

This is a basic tutorial for installing Cygwin on Windows 10.

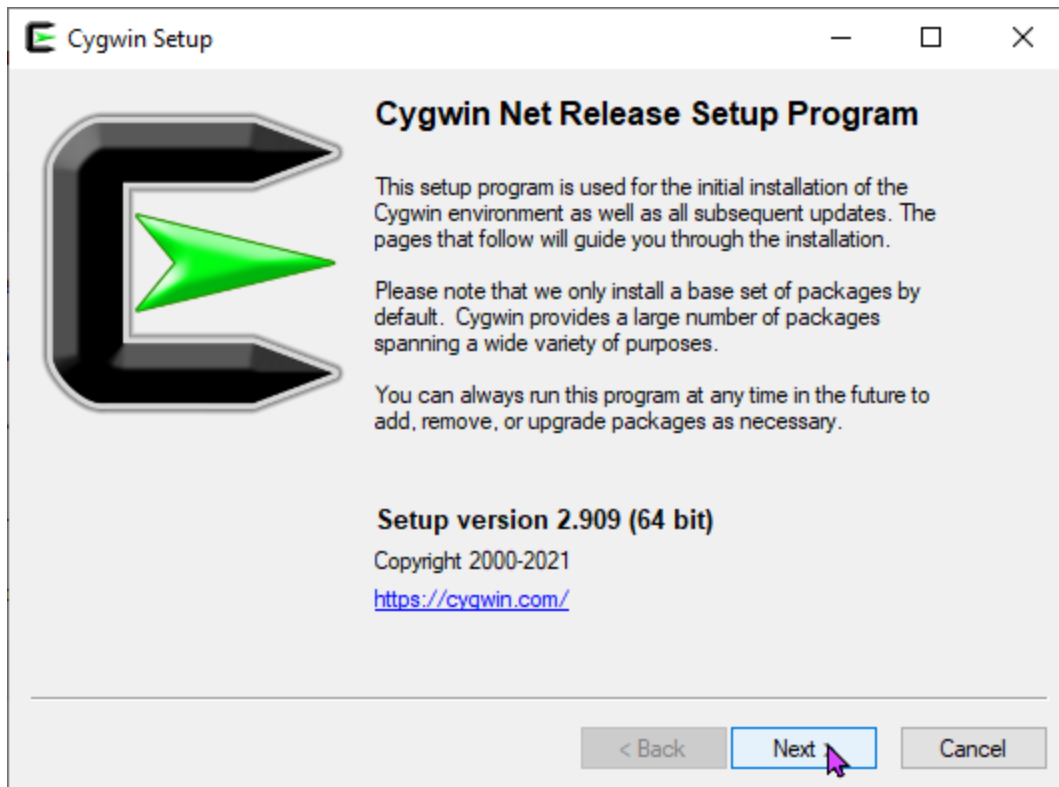
Step 1: Navigate to the [Cygwin](https://cygwin.com/) website and click on setup-x86_64.exe under Installing Cygwin:

The screenshot shows the Cygwin website homepage. The main heading is "Cygwin" in a large, bold, red font. Below it, the text reads "This is the home of the Cygwin project". The page is divided into several sections: "What...", "Cygwin is:", "Cygwin version", "DEPRECATION NOTE", "Installing Cygwin", and "Support for Cygwin". The "Installing Cygwin" section contains the link to "setup-x86_64.exe". The "DEPRECATION NOTE" section states that Cygwin 3.3.0 is the last version supporting Windows Vista, Windows Server 2008, and 32-bit Windows versions. The "Support for Cygwin" section provides information on how to report bugs and get help.

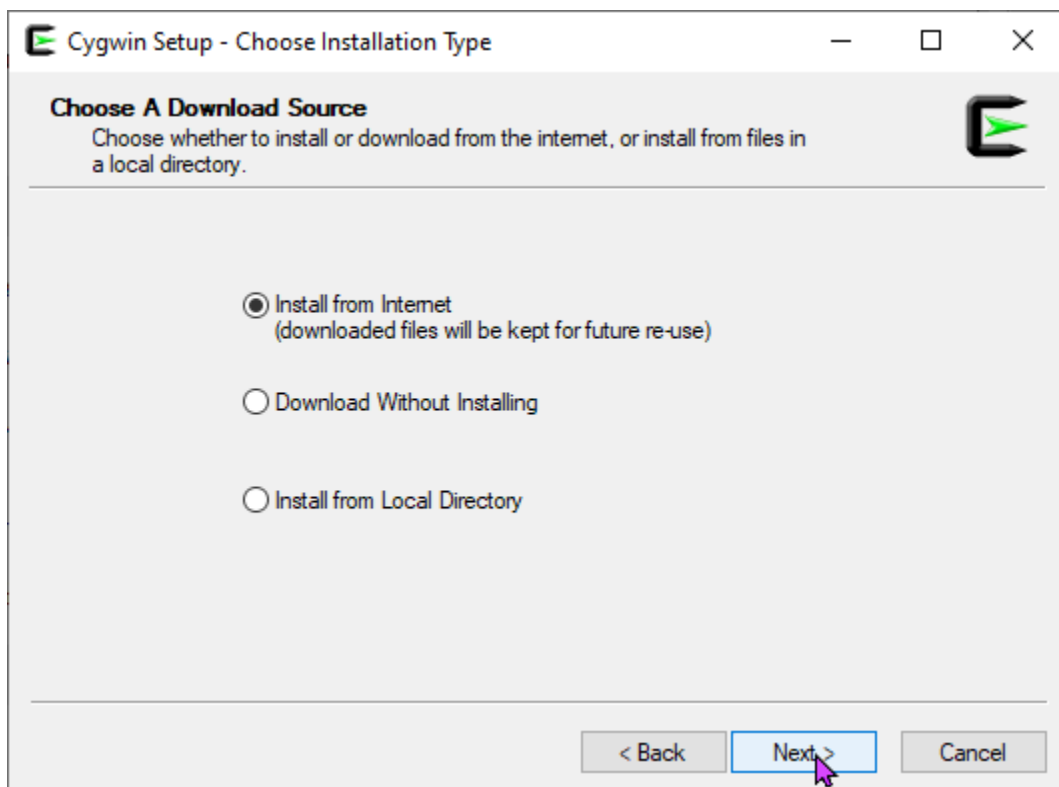
Step 2: Save the file to a location you know how to access. I'm using the Downloads folder:

The screenshot shows a Windows File Explorer window titled "Save As". The address bar shows the path "This PC > Downloads". The left sidebar shows the "Downloads" folder selected. The main pane displays a list of files and folders in the Downloads folder, including "Thunderstore Mod Manager - Installer.exe", "setup-x86_64.exe", and a folder named "http%3a%2f%2fmirrors.163.com%2fcyg...". The "File name" field at the bottom contains "setup-x86_64.exe" and the "Save as type" is set to "Application (*.exe)". The "Save" button is highlighted with a mouse cursor.

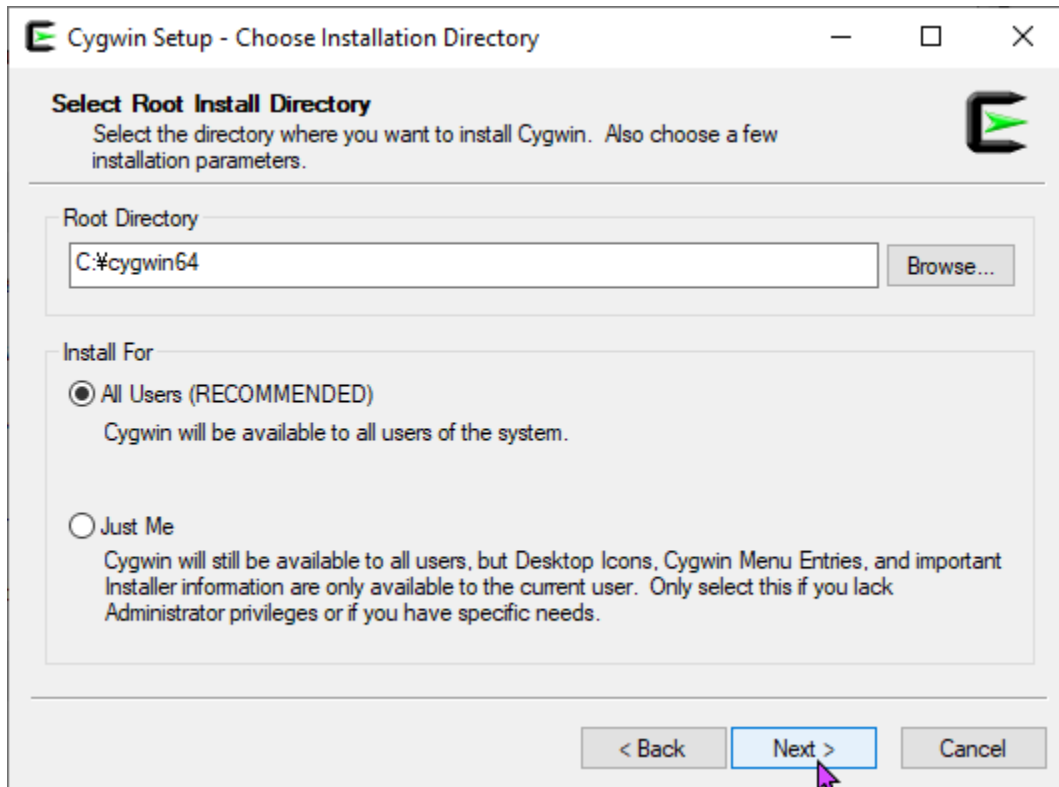
Step 3: Install Cygwin



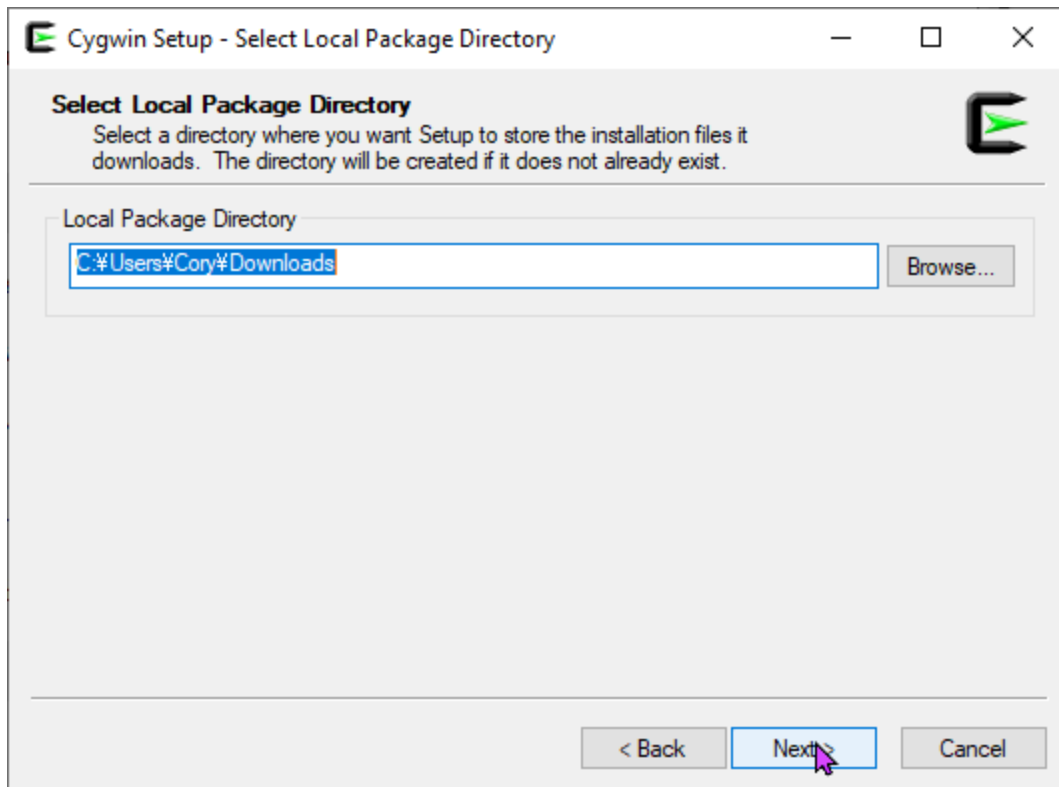
We'll be installing from the internet since that's the easiest option.



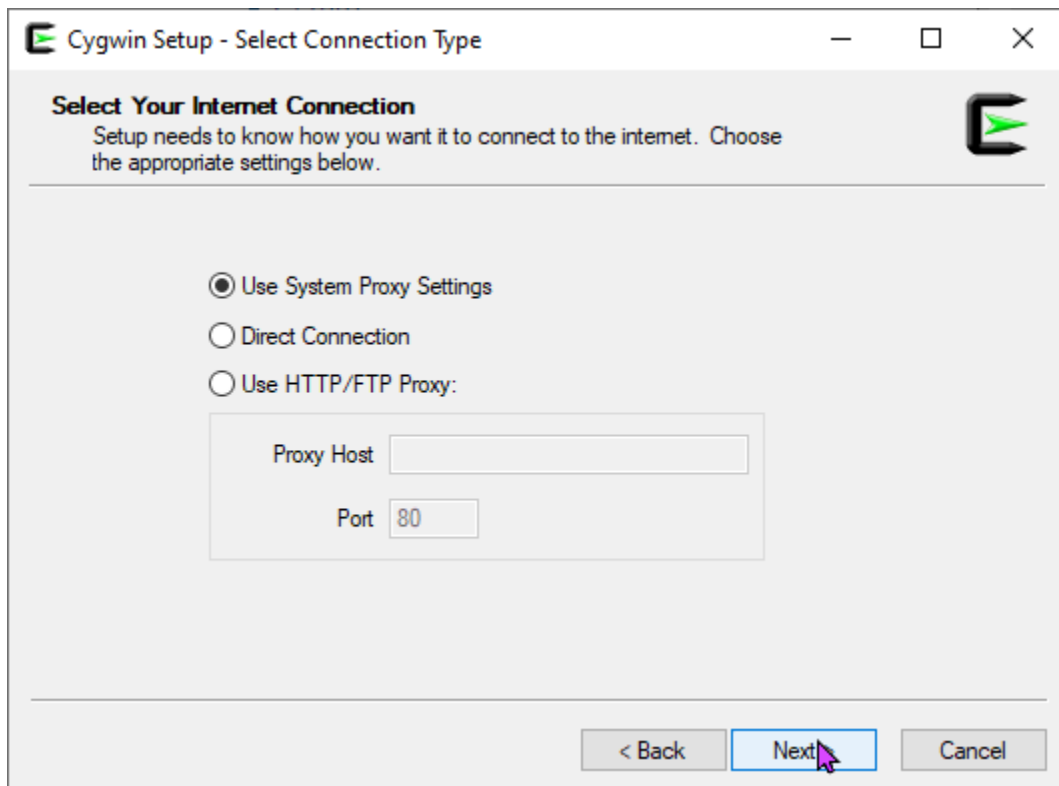
For this tutorial we will be going with the default settings. The Root Directory (where Cygwin will be installed) can be changed, just make sure to remember where it was changed to since we'll need it later.



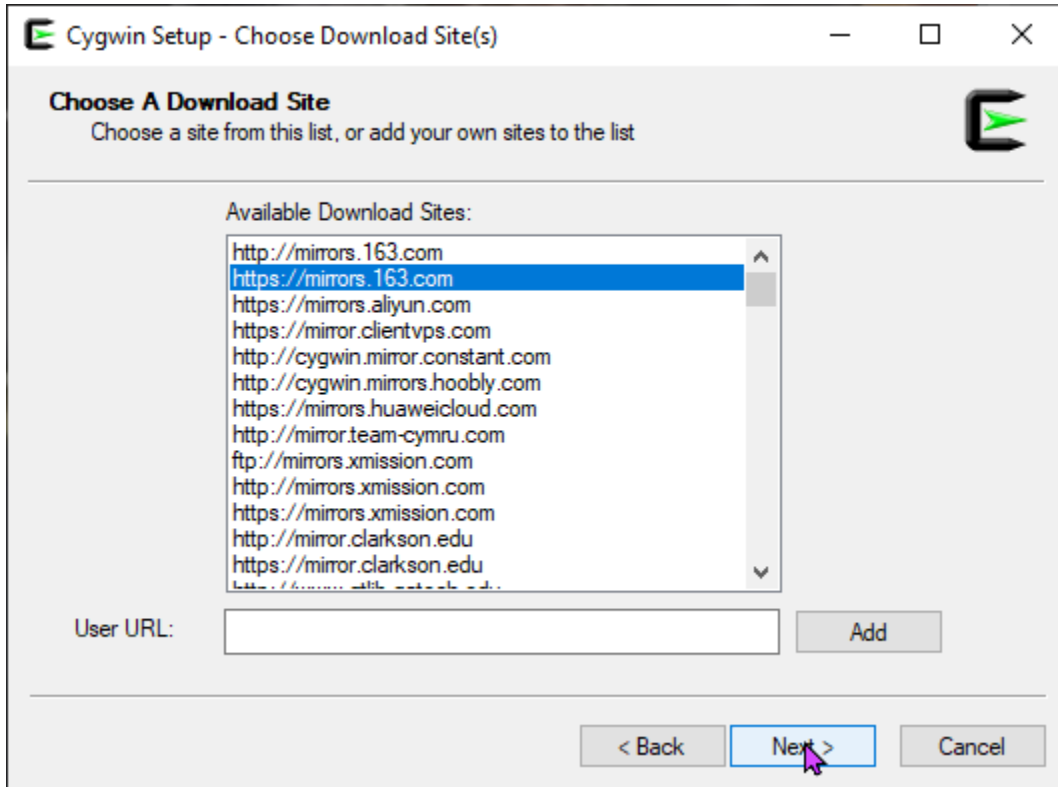
The Local Package Directory is just where files are stored when downloading the necessary files. If you plan on installing again in the future, make note of this location later for easier reinstallation. Otherwise, just click "Next".



Leave it default here unless you know what you're doing.

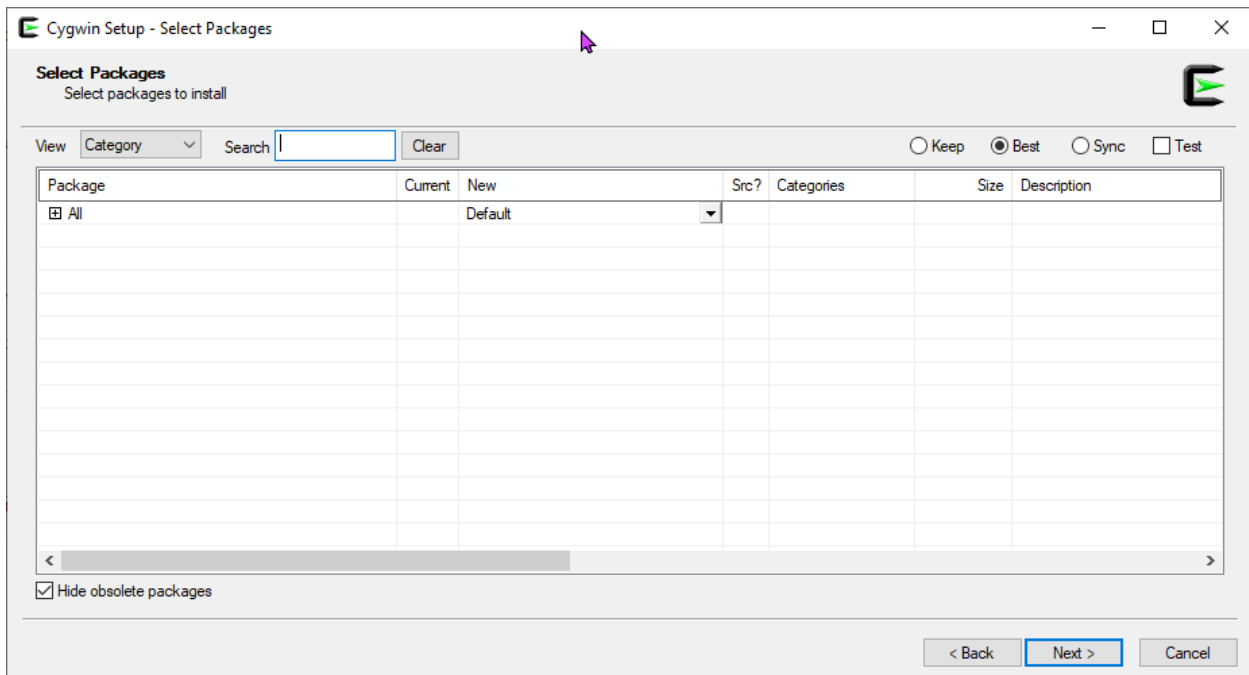


Pick a download site. This doesn't particularly matter, just make sure you're using an https site. I'm going to stick with the default for this tutorial.



It'll run for a moment and then this box will pop up.

Step 4: Selecting necessary packages

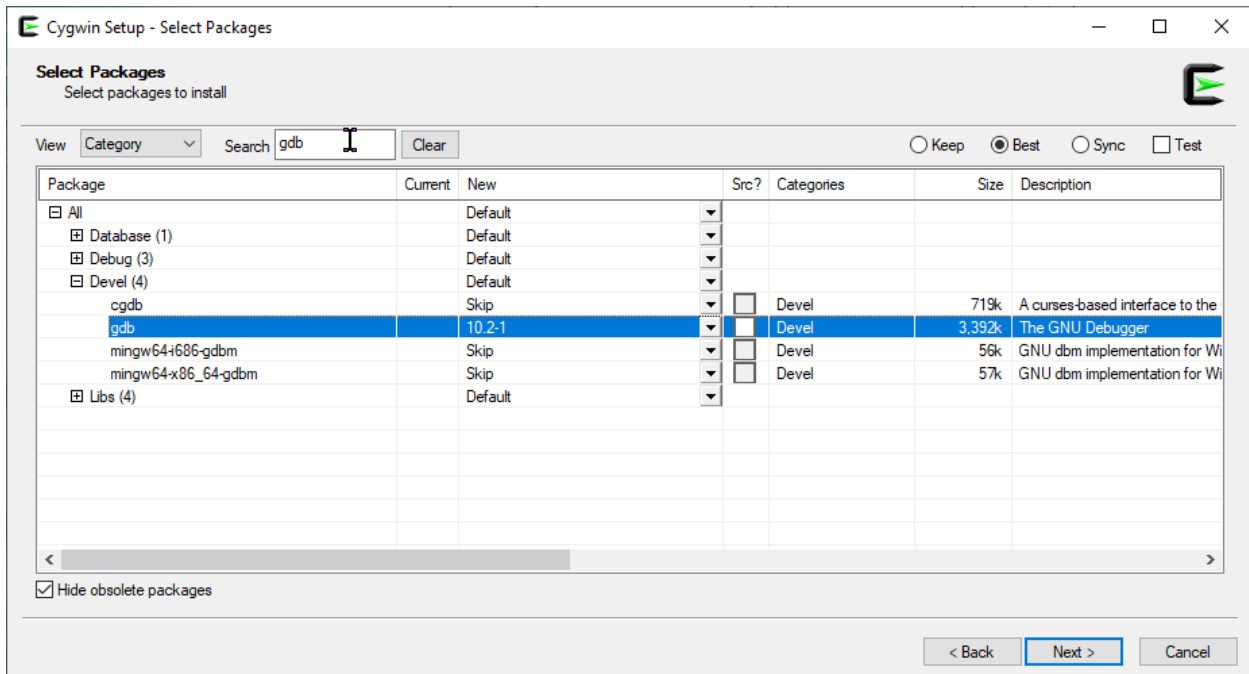
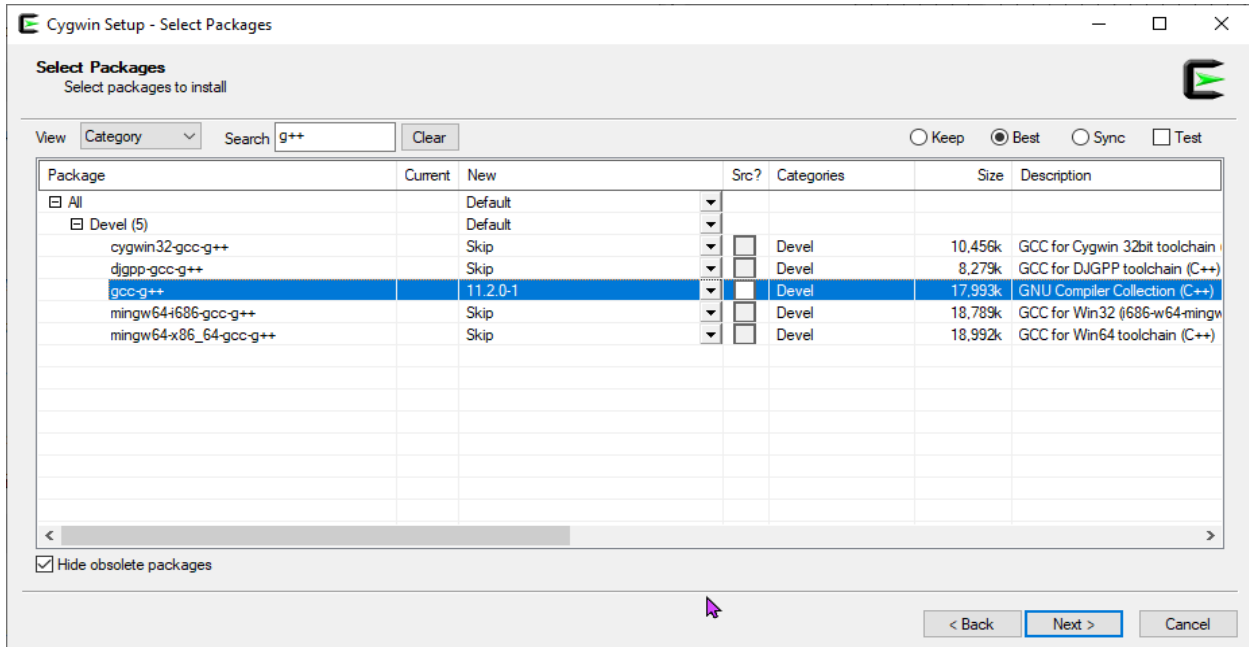


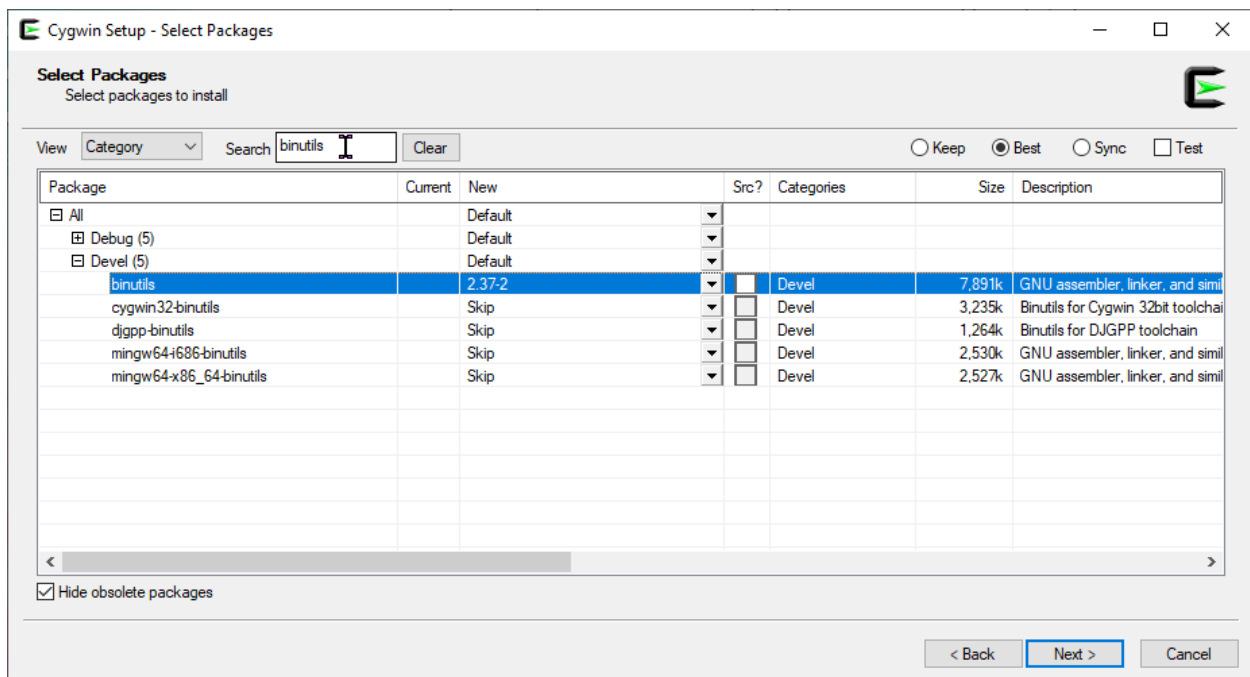
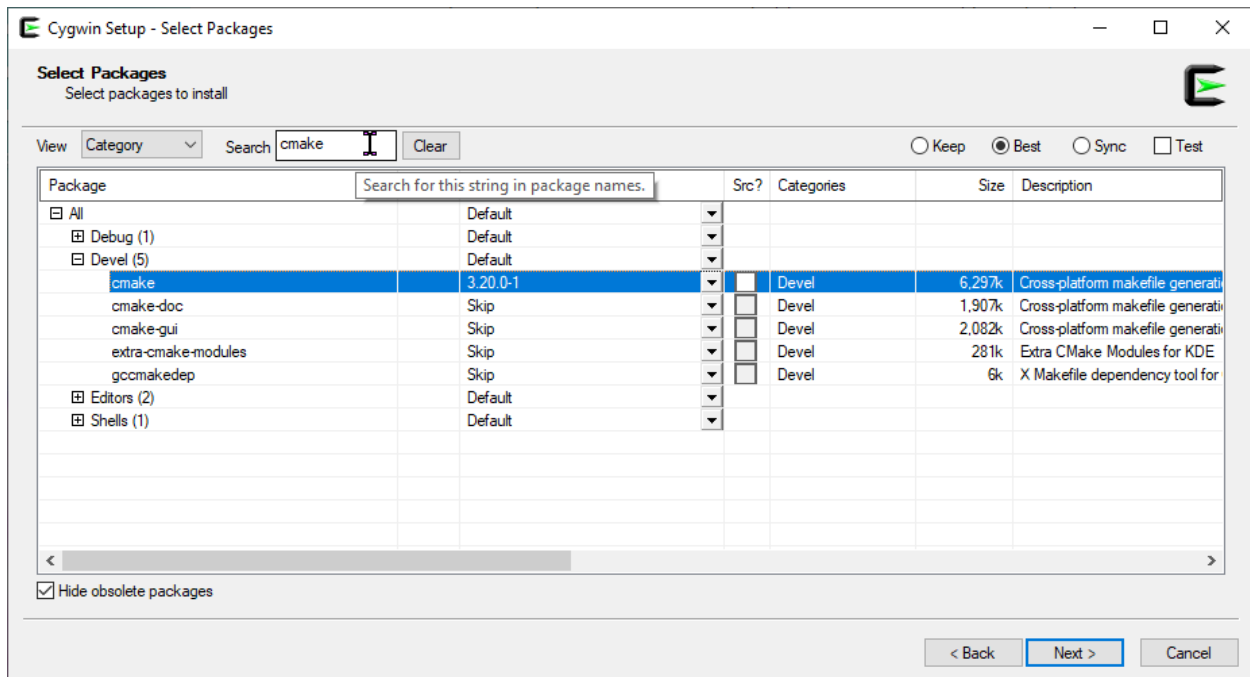
Cygwin has a lot of packages available, but we're only going to need four:

- gcc g++ v. 11.2.0-1
- gdb v. 10.2-1
- cmake v. 3.20.0-1
- binutils v. 2.37-2

These should be all we need for most major IDEs, and it's sufficient for compilation via command line.

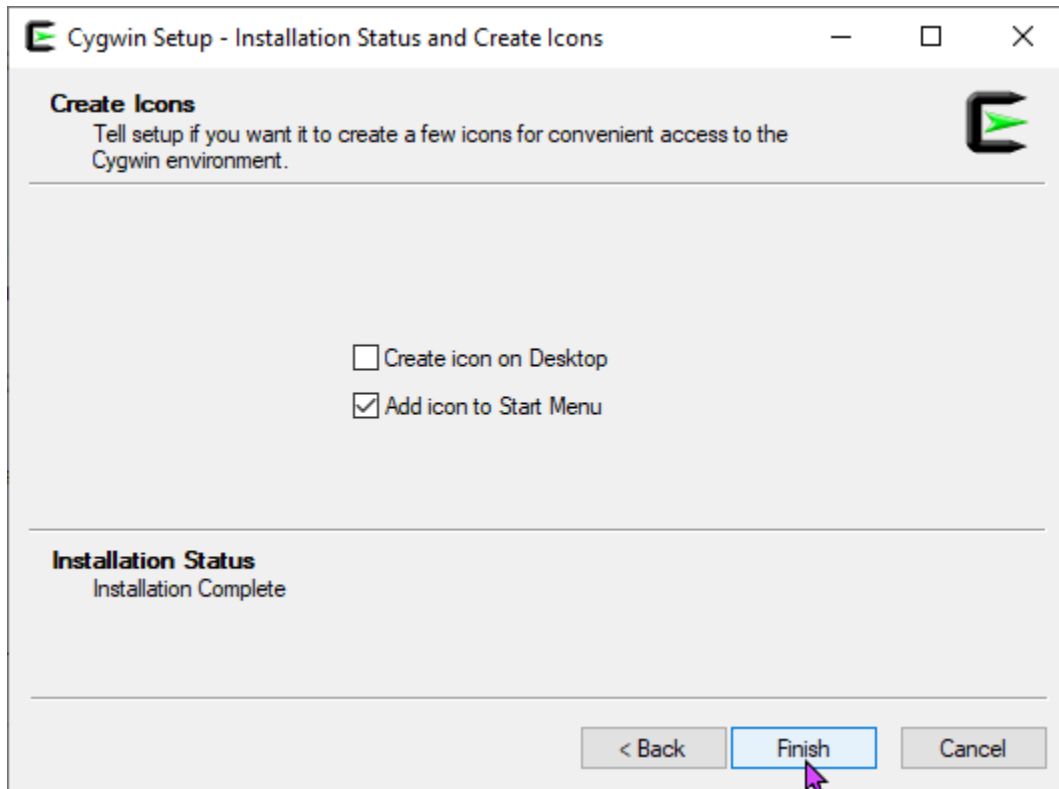
Note: The version numbers might change as these are always being updated so just make sure the latest version without (Test) is selected.



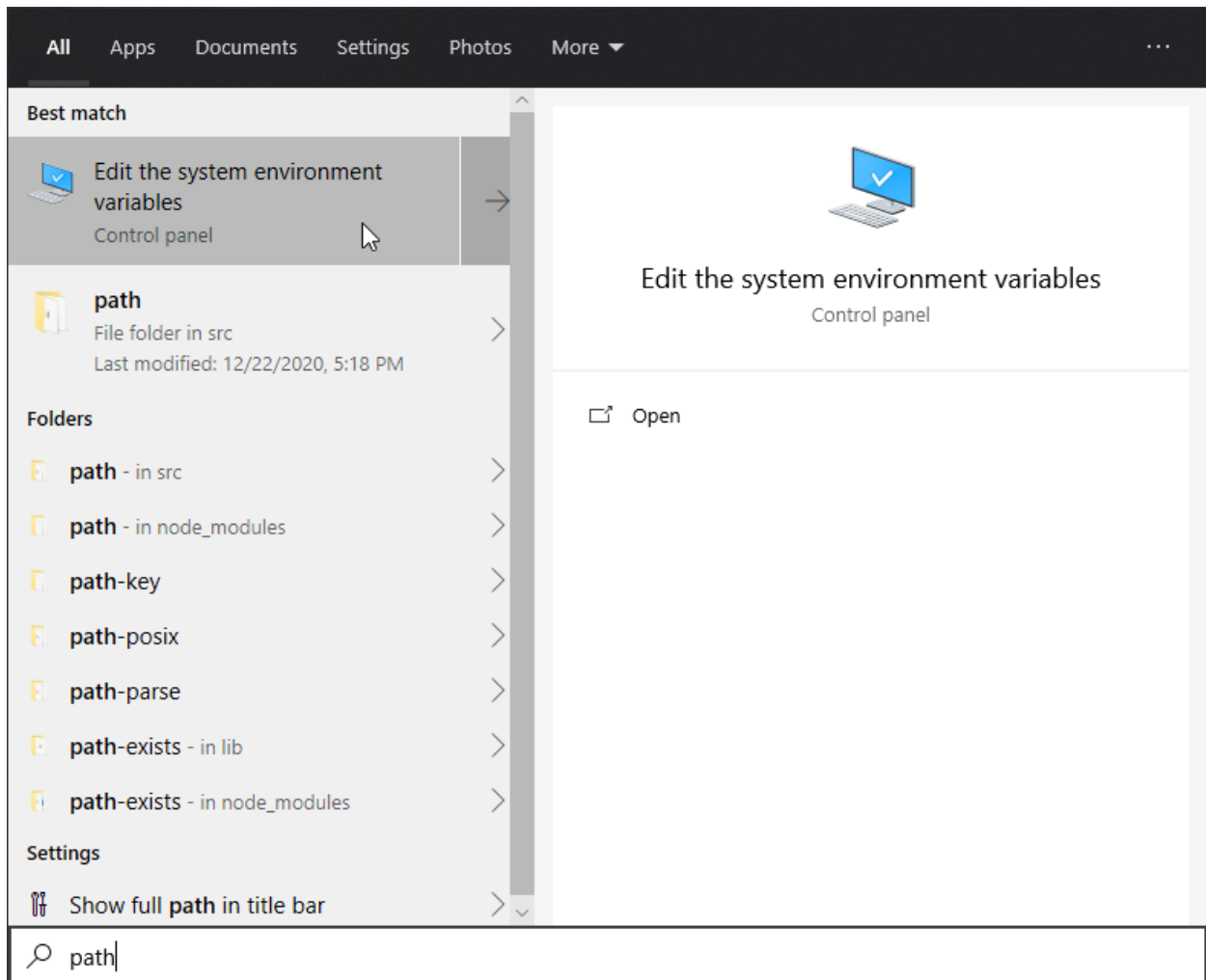


Click "Next". The installer will ask you to review and confirm changes, so just click "Next" once more. Depending on your internet connection it might take a bit, so just hang tight until it's done.

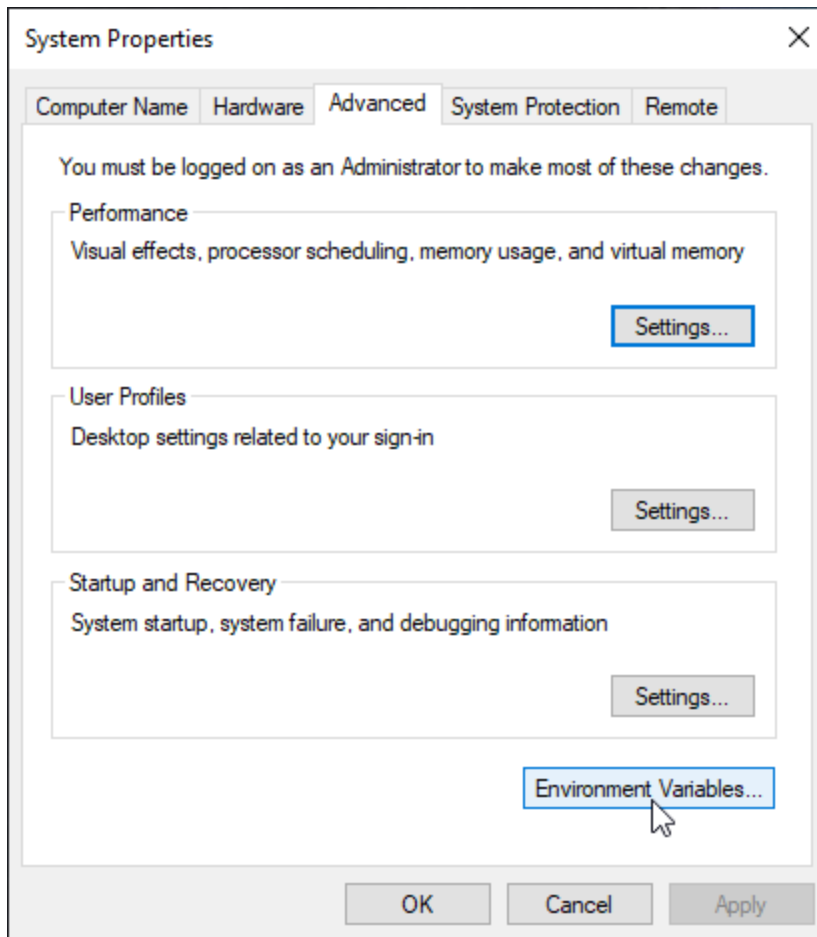
It's up to you if you want an icon on the desktop or in the start menu. I don't use my desktop, so I opted just to add the icon to the start menu. Click "Finish" and you're done with the installation.



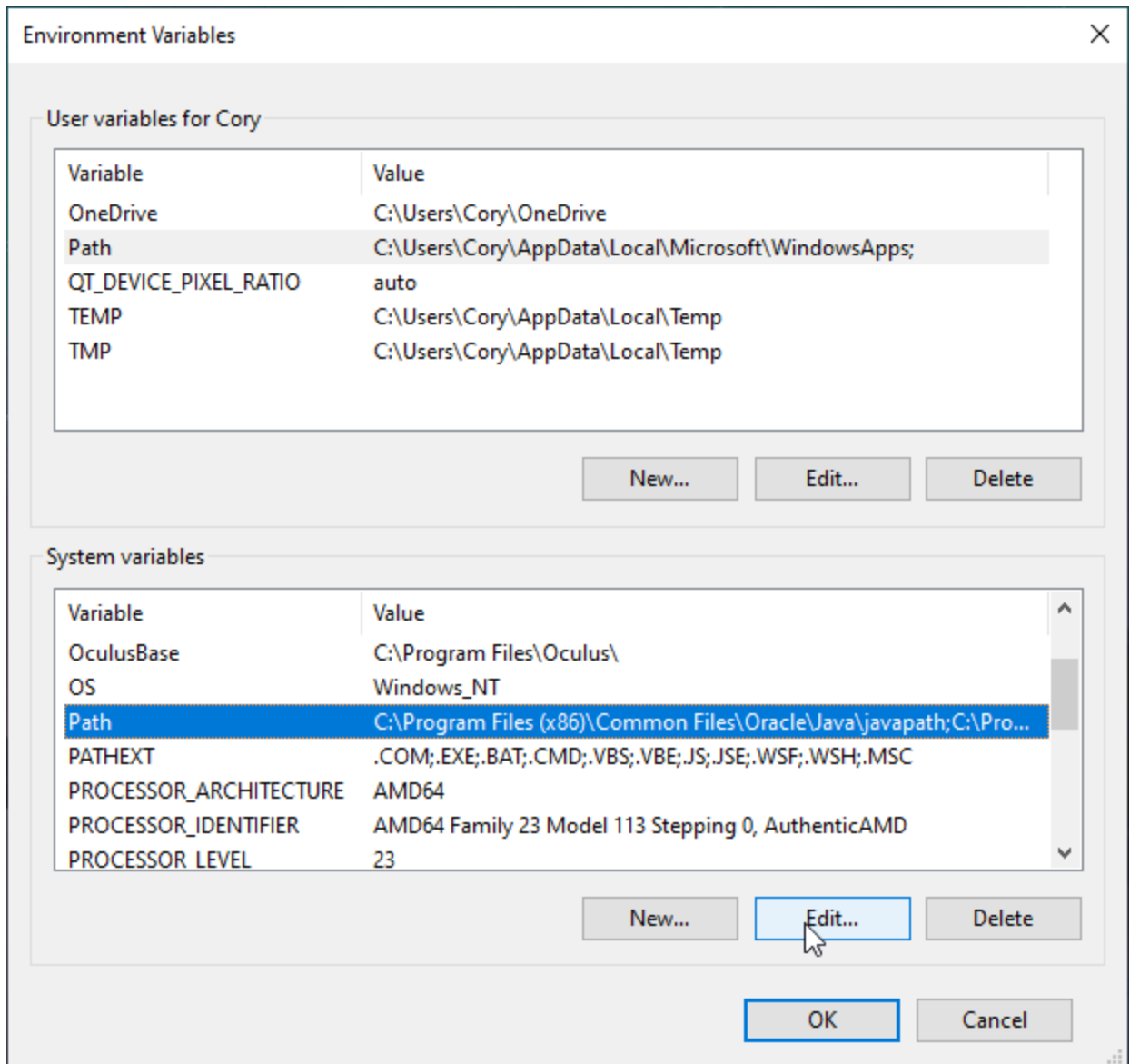
Step 5: Add the bin to the environment variables (the PATH)



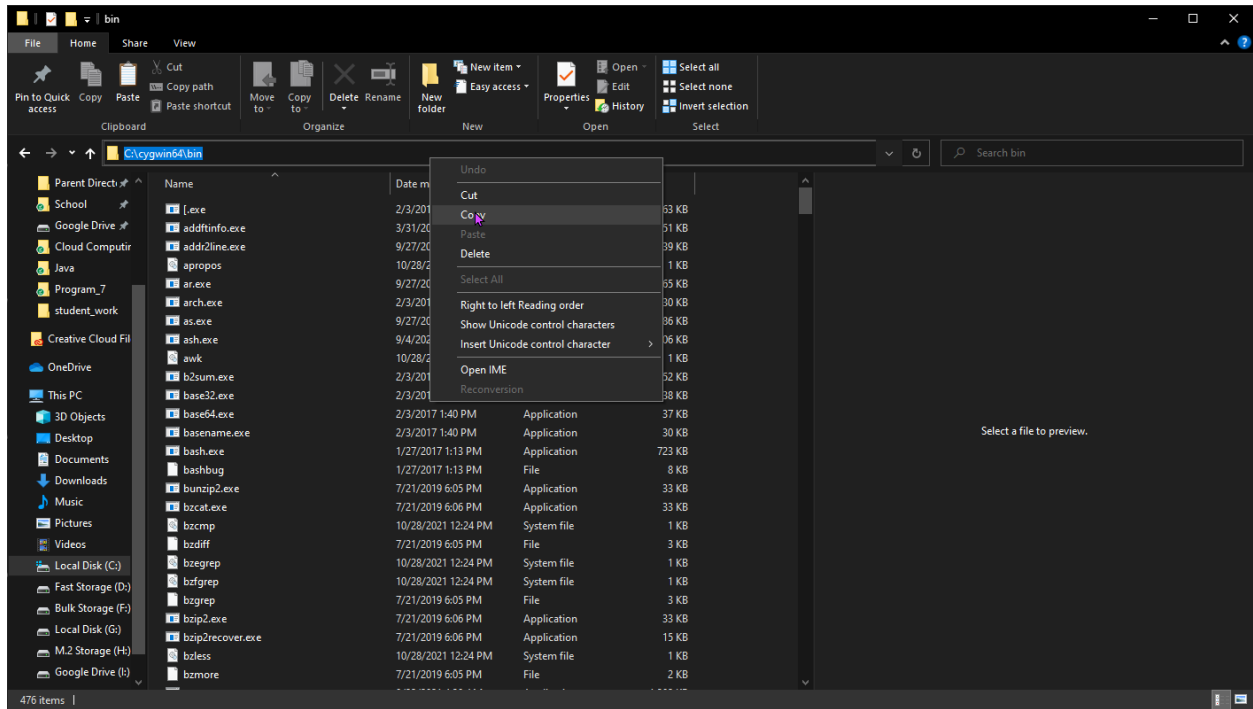
Go into your search bar and type in 'path', then select the "Edit the system environment variables" option.



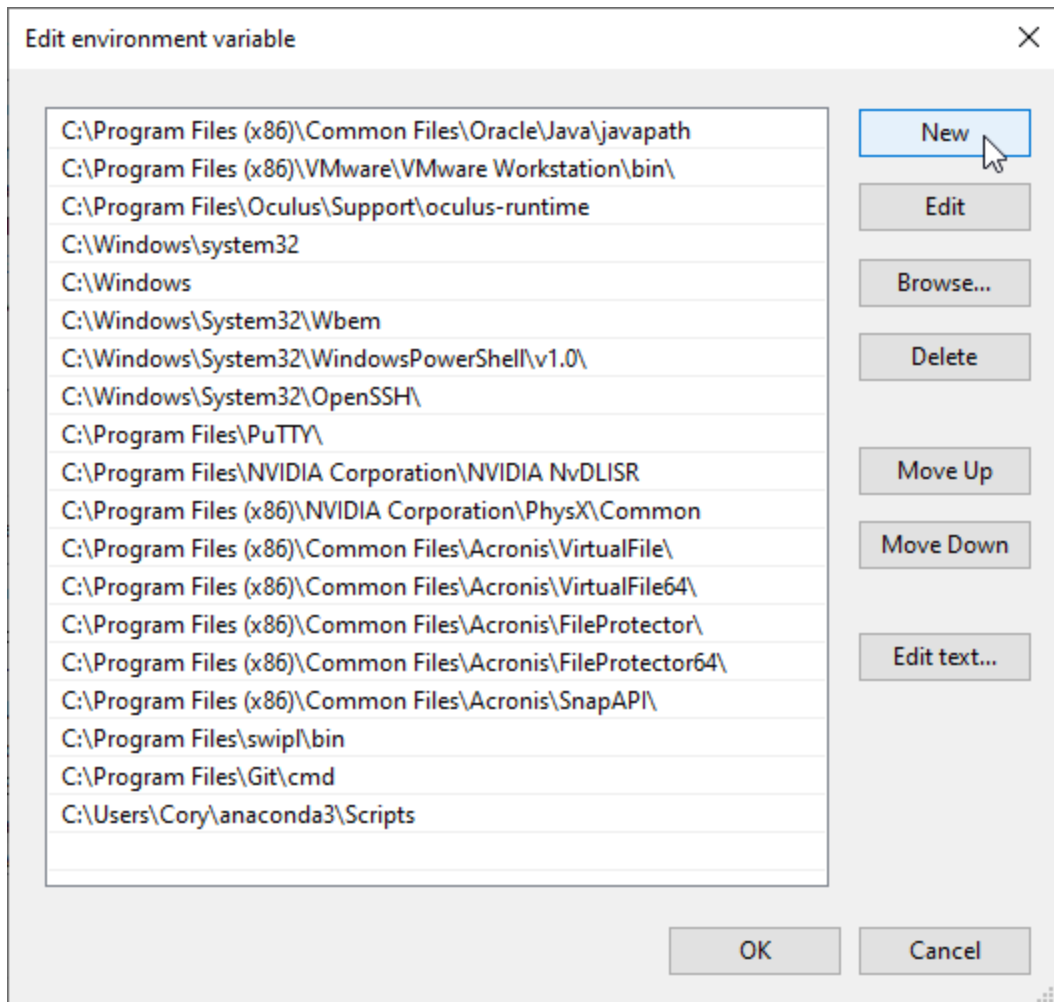
A window like this should pop up. Select "Environment Variables".



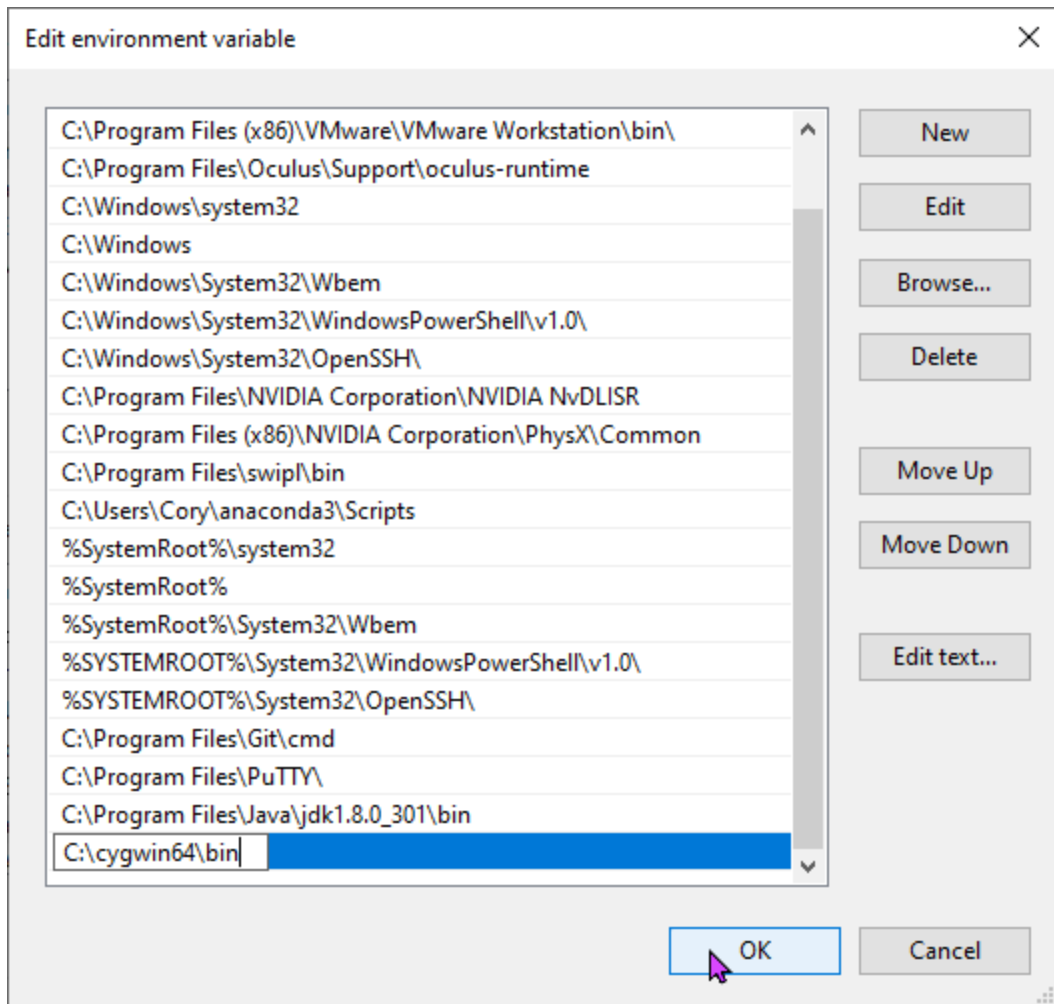
Select the "Path" category in the system variables and click "Edit".



Navigate to where you installed Cygwin in File Explorer and copy the entire directory path from the bin folder inside of the cygwin64 folder.

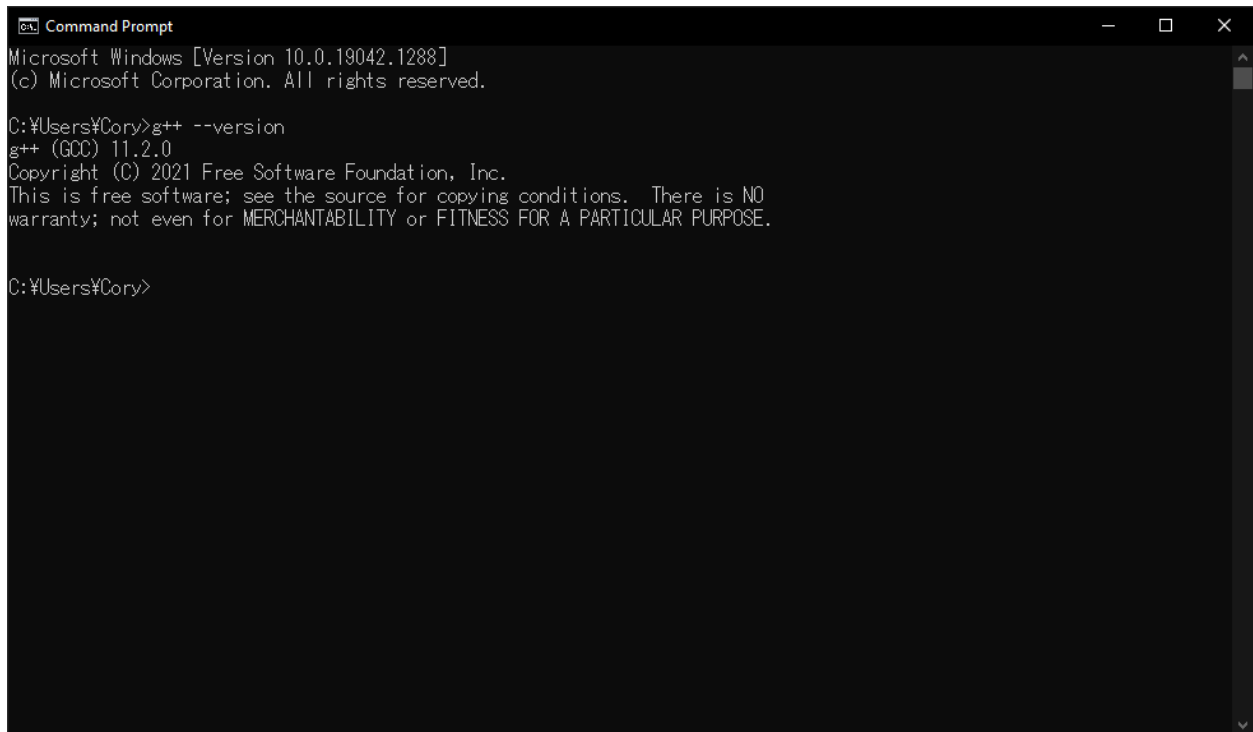


Click on "New":



Paste the full path to the bin directory in the text box that appeared and click "OK".

Step 6: Test

A screenshot of a Windows Command Prompt window. The title bar reads "Command Prompt". The window content shows the following text:

```
Microsoft Windows [Version 10.0.19042.1288]
(c) Microsoft Corporation. All rights reserved.

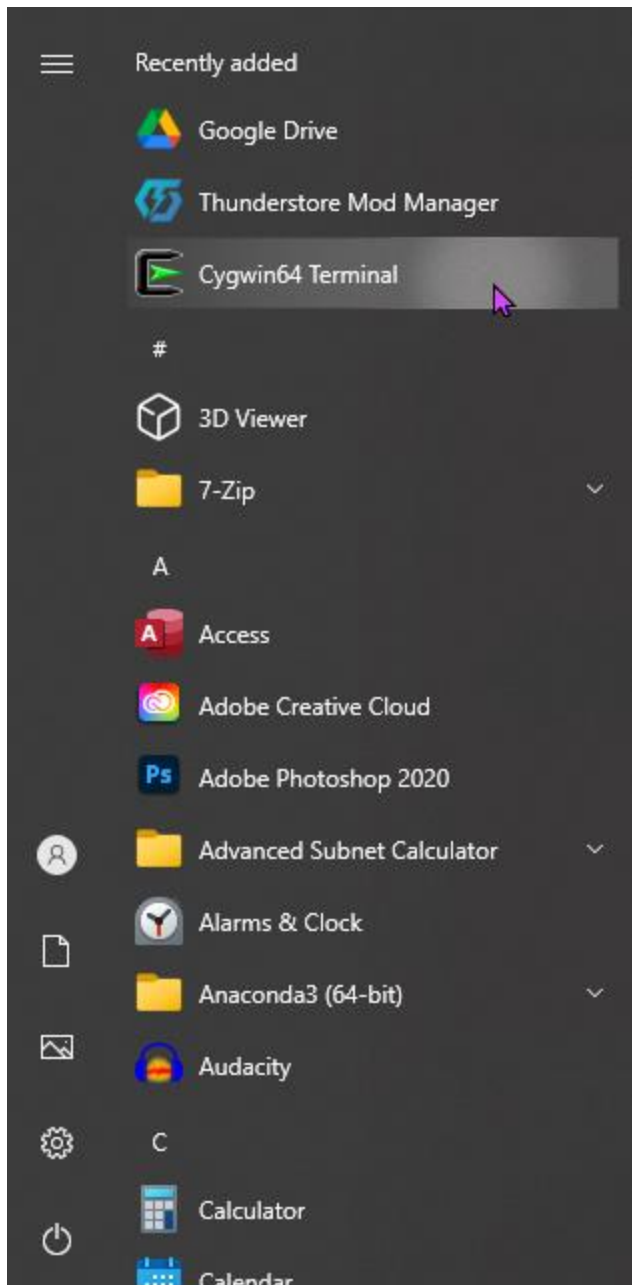
C:\Users\Cory>g++ --version
g++ (GCC) 11.2.0
Copyright (C) 2021 Free Software Foundation, Inc.
This is free software; see the source for copying conditions. There is NO
warranty; not even for MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE.

C:\Users\Cory>
```

Type in `g++ --version`. If the version appears, you've successfully installed Cygwin! The same commands can be used as in any compilation tutorial and programs compiled work on all platforms.

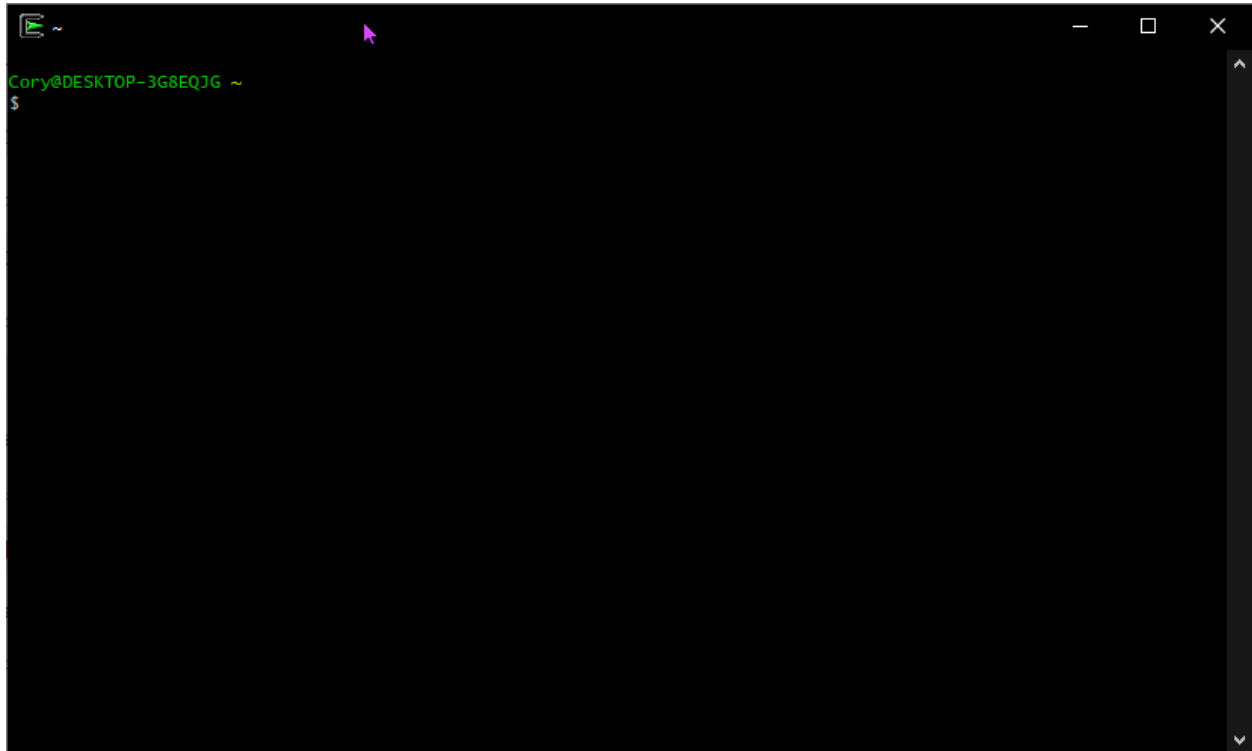
However, Cygwin has a choice: you can either continue using the Windows command prompt, or you can use Cygwin's built in linux-like terminal. Getting a feel for Linux will be important, since that's the primary development operating system, so practice might be a good idea. If you want to proceed using the Cygwin terminal, keep reading for the optional Cygwin tutorial.

(Optional) Step 7: Using the Cygwin terminal



If you selected the “Add icon to Start Menu” or “Create icon on Desktop” when installing, opening the terminal is the same as any other program. If you didn’t, you’ll have to navigate to the location where you installed Cygwin and either launch “mintty.exe” in the bin folder or double-click “Cygwin.bat” in the base install folder to launch it.

Once open, you'll see this:



This works like a Linux terminal, so Linux commands like 'ls' or 'vi' (should you feel so inclined) work fine. Windows commands still work. Once you have the terminal open, you can navigate to the appropriate directory for compilation (It doesn't start in the C: drive so you'll want to use cd once to get there) and compile the same way you normally would.

Here's an example of navigating to another directory and compiling code, the same way you would in most Linux distros.

```
 /cygdrive/f/Parent Directory/programming_stuff/Prog Fundamentals 3/assignment03
Cory@DESKTOP-3G8EQJG ~
$ cd f:

Cory@DESKTOP-3G8EQJG /cygdrive/f
$ cd Parent\ Directory/

Cory@DESKTOP-3G8EQJG /cygdrive/f/Parent Directory
$ cd programming_stuff/

Cory@DESKTOP-3G8EQJG /cygdrive/f/Parent Directory/programming_stuff
$ cd Prog\ Fundamentals\ 3

Cory@DESKTOP-3G8EQJG /cygdrive/f/Parent Directory/programming_stuff/Prog Fundame
ntals 3
$ cd assignment3
-bash: cd: assignment3: No such file or directory

Cory@DESKTOP-3G8EQJG /cygdrive/f/Parent Directory/programming_stuff/Prog Fundame
ntals 3
$ assignment03
-bash: assignment03: command not found

Cory@DESKTOP-3G8EQJG /cygdrive/f/Parent Directory/programming_stuff/Prog Fundame
ntals 3
$ cd assignment03

Cory@DESKTOP-3G8EQJG /cygdrive/f/Parent Directory/programming_stuff/Prog Fundame
ntals 3/assignment03
$ g++ -I ./ *.cpp

Cory@DESKTOP-3G8EQJG /cygdrive/f/Parent Directory/programming_stuff/Prog Fundame
ntals 3/assignment03
$ ./a
```