# LW: Setting up your PC for CSCE 121

For the first week only, you can complete this labwork on your own and do not have to attend lab to get credit.

# Installing the C++ Compiler

- 1. Download Cygwin setup
  - a. Go to https://cygwin.com/
  - b. Under "Installing Cygwin" follow the setup link for your computer to download the installer executable. You should try to use version (64 bit or 32 bit) that matches your computer's version of the Windows operating system.
    - This link will help you figure out if you are using the 64- or 32-bit version of windows (https://support.microsoft.com/en-us/help/827218/how-to-determine-whet her-a-computer-is-running-a-32-bit-version-or-64).
  - c. Run the setup executable and select "Next"



#### d. Select "Install from Internet" and then "Next"

a local directory.	ie internet, or install from	n files in	-
<ul> <li>Install from Internet (downloaded files will be k</li> </ul>	kept for future re-use)		
O <u>D</u> ownload Without Installi	ng		
O Install from Local Director	y		

e. Accept the default directory. Choose what works for your situation under "Install For".

Root Directory	-					
C:\cygwin64					Browse	e
nstall For						
All Users (	RECOMMENDED	))				
Cygwin w	ill be available to a	all users of the sys	tem.			
O Just Me						
Cygwin wi Installer in	Il still be available formation are only	to all users, but D available to the o	esktop Icons, Cy current user. Only	gwin Menu Entri v select this if you	es, and import u lack	ant

### f. Use whatever directory you want and then "Next".

	All Control of Control	,,	t.	
ocal Package Directory	y woloads			Drawas
C: (Users ymichael (Dov	whioads			Browse

### g. Accept the default (Use System Proxy Settings) and then "Next".

Ilse System Proxy Settings
O Use HTTP/FTP Proxy:
Proxy Host
Port 80

h. Choose whatever download site you want. I would recommend using servers in the US (i.e. .com, .edu, and .net). Anything in other countries is likely to be

slower.

	Available Download Sites:		
	http://cygwin.mirror.constant.com http://cygwin.mirrors.hoobly.com http://mirrors.koehn.com http://mirrors.metapeer.com http://www.pirbot.com http://mirrors.mission.com ftp://mirrors.xmission.com http://mirrors.xmission.com http://mirrors.clarkson.edu http://mirror.cs.vt.edu http://mirror.cs.vt.edu http://mirror.koddos.net http://mirror.hk.koddos.net ftp://mirrors.petic.net		
Uses UDL.		×	 

- i. Search and select each of the following packages **before** clicking next. Note: You just need bin, not src but feel free to get the src if you want to look at it. Note: Use search to find them more easily.
  - i. gcc-core

/iew	Category $\sim$	Search	gcc-core	Clear		🔘 Кеер	● Be	st	O Sync Test
Pack	kage			Current	New		Bin?	Src?	Categories
🗆 Al				Default	•				
E	Devel (5)				Default	•			
	cygwin32-gcc-c	ore			Skip	-			Devel
	djgpp-gcc-core				Skip	-			Devel
	gcc-core				7.4.0-1	<b>•</b>	~		Devel
	mingw64-i686-g	cc-core			Skip	•			Devel
	mingw64-x86_6	4-gcc-con	e		Skip	•			Devel

#### ii. gcc-g++

iew Category ~ Search gcc-g++	Clear	() Кеер	● Be	est	O Sync Tes
Package	Current	New	Bin?	Src?	Categories
e All		Default 👻			
Devel (5)		Default 👻			
cygwin32-gcc-g++		Skip 👻			Devel
djgpp-gcc-g++		Skip			Devel
gcc-g++		7.4.0-1			Devel
mingw64-i686-gcc-g++		Skip 👻			Devel
minaw64-x86 64-acc-a++		Skip 👻			Devel

#### iii. libgcc1

Select Packages Select packages to install							E
View Category V Search libgcc1	Clear		🔘 Кеер	Best	⊖ Syn	c [	Test
Package	Current	New			Bin?	Src?	Catego
E All		Default					
□ Libs (1)		Default			-		
libgcc1		7.4.0-1		-	· /		Libs

#### iv. gdb

/iew	Category ~	Search	gdb		Clear		() Кеер	Best		🔿 Syne	c [	] Test
Pack	age		8	Searc	h for this	s string in pa	ickage name	s.	_	Bin?	Src?	Catego
ΞA						Default			•			
Θ	E Database (1)					Default			-			
Θ	E Debug (3)					Default			-			
E	Devel (4)					Default			-			
	cgdb					Skip			-			Devel
	S					7911						Dougl

#### v. make

/iew	Category $\checkmark$	Search	make	Clear		🔾 Keep 🌘	Best (	) Syno	c 🗌 Test
Pac	kage			Current	New			Bin?	Src? Cat
	extra-cmake-modules				Skip		-		Dev
	gcc-tools-epoch	1-automa	ke		Skip		-		Dev
	gcc-tools-epoch	2-automa	ke		Skip		-		Dev
	gccmakedep				Skip		-		Dev
	imake				Skip		-		Dev
	make				4.1-1		-	~	Dev
	makadapand				Chin		_		Dau

## vi. libmpfr4

ew	Category	✓ Search	libmpfr4	Clear		⊖ Keep	Best	(	🔵 Syno		] Test
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E	E Libs (1)				Default			-			
	libmpfr4				3.1.6-1p1			-	Image: A start of the start		Libs, I
Œ	3 Math (1)				Default			-			

### j. Then click next

ew Pending V Search	Clear		🔾 Кеер	Best	⊖ Sync □ Te	est
Package	Current	New		Bin? Src?	Categories	^
base-files	4.2-4	4.3-2	-		Base	
bzip2	1.0.6-3	1.0.8-1	•		Archive	
ca-certificates	2.22-1	2.32-1	-		Net	
crypto-policies		20190218-1	-		Base	
cygwin	2.10.0-1	3.0.7-1	-		Base	
cygwin-devel	2.10.0-1	3.0.7-1	*		Devel	
gawk	4.2.1-1	5.0.1-1	*		Base, Interpreters	
gcc-core	7.3.0-3	7.4.0-1	-		Devel	
dcc-d++	7.3.0-3	7.4.0-1	<b>▼</b>		Devel	~
<					2	•

k. You probably won't get this window unless you've installed Cygwin before. This is uninstalling parts to replace with updated parts. Click "Next".

			X
			-
Uninstall base-files 4.2-4 (automatically added) Uninstall bzip2 1.0.6-3 (automatically added) Uninstall ca-certificates 2.22-1 (automatically added) Uninstall cygwin 2.10.0-1 (automatically added) Uninstall cygwin-devel 2.10.0-1 (automatically added) Uninstall gawk 4.2.1-1 (automatically added)	D)		^
Uninstall gcc-core 7.3.0-3 (automatically added) Uninstall gcc-g++ 7.3.0-3 (automatically added) Uninstall gdb 7.12.1-2 (automatically added) Uninstall groff 1.22.3-1 (automatically added) Uninstall info 6.5-2 (automatically added)			~

## I. Create icons if you want. Now you're done so choose "Finish"!

Tell setup if you war Cygwin environment	nt it to create a few icons for convenien	it access to the		>
	Create icon on Desktop			
	Add icon to Start Menu			
nstallation Status				
	ð			

- m. Now you can run it. Either
  - i. Type "Cygwin" in the start bar in the lower left-hand corner of the screen.
  - ii. Open the icon you put on the desktop (if you did that.)
- n. You should now have a command-line interface ready for you to use to compile!



# Writing, Compiling, and Executing a C++ Program

- 1. Now that you've got the compiler installed, let's go through the steps of writing a program that simply prints "Hello, World!" to the standard output.
- Open your favorite text editor (I'm using <u>Notepad++</u>) and create a new file. If you don't have a text editor installed, go to the "Text Editor Installation (optional)" section at the end of this document and install Notepad++.
- 3. Type the following into your new file:

```
#include <iostream>
int main() {
    std::cout << "Hello, World!" << std::endl;
    return 0;
}</pre>
```

- 4. Save this source file as hello\_world.cpp.
  - a. Save to C:\cygwin64\home\<username>\lw\1\
    - i. <username> is your username (i.e. mine is pcr)
    - ii. You will need to create the new folders "lw" and "1".
- 5. Launch the Cygwin Terminal application from the Start Menu (
  <sup>⊞</sup> Win, type Cygwin) and change directory to that containing hello\_world.cpp (cd lw/1/).
  - a. The full path would be /home/<username>/lw/1

AUTH+pcr@CSE-RITCHEY-NB1 ~ \$ cd lw/1/ AUTH+pcr@CSE-RITCHEY-NB1 ~/lw/1 \$ | 6. Once in that directory, verify that hello\_world.cpp exists by listing the directory's contents (ls):



7. Compile and run:

\$

a. Compile the code with g++ -std=c++17 -o hello\_world hello\_world.cpp

```
AUTH+pcr@CSE-RITCHEY-NB1 ~/lw/1
$ g++ -std=c++17 -o hello_world hello_world.cpp
AUTH+pcr@CSE-RITCHEY-NB1 ~/lw/1
$
```

b. Run the code by executing ./hello\_world.exe i. ./hello\_world also works

```
AUTH+pcr@CSE-RITCHEY-NB1 ~/lw/1
$ ./hello_world.exe
Hello, world!
 AUTH+pcr@CSE-RITCHEY-NB1 ~/lw/1
```

# Labwork Acknowledgment

After completing the lab, fill out and submit the <u>LW 1 Acknowledgment form</u>: https://forms.gle/AsTiairNaUh6zJePA You must be logged in to your @tamu Google account.

# Text Editor Installation (optional)

You will want a text editor with syntax highlighting. Although it is not strictly necessary, it really makes reading code much easier. We prefer to use <u>Notepad++</u>. It is very easy to use. You should avoid using the Notepad editor that is built into Windows.

There are other options available that are popular with many programmers and work on multiple platforms. However, these may not be as easy to use initially.

- <u>Sublime</u>
- <u>Atom</u>
- Visual Studio Code

For the brave souls out there, you can use vim in Cygwin. If you decide to go that route, you're on your own. You can also install nano (during setup) for a gentler (but much more limited) text-editing experience.