

Using Eclipse for C Programming

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Abstract

Students are used to using the Eclipse IDE for programming in Java. This document describes how to install and use Eclipse for programming in C (and C++). Amazingly, it isn't as easy as it should be.

1 Obtaining Eclipse

- Visit eclipse.org.
- Click the big “Download” button.
- Don't click the “Download” button on the next page. Instead click the “Download Packages” link.
- Scroll down to “Eclipse IDE for C/C++ Developers”.
- Click the download link if that is the correct platform (that is, if you are downloading for the platform that you are using to do the download).
- Otherwise click the heading and it will take you to a page with links to download that version of Eclipse for all platforms.

2 Installing Eclipse

You've downloaded Eclipse. Congratulations! Time to install it.

2.1 Installing Eclipse on a Mac

- On a Mac, the download will be a `.dmg` disk image. It will probably be in your Downloads folder.
- Double-click it to “mount” the image.
- A Finder window should open displaying the Eclipse application and a shortcut to the Applications folder.
- To install Eclipse in the Applications folder, just drag the application onto the shortcut. You may need administrator privileges for this.
- But Eclipse can be installed anywhere, such as your Desktop or any other folder. Just drag it from the mounted disk image to where you want it.
- To unmount the disk image, click the eject button in a Finder window sidebar (if it is shown there), or drag the disk icon that is on your desktop to the Trash.
- You can delete the `.dmg` file once you've put Eclipse where you want it.

2.2 Installing Eclipse on Windows

- On a Windows machine, the download will be a `.zip` archive. It will probably be in your Downloads folder.
- Double-click it to extract (unpack) the archive.
- You can run Eclipse right from the resulting folder, or move it somewhere else.
- You can delete the `.zip` file once you've unpacked it.

3 Installing Java (yes, even for C/C++ Development)

Eclipse is itself written in Java, so you need Java on the machine to run Eclipse. If you have previously been using Eclipse for Java development on this machine, you will already have Java installed. If not:

- Download Java from java.com (Oracle)
- If you only intend to use Java to run Eclipse (but not develop in Java), you may use the “Free Java Download” button. This will download the Java Runtime Environment (JRE).
- If you are planning to also do Java development, you need the Java Development Kit (JDK).
 - Click “See all Java downloads”.
 - Click “Looking for the JDK?” in the left sidebar.
 - Then “JDK Downloads”.
 - Then not Java 10, but “Java SE 8. . .” (build version varies, currently 171/172).
 - Click the Download button under “JDK”.
 - Check “Accept License Agreement”.
 - Click download link for “Windows x64” (or whatever platform).
- Either way, run the installer that you just downloaded (`jdk-8u171-windows-x64.exe` or whatever it is called).

You should now be able to run Eclipse by double-clicking it.

4 Installing a C Compiler

You might reasonably expect that once you installed something named “Eclipse for C/C++ Development” you would be able to develop C (or C++) programs with it. Unfortunately that isn’t the case. In fact, it isn’t the case for Java development either. For Java development, you need to install Java. For C development you need to install a C toolchain. Here’s my method.

4.1 Installing Developer Tools on a Mac

- Download the XCode IDE from the Apple App Store. This is a huge package that supports development for macOS and iOS, but it also includes all the programs that you need for

C development using Eclipse.

- There are other ways to get what you need, but they are all more involved. But if you don't have 5GB of free disk space for XCode, you'll have to look around.

4.2 Installing MinGW on Windows

- Download and install MinGW (“Minimal GNU for Windows”) from mingw.org.
- The instructions are at [Documentation](#) then [Getting Started](#).
- The short version is to download `mingw-get-setup.exe` from this link: <https://sourceforge.net/projects/mingw/files/latest/download>.
- Double-click the downloaded file (probably in your Downloads folder) to start the installer.
- Accept all the default settings and click “Continue” to do the installation.
- It told me that MinGW was previously installed (which it wasn't), but telling it to “Reinstall” worked fine.
- You may delete `mingw-get-setup.exe` after the installation is complete.

5 Using Eclipse for C Programming

Finally!

First create a new C/C++ project:

- From the menubar: New > C/C++ Project
- Select “C Managed Build”
- Enter project name and select “Executable > Empty Project”
- For “Toolchain,” on a Mac select “Cross GCC” and on Windows select “MinGW GCC.”
- For “Select Configurations,” either accept the default (two configurations, Debug and Release) or uncheck Release
- Ignore the “Cross-compiler Settings” (leave them blank).

- Click “Finish.”

Customize the project settings (your mileage may differ, but these are my recommendations):

- From the menubar: Project > Properties
- Sidebar: C/C++ Build > Settings
- For Debug configuration:
 - Tool Settings tab:
 - * GCC C Compiler item (or other depending on platform)
 - Dialect: Language Standard: select C99
 - Warnings: check -Werror as well as -Wall
 - Build Artifact tab:
 - * Artifact name: Replace `${ProjName}` with whatever name you want if you don't want your executable to be named after your project (which probably has spaces in the name, etc.).
- Project > Build Automatically should be checked

There must be a way to save these settings for use with future projects. . .

Now add a new file to the project:

- From the menubar: New > Source File
- Enter name, *e.g.*, `test.c`
- Note that this does not use a `src` folder as you may be used to seeing with Java development using Eclipse. Simply adding a folder and using it doesn't Just Work, but I'm sure it could be made to work.

Write the code. I suggest doing Hello World for your first program. Eclipse will flag your errors like in Java every time you pause and/or save.

Try to run your program with the green play button like in Java. You will get an error something like “Launch Error: Binary not found.” Awesome.

You need to create a “Run Configuration:”

- From the menubar: Run > Run Configurations
- Select “C/C++ Application”

- Then click the “New” icon (the page with a plus sign) to create a new run configuration.
- Name: Debug C Application (or whatever you want to call it)
- Project: leave blank or erase
- C/C++ Application:
 - On a Mac: `${workspace_loc}/${project_name}/Debug/${project_name}`
 - On Windows: `${workspace_loc}\${project_name}\Debug\${project_name}.exe`
- Apply, Close

Now click the green play button again and you should see the program output in the Eclipse console.

That is all. You now know as much as I do about this.