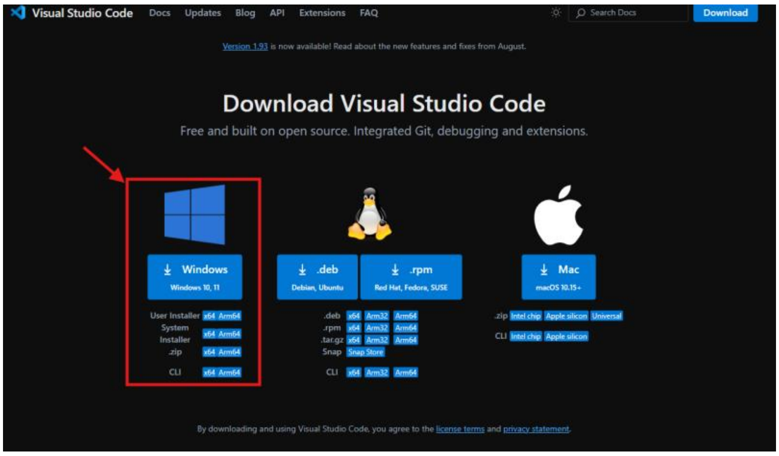
C Environment Set up Guide

Step1: Install a C compiler (e.g., GCC) or IDE (e.g., Code::Blocks, Visual Studio).

Visual Studio Code: [Download Link]

Download the VS Code, and follow the installation instructions.

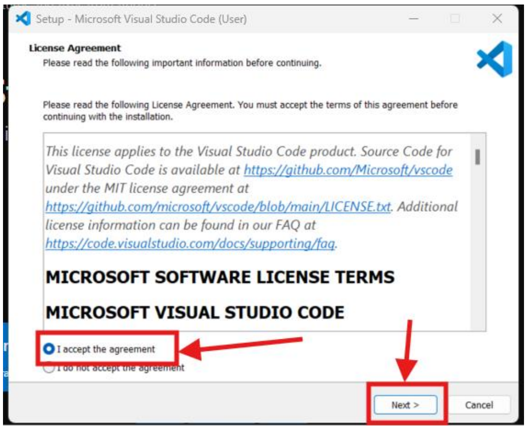


Version 1.93 is now available! Read about the new features and fixes from August.

Download Visual Studio Code

Free and built on open source. Integrated Git, debugging and extensions.

By downloading and using Visual Studio Code, you agree to the license terms and privacy statement.


Setup - Microsoft Visual Studio Code (User)

License Agreement

Please read the following important information before continuing.

Please read the following License Agreement. You must accept the terms of this agreement before continuing with the installation.

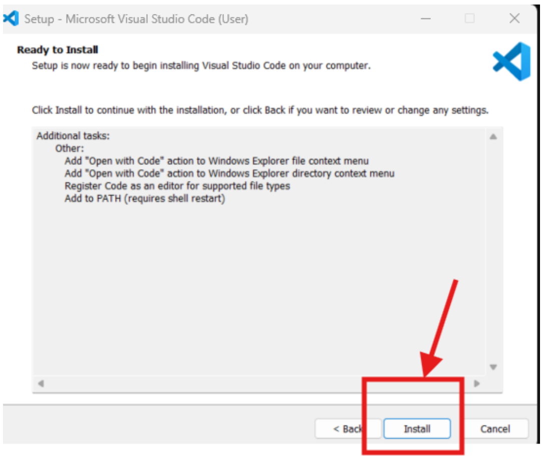
This license applies to the Visual Studio Code product. Source Code for Visual Studio Code is available at https://github.com/Microsoft/vscode under the MIT license agreement at https://github.com/microsoft/vscode/blob/main/LICENSE.txt. Additional license information can be found in our FAQ at https://code.visualstudio.com/docs/supporting/faq.

MICROSOFT SOFTWARE LICENSE TERMS

MICROSOFT VISUAL STUDIO CODE

● I accept the agreement

○ I do not accept the agreement


Setup - Microsoft Visual Studio Code (User)

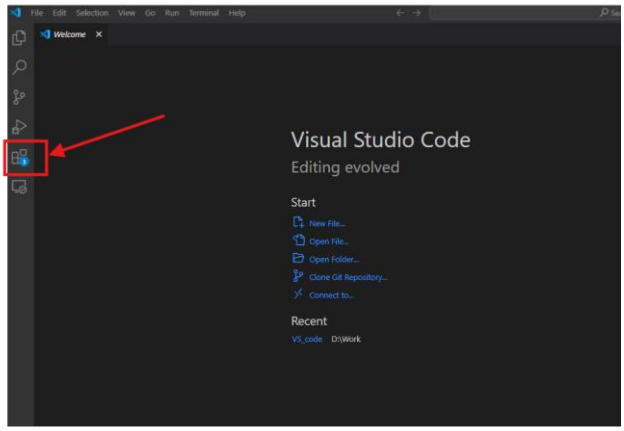
Ready to Install

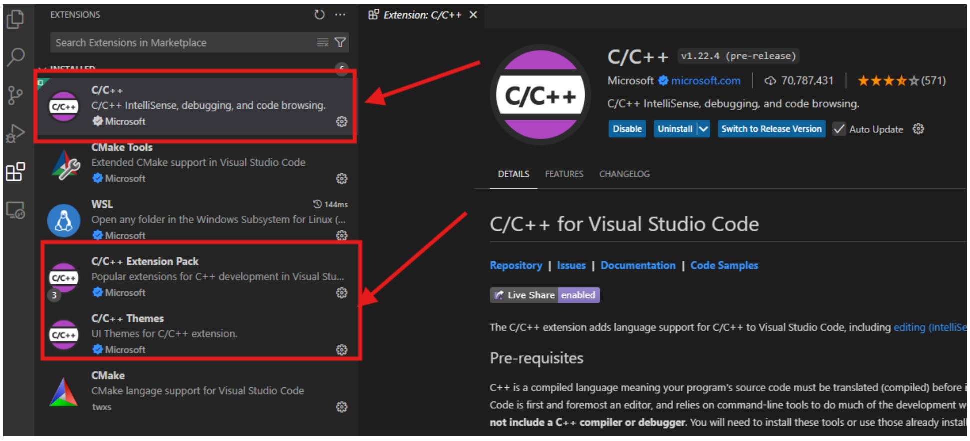
Setup is now ready to begin installing Visual Studio Code on your computer.

Click Install to continue with the installation, or click Back if you want to review or change any settings.

```
Additional tasks:
    Other:
      Add "Open with Code" action to Windows Explorer file context menu
      Add "Open with Code" action to Windows Explorer directory context menu
      Register Code as an editor for supported file types
      Add to PATH (requires shell restart)
```

After Installation click on the extension icon and all the C and C++ extension shown below.




EXTENSIONS
Search Extensions in Marketplace
INSTALLED
C/C++
C/C++ IntelliSense, debugging, and code browsing.
Microsoft
CMake Tools
Extended CMake support in Visual Studio Code
Microsoft
WSL
144ms
Open any folder in the Windows Subsystem for Linux (...
Microsoft
C/C++ Extension Pack
Popular extensions for C++ development in Visual Stu...
Microsoft
C/C++ Themes
UI Themes for C/C++ extension.
Microsoft
CMake
CMake langage support for Visual Studio Code
twxs
Extension: C/C++
C/C++
v1.22.4 (pre-release)
Microsoft
microsoft.com
70,787,431
★★★★☆ (571)
C/C++ IntelliSense, debugging, and code browsing.
Disable
Uninstall
Switch to Release Version
Auto Update
DETAILS
FEATURES
CHANGELOG
C/C++ for Visual Studio Code
Repository | Issues | Documentation | Code Samples
Live Share enabled
Pre-requisites

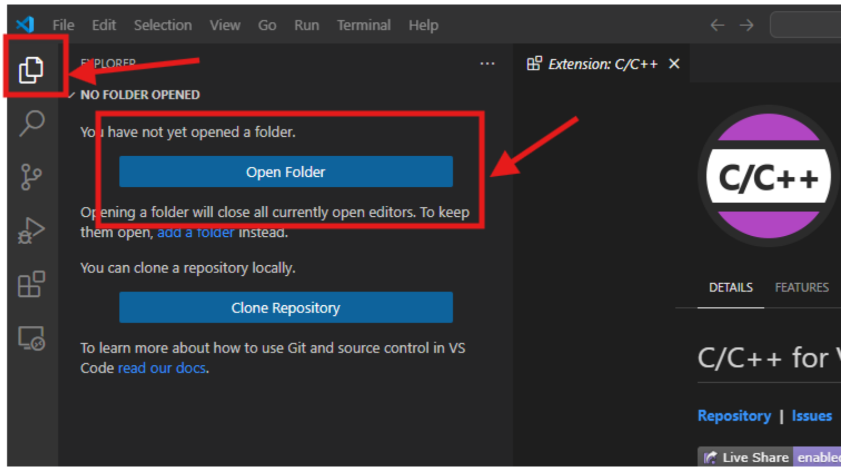
The C/C++ extension adds language support for C/C++ to Visual Studio Code, including editing (IntelliSe

C++ is a compiled language meaning your program's source code must be translated (compiled) before i

Code is first and foremost an editor, and relies on command-line tools to do much of the development w

not include a C++ compiler or debugger. You will need to install these tools or use those already instal

After Installation of the all the C/C++ Extensions Create a folder in your local system and import that folder in the VS Code shown below.

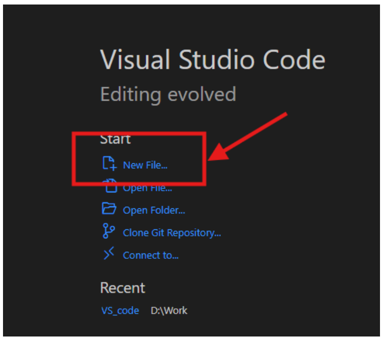


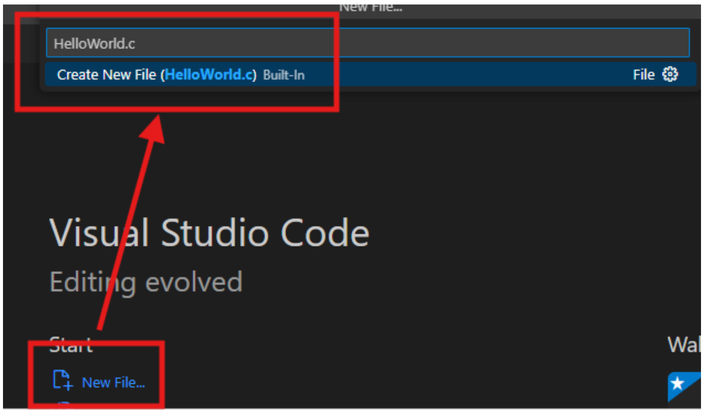
You have not yet opened a folder.

Opening a folder will close all currently open editors. To keep them open, add a folder instead.

You can clone a repository locally.

To learn more about how to use Git and source control in VS Code read our docs.





Step2: Learn to compile and run C programs.

To run the C programs you need GCC Compiler. Download Link

How to install gnu gcc compiler for C Language on Windows

If you're a developer aiming to compile C/C++ programs using the command prompt, this blog post can guide you through the process of installing the gcc and g++ compilers on your Windows PC.

Without these compilers installed, attempting to compile or run C/C++ programs may result in an error message stating:

```
gcc : The term 'gcc' is not recognized as the name of a cmdlet, function, script file, or operable
the spelling of the name, or if a path was included, verify that the path is correct and try again.
At line:1 char:1
+ gcc
+ ~~~
    + CategoryInfo          : ObjectNotFound: (gcc:String) [], CommandNotFoundException
    + FullyQualifiedErrorId : CommandNotFoundException
```

In Windows 10 and older, this error looks like this: *"gcc is not recognized as an internal or external command."*

A little Background

Before we proceed with the installation steps, we need to know about these tools:

- MinGW: This is a development environment to run C/C++ programs for Windows
- gcc: This is the compiler that we will be using to compile C programs.
- g++: This is the compiler for compiling C++ programs.

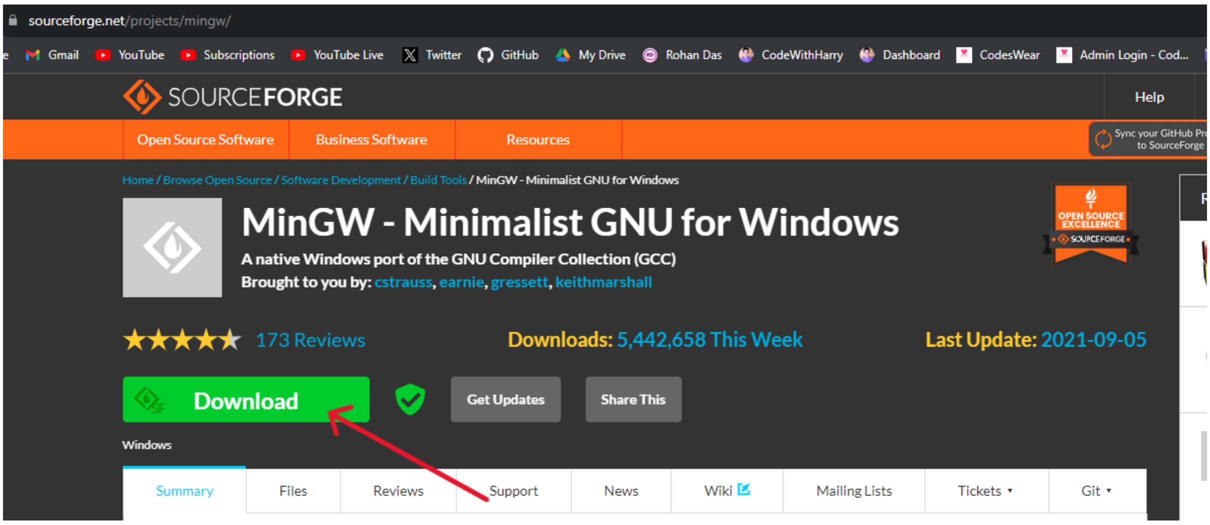
MinGW includes both the gcc and g++ compilers in one package, eliminating the need for separate installations.

By downloading and installing MinGW, you can seamlessly continue your journey in C/C++ programming without the hassle of installing each compiler individually.

Step 1: Download MinGW Tool

Let's start by downloading the MinGW installer from MinGW's Sourceforge Page.

On this Sourceforge download page, click on the download button, and download the installer.



MinGW - Minimalist GNU for Windows

A native Windows port of the GNU Compiler Collection (GCC)

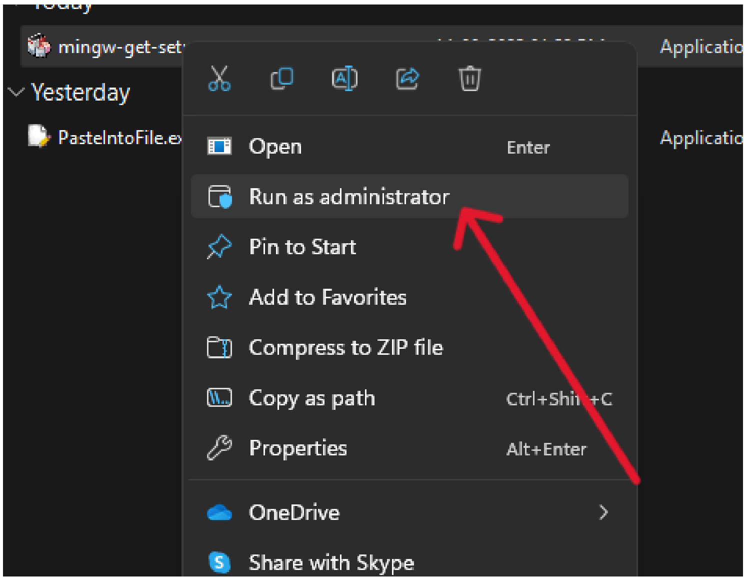
Brought to you by: cstrauss, earnie, gressett, keithmarshall

Downloads: 5,442,658 This Week

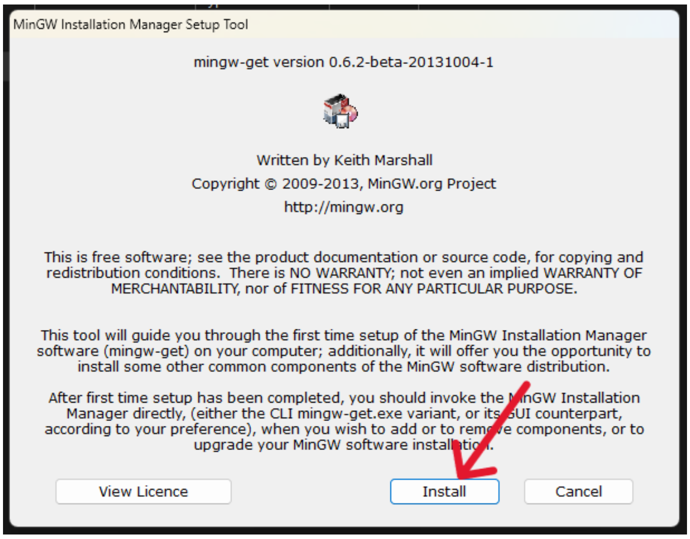
Last Update: 2021-09-05

Step 2: Install MinGW

1. Right-click on the downloaded mingw-get-setup.exe file and run as administrator.



2. In the MinGW Installation Manager Setup Tool window, click on Install.


MinGW Installation Manager Setup Tool

mingw-get version 0.6.2-beta-20131004-1

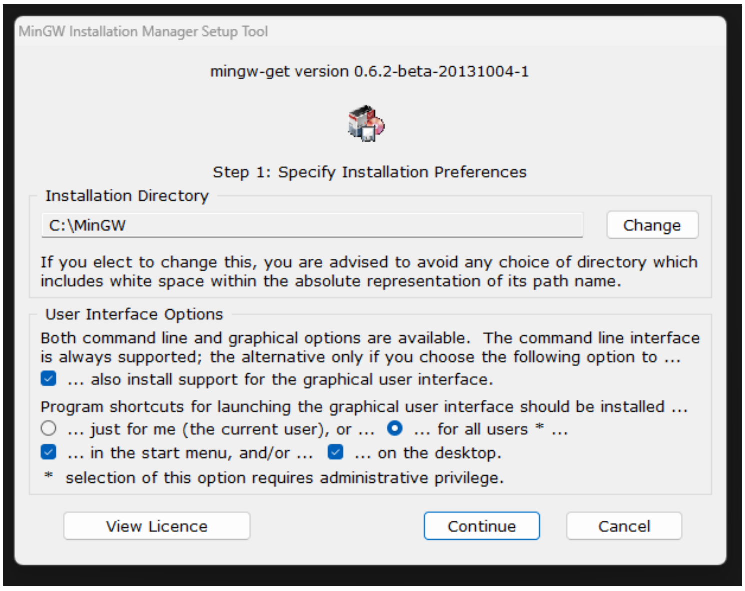
Written by Keith Marshall
Copyright © 2009-2013, MinGW.org Project
http://mingw.org

This is free software; see the product documentation or source code, for copying and redistribution conditions. There is NO WARRANTY; not even an implied WARRANTY OF MERCHANTABILITY, nor of FITNESS FOR ANY PARTICULAR PURPOSE.

This tool will guide you through the first time setup of the MinGW Installation Manager software (mingw-get) on your computer; additionally, it will offer you the opportunity to install some other common components of the MinGW software distribution.

After first time setup has been completed, you should invoke the MinGW Installation Manager directly, (either the CLI mingw-get.exe variant, or its GUI counterpart, according to your preference), when you wish to add or to remove components, or to upgrade your MinGW software installation.

3. By default, the installation directory is set as C:\MinGW. You can change the installation directory by clicking on the Change button and selecting a different folder (I don't recommend changing the installation directory).


MinGW Installation Manager Setup Tool

mingw-get version 0.6.2-beta-20131004-1

Step 1: Specify Installation Preferences

Installation Directory

C:\MinGW

If you elect to change this, you are advised to avoid any choice of directory which includes white space within the absolute representation of its path name.

User Interface Options

Both command line and graphical options are available. The command line interface is always supported; the alternative only if you choose the following option to …

☑ … also install support for the graphical user interface.

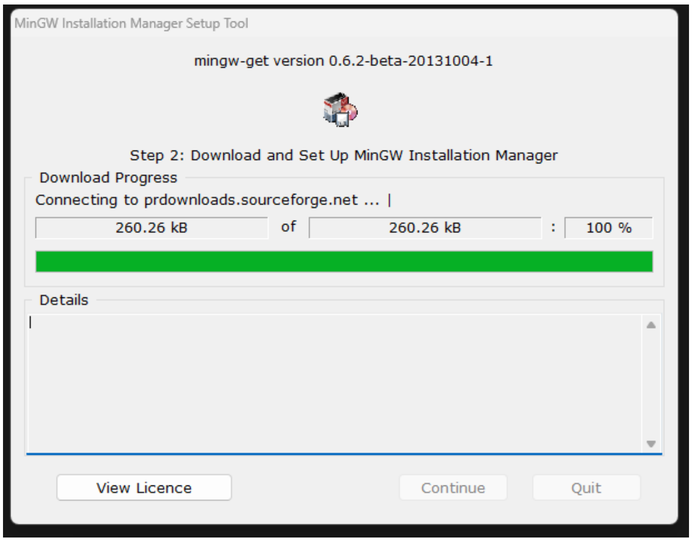
Program shortcuts for launching the graphical user interface should be installed …

○ … just for me (the current user), or … ● … for all users * …

☑ … in the start menu, and/or … ☑ … on the desktop.

* selection of this option requires administrative privilege.

4. Click on the Continue button to start the installation. Here it might take some time to download. Once it’s complete, click on continue to start the installation.



MinGW Installation Manager Setup Tool

mingw-get version 0.6.2-beta-20131004-1

Step 2: Download and Set Up MinGW Installation Manager

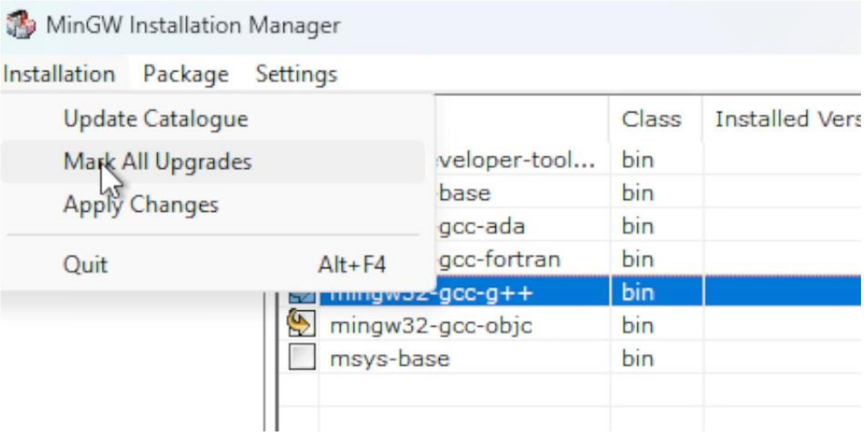
Download Progress

Connecting to prdownloads.sourceforge.net ... |

260.26 kB of 260.26 kB : 100 %

Details

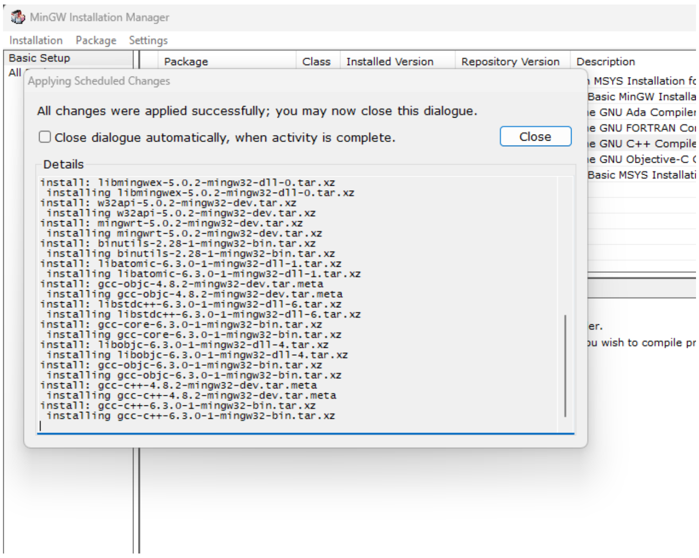
5. Now, you will be presented with this window. Here, we will right-click on the following items and select the mark for installation:
   (a) mingw32-gcc-g++
   (b) mingw32-gcc-objc
   Once we have selected the items, we will click on "Installation" at the top and hit apply changes. It will start downloading and installing the packages. The video below clearly shows these steps:



MinGW Installation Manager

Class	Installed Vers
…veloper-tool... bin	
…base bin	
…gcc-ada bin	
…gcc-fortran bin	
mingw32-gcc-g++ bin	
mingw32-gcc-objc bin	
msys-base bin	

1. Once the installation is done, You will be presented with this window. Click on 'close' to close the window.



Applying Scheduled Changes

All changes were applied successfully; you may now close this dialogue.

☐ Close dialogue automatically, when activity is complete.

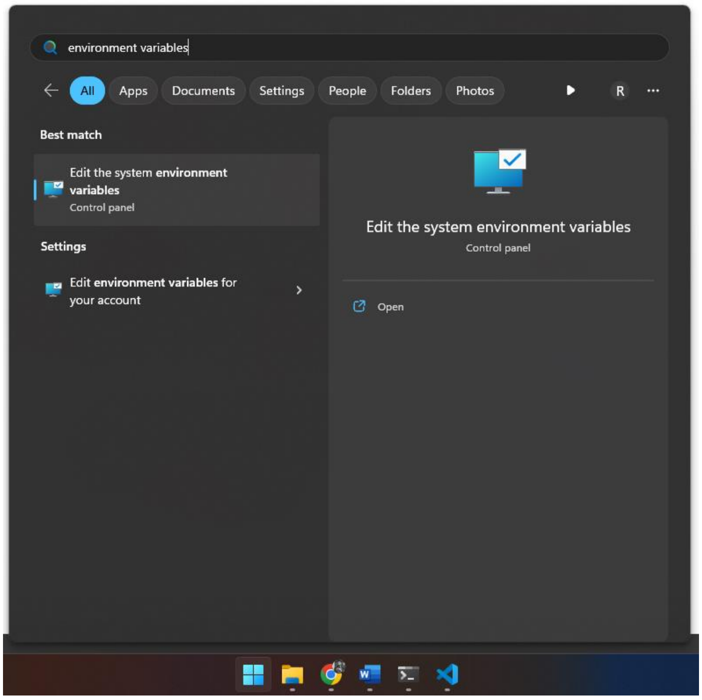
Close

Details

```
install: libmingwex-5.0.2-mingw32-dll-0.tar.xz
 installing libmingwex-5.0.2-mingw32-dll-0.tar.xz
install: w32api-5.0.2-mingw32-dev.tar.xz
 installing w32api-5.0.2-mingw32-dev.tar.xz
install: mingwrt-5.0.2-mingw32-dev.tar.xz
 installing mingwrt-5.0.2-mingw32-dev.tar.xz
install: binutils-2.28-1-mingw32-bin.tar.xz
 installing binutils-2.28-1-mingw32-bin.tar.xz
install: libatomic-6.3.0-1-mingw32-dll-1.tar.xz
 installing libatomic-6.3.0-1-mingw32-dll-1.tar.xz
install: gcc-objc-4.8.2-mingw32-dev.tar.meta
 installing gcc-objc-4.8.2-mingw32-dev.tar.meta
install: libstdc++-6.3.0-1-mingw32-dll-6.tar.xz
 installing libstdc++-6.3.0-1-mingw32-dll-6.tar.xz
install: gcc-core-6.3.0-1-mingw32-bin.tar.xz
 installing gcc-core-6.3.0-1-mingw32-bin.tar.xz
install: libobjc-6.3.0-1-mingw32-dll-4.tar.xz
 installing libobjc-6.3.0-1-mingw32-dll-4.tar.xz
install: gcc-objc-6.3.0-1-mingw32-bin.tar.xz
 installing gcc-objc-6.3.0-1-mingw32-bin.tar.xz
install: gcc-c++-4.8.2-mingw32-dev.tar.meta
 installing gcc-c++-4.8.2-mingw32-dev.tar.meta
install: gcc-c++-6.3.0-1-mingw32-bin.tar.xz
 installing gcc-c++-6.3.0-1-mingw32-bin.tar.xz
```

Step 3: Set up the environment variable for MinGW:

1. Once the MinGW setup is complete and the gcc and g++ compiler packages are installed, we need to set the PATH variable for our computer.
   Click on your search icon beside the windows icon and type "Environment Variables"



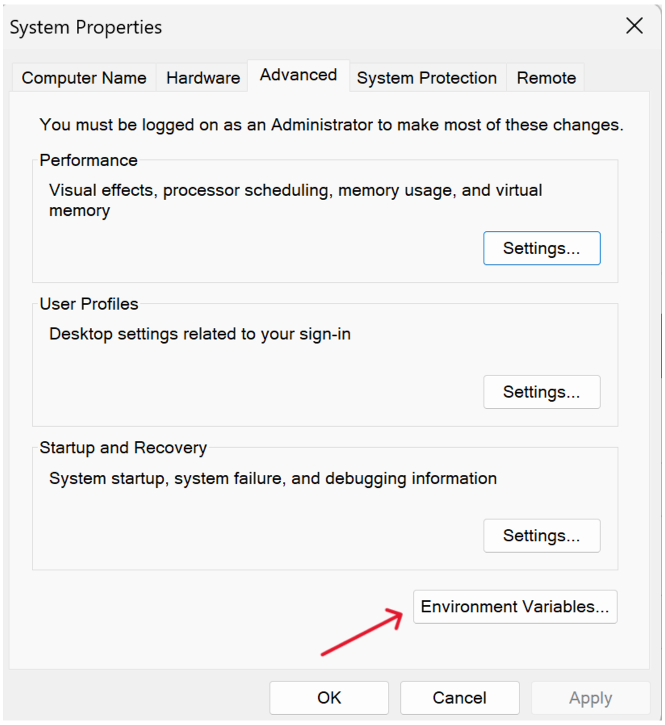
environment variables

Edit the system environment variables
Control panel

Edit environment variables for your account

Edit the system environment variables
Control panel

2. Click on the first option "Edit the system Environment Variables". A System Properties window will open. Click on "Environment Variables"



System Properties

You must be logged on as an Administrator to make most of these changes.

Performance

Visual effects, processor scheduling, memory usage, and virtual memory

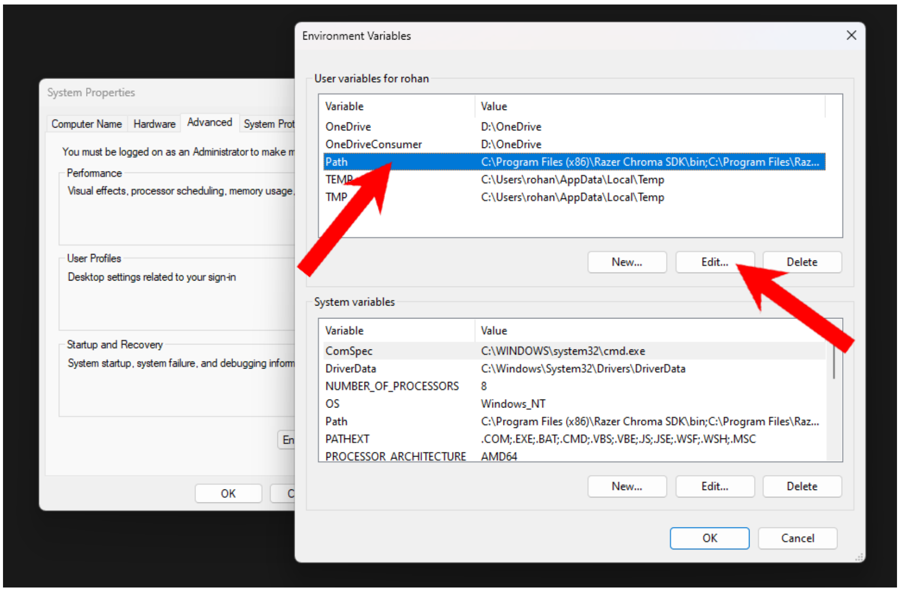
User Profiles

Desktop settings related to your sign-in

Startup and Recovery

System startup, system failure, and debugging information

3. Select Path and click on "Edit"



Environment Variables

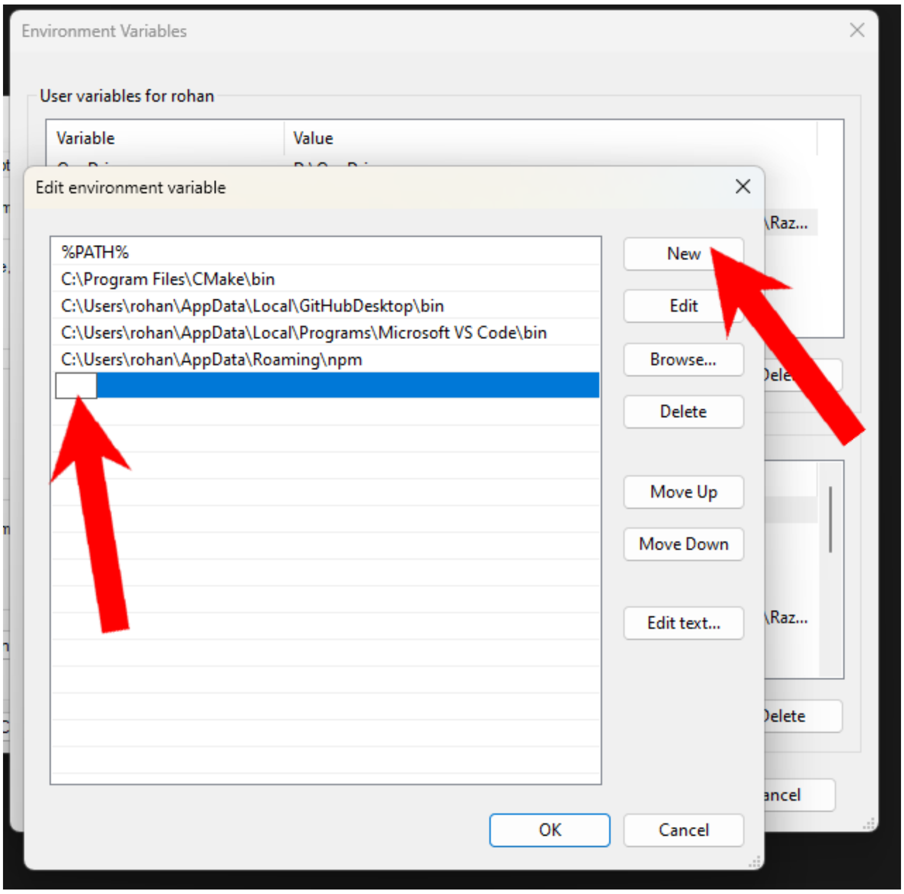
User variables for rohan

Variable	Value
OneDrive	D:\OneDrive
OneDriveConsumer	D:\OneDrive
Path	C:\Program Files (x86)\Razer Chroma SDK\bin;C:\Program Files\Raz...
TEMP	C:\Users\rohan\AppData\Local\Temp
TMP	C:\Users\rohan\AppData\Local\Temp

System variables

Variable	Value
ComSpec	C:\WINDOWS\system32\cmd.exe
DriverData	C:\Windows\System32\Drivers\DriverData
NUMBER_OF_PROCESSORS	8
OS	Windows_NT
Path	C:\Program Files (x86)\Razer Chroma SDK\bin;C:\Program Files\Raz...
PATHEXT	.COM;.EXE;.BAT;.CMD;.VBS;.VBE;.JS;.JSE;.WSF;.WSH;.MSC
PROCESSOR_ARCHITECTURE	AMD64

4. Click "New" and add the location of MinGW installation.



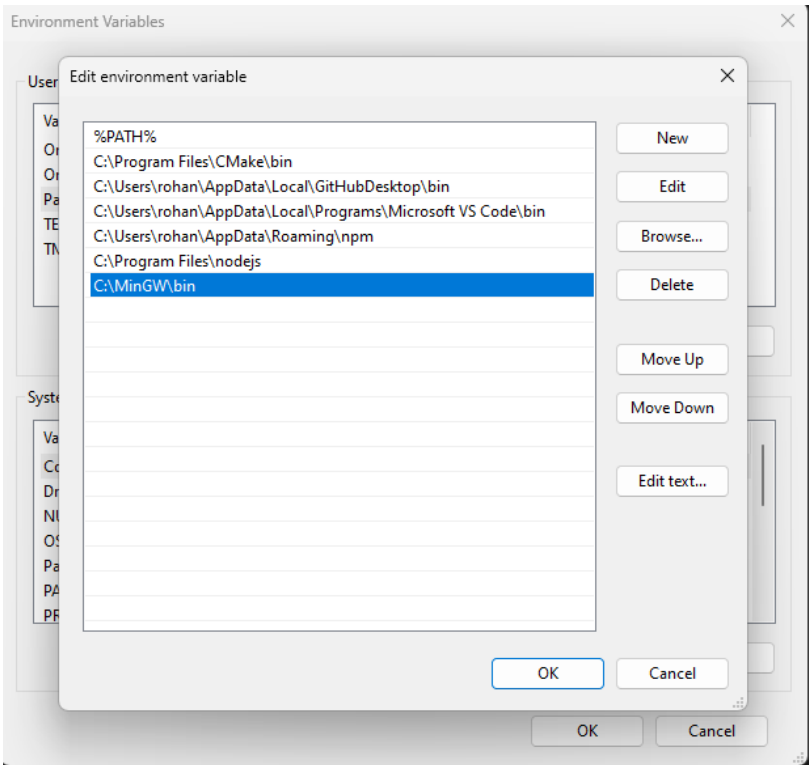
Environment Variables

User variables for rohan

Edit environment variable

%PATH%
C:\Program Files\CMake\bin
C:\Users\rohan\AppData\Local\GitHubDesktop\bin
C:\Users\rohan\AppData\Local\Programs\Microsoft VS Code\bin
C:\Users\rohan\AppData\Roaming\npm

*By Default, the MinGW installer installs all the files to “**C:\MinGW\bin**” folder. If you have changed the installation directory while installing it you need to give the location of that folder. This is how it will look:*



Environment Variables

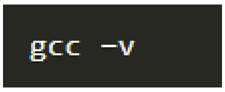
Edit environment variable

%PATH%
C:\Program Files\CMake\bin
C:\Users\rohan\AppData\Local\GitHubDesktop\bin
C:\Users\rohan\AppData\Local\Programs\Microsoft VS Code\bin
C:\Users\rohan\AppData\Roaming\npm
C:\Program Files\nodejs
C:\MinGW\bin

Step 4: Test gcc and g++ compiler:

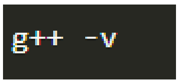
To test if the gcc compiler or the g++ compiler is installed correctly, open a command prompt and type the following command.

For gcc compiler:

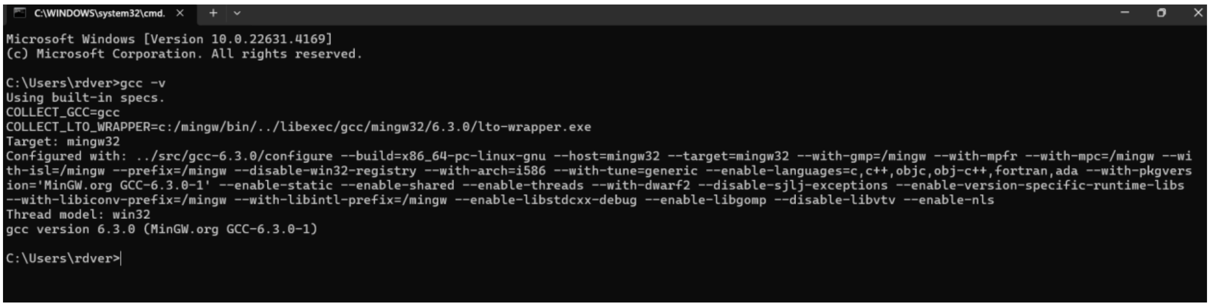


```
gcc -v
```

For g++ compiler:



```
g++ -v
```



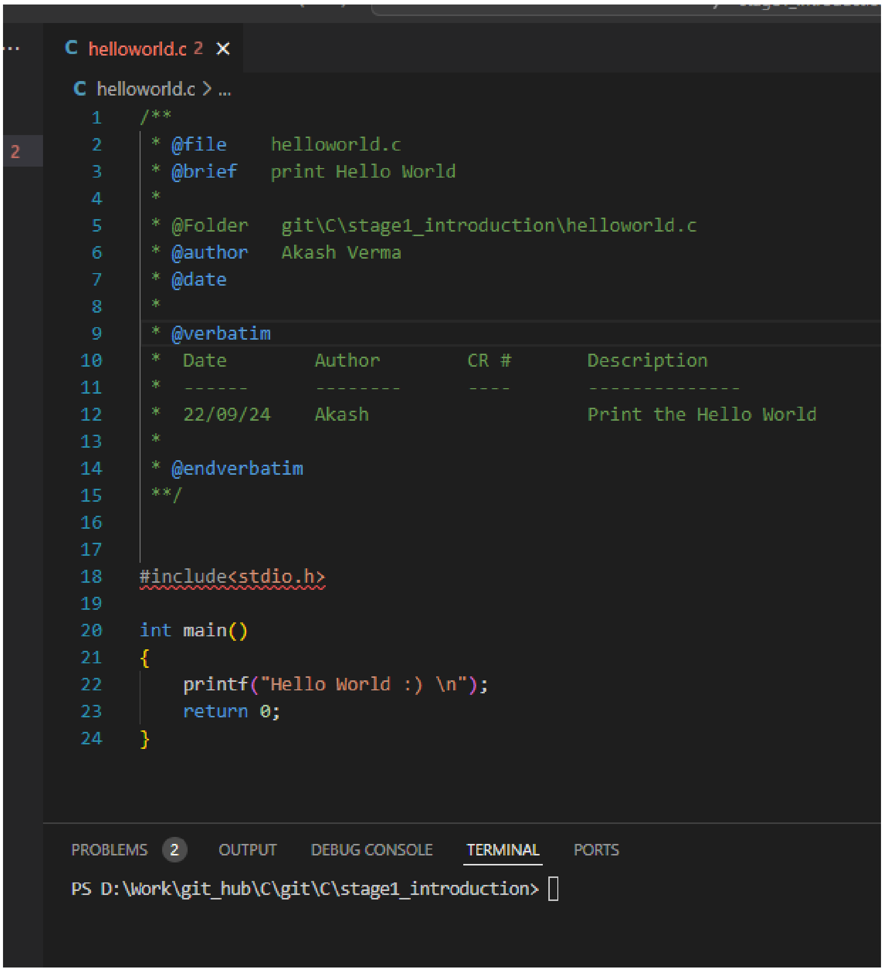
```
Microsoft Windows [Version 10.0.22631.4169]
(c) Microsoft Corporation. All rights reserved.

C:\Users\rdver>gcc -v
Using built-in specs.
COLLECT_GCC=gcc
COLLECT_LTO_WRAPPER=c:/mingw/bin/../libexec/gcc/mingw32/6.3.0/lto-wrapper.exe
Target: mingw32
Configured with: ../src/gcc-6.3.0/configure --build=x86_64-pc-linux-gnu --host=mingw32 --target=mingw32 --with-gmp=/mingw --with-mpfr --with-mpc=/mingw --wi
th-isl=/mingw --prefix=/mingw --disable-win32-registry --with-arch=i586 --with-tune=generic --enable-languages=c,c++,objc,obj-c++,fortran,ada --with-pkgvers
ion='MinGW.org GCC-6.3.0-1' --enable-static --enable-shared --enable-threads --with-dwarf2 --disable-sjlj-exceptions --enable-version-specific-runtime-libs
--with-libiconv-prefix=/mingw --with-libintl-prefix=/mingw --enable-libstdcxx-debug --enable-libgomp --disable-libvtv --enable-nls
Thread model: win32
gcc version 6.3.0 (MinGW.org GCC-6.3.0-1)

C:\Users\rdver>
```

Conclusion:

You've now successfully set up gcc on Windows 11, enabling you to create C/C++ applications seamlessly. These steps cover the entire process, from installing the gcc and g++ compilers to executing your programs in the command prompt. Should you encounter any inquiries or difficulties, feel free to reach out via the comments section. Happy coding!

Now Come back to VS Code:

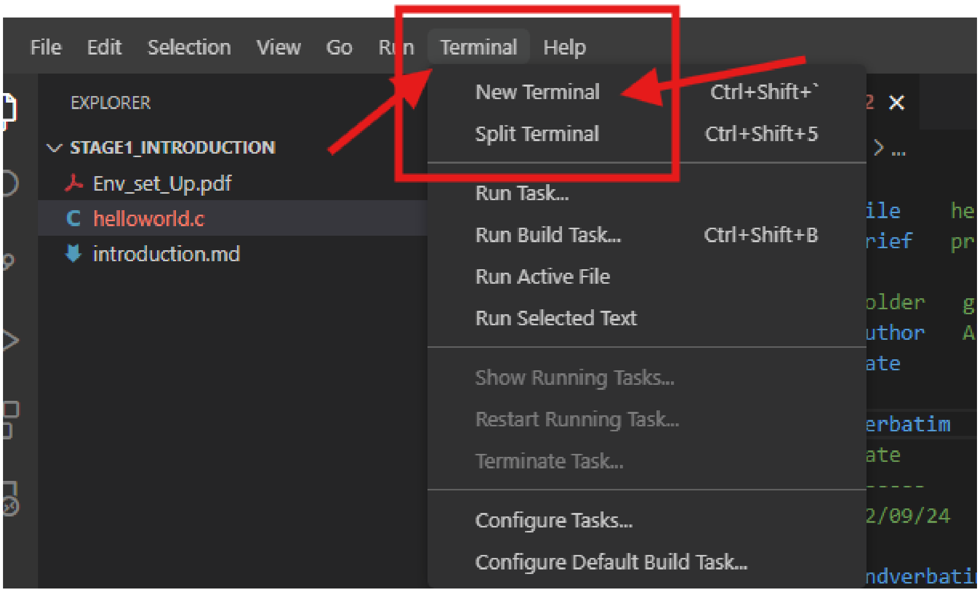
Write your 1st program Hello World and Compile it.



```c
/**
 * @file    helloworld.c
 * @brief   print Hello World
 *
 * @Folder   git\C\stage1_introduction\helloworld.c
 * @author   Akash Verma
 * @date
 *
 * @verbatim
 *  Date        Author        CR #       Description
 *  ------      --------      ----       --------------
 *  22/09/24    Akash                    Print the Hello World
 *
 * @endverbatim
 **/


#include<stdio.h>

int main()
{
    printf("Hello World :) \n");
    return 0;
}
```

```
PS D:\Work\git_hub\C\git\C\stage1_introduction>
```

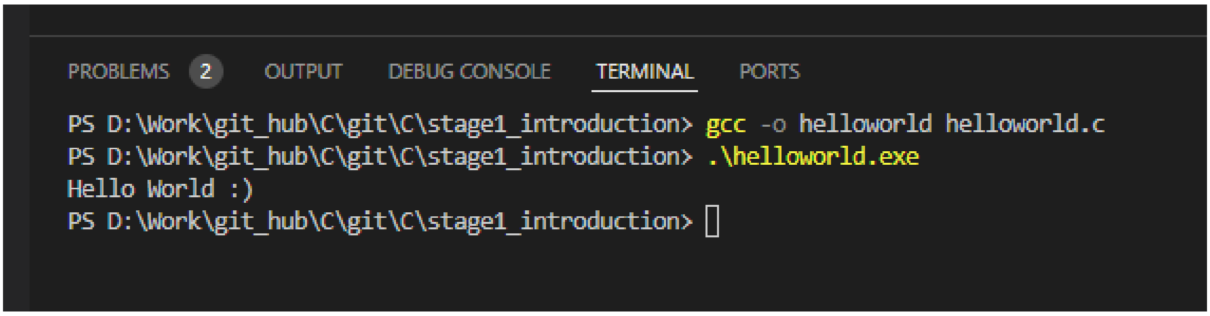
Open Terminal in VS Code.



Command to compile and run your code:

PS D:\Work\git_hub\C\git\C\stage1_introduction> **gcc -o helloworld helloworld.c**

PS D:\Work\git_hub\C\git\C\stage1_introduction> **.\helloworld.exe**



```
PS D:\Work\git_hub\C\git\C\stage1_introduction> gcc -o helloworld helloworld.c
PS D:\Work\git_hub\C\git\C\stage1_introduction> .\helloworld.exe
Hello World :)
PS D:\Work\git_hub\C\git\C\stage1_introduction> 
```