows

```
# Just download it from official website and run setup.exe
```

- Mac

```
brew install doxygen
```

- Linux

```
git clone https://github.com/doxygen/doxygen.git
cd doxygen
mkdir build
cd build
cmake -G "Unix Makefiles" ..
make
make install
```

## Get started with Doxygen

In this tutorial, I will use Mac m1 version to introduce. And Linux's steps basically same with Mac's ones.

## Step 1 : Initialize Doxygen configure file

```
doxygen -g
```

After run this command, you will get a file named "Doxyfile"

If add option [-s], you will get none-comment simple one.

## Step 2 : Edit TAG in Doxyfile

There are some TAGs in Doxyfile that can edit information. By these TAGs, it will effect your generating documentation difference.

List some more important TAGs below:

- **PROJECT\_NAME** : As its names.
- **OUTPUT\_DIRECTORY** : Output path of generating document. If you do not input any value, the output path will be current path.
- **OUTPUT\_LANGUAGE** : Output language format.
- **OPTIMIZE\_OUTPUT\_FOR\_C** : If your document is c language file, it must be YES value.
- **GENERATE\_TREEVIEW** : Generate tree structure format. It will showed left side.
- **EXTRACT\_ALL** : Even though these documents have no content. It will show imformation to generating file.

About top of this note that I explane TAGs. These are also changed value from default file that I modified.

For more TAGs imformation, please follow the link below :

<https://www.doxygen.nl/manual/config.html>

## Step 3 : Standard comment format and parameter

To let Doxygen can analysis your file. It is needed to add some comment format and parameter.

### • Comment Format

- New Lines

```
/**
 *   ...Comments...
 *   ...Comments...
 *   ...Comments...
 */
```

- Single Line

```
/** ...Comments... */
```

```
/// ...Comments...
```

- Same Line with Code

```
/**< ...Comments... */
```

```
///< ...Comments...
```

- **Parameter**

- @brief (\brief) : a short description
- @file (\file) : target file name (always be current file name.) (write at top of file)
- @author (\author) : author name (write at top of file)
- @date (\date) : date (write at top of file)
- @param[in/out] (\param[in/out]) : function parameter target name

About top of this note that I explane parameter. These are also added by me.

For more Comment anf Parameter imformation, please follow two links below :

<https://www.doxygen.nl/manual/docblocks.html> <https://www.doxygen.nl/manual/commands.html>

#### Step 4 : Generate document

```
doxygen Doxyfile
```

After run this command, you could view your document by your path of **OUTPUT\_DIRECTORY** TAG in Doxyfile. In "html" directory, there is a file named "index.html". Open it and you can view your document.