The following directions provide details on installing required tools and processes required to acquire current GCL code and compile it to run on Win32 platforms from WinXP to Win7.<sup>1, 2</sup> This should also work on Win8 but these directions have not been verified with Win8.

### **1. INSTALL AND CONFIGURE GIT FOR WINDOWS**

Acquire Git for Windows from the following URL: 1.1

http://code.google.com/p/msysgit/downloads/list?q=full+installer+official+git

1.2 Click to choose the most current 'Full Installer...' to your computer (figure 1)

Downloads - msysgit - Git for Windows -	Google Project Hosting - Windows Intern	et Explorer			_15
🕤 🗢 🔀 http://code.google.com/p/ms	rsgit/downloads/list?q=full+ 🔎 🗹 🔧 😭	ownloads - msys	git - Git for 🗙	1	
ile Edit View Favorites Tools Help					
					My favorites V   Sign in
Git for Windows		[			Search projects
roject Home Downloads <u>Wiki</u>	Source				
earch Current downloads 🔽 for t	ull installer official git	Search			
					1 - 9 of 9
Filename ▼	Summary + Labels ▼	Uploaded v	ReleaseDate v	Size 🔻	DownloadCount v
Git-1.8.4-preview20130916.exe	Full installer for official Git for Windows 1.8.4 Featured Beta	Sep 16	Sep 16	14.9 MB	466769
Git-1.8.3-preview20130601.exe	Full installer for official Git for Windows 1.8.3 Beta	Jun 2	Jun 2	14.8 MB	851086
Git-1.8.1.2-preview20130201.exe	Full installer for official Git for Windows 1.8.1.2 Beta	Feb 2013	Feb 2013	14.7 MB	828069
Git-1.8.0-preview20121022.exe	Full installer for official Git for Windows	Oct 2012	Oct 2012	14.5 MB	463801

Figure 1. Choose the most current Git

- Click the chosen Git version for downloading (figure 2) 1.3
- 1.4 Choose `Run' in the dialog box that appears at the bottom of your browser screen (figure 2)

NOTE: If your browser alerts you that the publisher of this version can't be verified, select the Run button again to initiate the installation without copying the file to your hard drive.

Git-1.8.4-preview20130916.exe	- msysgit - Full installer for official Git for Windows 1.8.4 - G - Windows Internet Explorer
	m/p/msysgit/downloads/detail?name=Git-1.8.4-preview20130916.exe&can=2&q=full+installer+official+gi 🔎 🖬 🏠 🎇
Git-1.8.4-preview20130916 ×	
File Edit View Favorites Tools	Help
	My favorites V   Sign in
a msysgit	Search projects
Project Home Downloads	Wiki Source
Search Current downloads	for full installer official git Search
Download: Full installer 48 people starred	for official Git for Windows 1.8.4 this download
Uploaded by: <u>pattho@qmail.com</u> Released: Sep 16, 2013	File: Git-1.8.4-preview20130916.exe 14.9 MB
Uploaded: Sep 16, 2013	Description:
Downloads: 517522 Type-Installer	SHA1 Checksum: a432dcb6068b27bca9de96dc50e966435d85a064 What's this?
Featured	
	o run or save Git-1.8.4-preview20130916.exe (14.8 MB) form mayogit.googlecode.com?
Order-1	Run Save 🔻 Cancel

Figure 2. Choose version for downloading & run installation program

1 Setup and configuration directions prepared by Don Winiecki <dwiniecki@boisestate.edu> 7. November 2013 using details provided by Camm Maguire, Mike Thomas and Gordon Novak Jr. <a href="http://lists.gnu.org/archive/html/axiom-developer/2003-10/msg00227.html">http://lists.gnu.org/archive/html/axiom-developer/2003-10/msg00227.html</a>

- The preferred build system for Win32 GCL is MinGW & MSYS. These directions will result in installation of the following components (as 2 of 5. November 2013).
  - GNU C Compiler (GCC) version 4.8.1-4 ٠ ٠
    - MinGW binutils version 2.23.2-1 version 1.0.18-1-msys-1.0.18
  - MSYS Core

NOTE: If a `User Account Control' dialog box asks for confirmation to allow the program to make changes to your computer, click `Yes' to continue

1.5 Click the `Next' button on the `Git Setup' dialog box (figure 3)



Figure 3. Beginning installation of Git

- 1.6 Click `Next' to accept the GNU General Public License required to install Git
- 1.7 Click `Next' to accept default components in the `Git Setup' dialog box
- 1.8 Click 'Next' to accept default configuration for adjusting your PATH settings
- 1.9 Click `Next' to accept default configuration for Configuring the line ending conversions

The installation process will proceed automatically to install Git on your computer. An icon labeled `Git Bash' (figure 4) will be installed on your computer's desktop and in your Start menu.



Figure 4. 'Git Bash' icon

1.10 When the installation is completed, you can choose to read the release notes, otherwise, uncheck the checkbox labeled "View ReleaseNotes.rtf" and click the 'Finish' button to complete this process.

## 2. INSTALL BUILD TOOLS FOR WIN32 GCL (MinGW, MSYS)<sup>3</sup>

2.1 Acquire the MinGW installer from the following URL (figure 5):

http://sourceforge.net/projects/mingw/files/

<sup>3</sup> Thanks to Camm Maguire for prototyping this process.

🙋 MinGW - Minimalist GNU for	Windows - Browse Files at SourceForge.	net - Windows Internet Explorer	
COO - Control http://sourcefor	ge.net/projects/mingw/files/		P 🛨 🕁 🕁 🔅
AlingW - Minimalist GNU for	×		
File Edit View Favorites T	ools Help		
Home / Browse / Development / Buil	d Tools / MinGW - Minimalist GNU for Window	rs / Files	^
A native Windows port o Brought to you by: cstrauss, cwils Summary Files Review		(GCC)	
Home			Start Dov
Name	Modified Size	Downloads	Free vers
MinGW	2013-10-26		
installer	2013-10-04		,
- Other	2014 44 42		
			100% ·

Figure 5. Select most recent MinGW setup program

2.2 When prompted, choose `Run' from the browser prompt (figure 6)

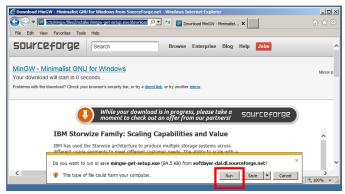


Figure 6. Running the MinGW setup program

NOTE: If your browser prompts you that the publisher of `mingw-get-setup.exe' couldn't be verified, click `Run' to continue.

2.3 Click `Install' in the `MinGW Installation Manager Setup Tool (figure 7).

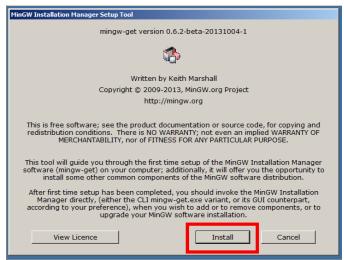


Figure 7. Initiating installation of MinGW

NOTE: The default directory for MinGW is always c:\MinGW (figure 8). If you have an existing MinGW and MSYS setup, it is recommended that you rename its directories so that the current MinGW system can install in its preferred default location.

For example, I have an older installation of MinGW and MSYS in directories at the root level of my hard drive. I renamed them c:\~MSYS to facilitate use of the newest MinGW.

If you have an existing installation of MinGW in default directories and do not rename those directories, the following will replace that installation.

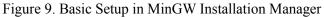
2.4 Click `Continue' to accept default location for MinGW and installation features (figure 8).

MinGW Installation Manager Se	tup Tool
mi	ngw-get version 0.6.2-beta-20131004-1
	3
	ep 1: Specify Installation Preferences
<ul> <li>Installation Directory –</li> </ul>	
C:\MinGW	Change
	his, you are advised to avoid any choice of directory which thin the absolute representation of its path name.
is always supported; the	graphical options are available. The command line interface e alternative only if you choose the following option to rt for the graphical user interface.
• just for me (the o	unching the graphical user interface should be installed current user), or C for all users * , and/or 🔽 on the desktop.
<ul> <li>* selection of this opti</li> </ul>	on requires administrative privilege
View Licence	Continue Cancel

Figure 8. Installation details for MinGW

- 2.5 A dialog box will show progress of installation of the 'MinGW Installation Manager'
- 2.6 When the process is completed, click the `Continue' button to proceed. The `MinGW Installation Manager' window will appear (figure 9).
- 2.7 Click the 'Basic Setup' item in the left-most pane of the 'MinGW Installation Manager' window (figure 9)

MinGW Installation Manager					
Anotaliation radiane Settings					Help
Basic Setup	Package	Class	Installed Version	Repository Version	Description
All Dackages	mingw-developer-tool	bin		2013072300	An MSYS Installation for MinGW Developers (meta
	mingw32-base	bin	2013072200	2013072200	A Basic MinGW Installation
	mingw32-gcc-ada	bin		4.8.1-4	The GNU Ada Compiler
	mingw32-gcc-fortran	bin		4.8.1-4	The GNU FORTRAN Compiler
	mingw32-gcc-g++	bin		4.8.1-4	The GNU C++ Compiler
	mingw32-gcc-objc	bin		4.8.1-4	The GNU Objective-C Compiler
	msys-base	bin	2013072300	2013072300	A Basic MSYS Installation (meta)
	<u>   </u>				► E
	General Description Depe	endencie	s   Installed Files   Ve	rsions	
	No package selected.				
	Please select a package from	m the lis	t above, to view relate	ed data.	
	L				



2.8 Click on `mingw32-base' in the upper-right pane in the `MinGW Installation Manager' window. In the drop-down menu that appears, select `Mark for Installation' (figure 10).

	anager					
stallation Package Setti	ings					He
asic Setup		Package	Class	Installed Version	Repository Version	Description
ll Packages					2013072300	An MSYS Installation for MinGW Developers (m
		mingw32-base	— b ı	2013072200	2013072200	A Basic MinGW Installation
		Unmark	bh		4.8.1-4	The GNU Ada Compiler
		Mark for Installation	bh		4.8.1-4	The GNU FORTRAN Compiler
		Mark for Reinstallation			4.8.1-4	The GNU C++ Compiler
		Mark for Upgrade	bin		4.8.1-4	The GNU Objective-C Compiler
		Mark for Removal	bin	2013072300	2013072300	A Basic MSYS Installation (meta)
			_			
	•					
		Basic MinGW Installa		c GCC installation :	and includes the C cor	nniler, linker and other binary tools, the runtin
	Th	nis meta package provi	ides a basi		and includes the C cor	npiler, linker and other binary tools, the runtir ponents can be added manually as needed.
	Th	nis meta package provi	ides a basi		and includes the C cor	
	Th	nis meta package provi	ides a basi		and includes the C cor	
	Th	nis meta package provi	ides a basi		and includes the C cor	
	Th	nis meta package provi	ides a basi		and includes the C cor	
	Th	nis meta package provi	ides a basi		and includes the C cor	
	Th	nis meta package provi	ides a basi		and includes the C cor	
	Th	nis meta package provi	ides a basi		and includes the C cor	npiler, linker and other binary tools, the runtin ponents can be added manually as needed.
	Th	nis meta package provi	ides a basi		and includes the C cor	

Figure 10. Selecting and Marking items for installation in 'MinGW Installation Manager' window.

- 2.9 Repeat step 2.8 (above) for `msys-base'.
- 2.10 Click `All Packages' and then `MinGW' in the upper-left pane of the `MinGW Installation Manager' window (figure 11).

	Package	Class	Installed Version	Repository Version	Description
l Packages	mingw32-autoconf	bin	10-1	10-1	Wrapper scripts for autoconf commands
MinGW	mingw32-autoconf	lic		10-1	Wrapper scripts for autoconf commands
MinGW Base System	mingw32-autoconf2.1	bin	2.13-4	2.13-4	Automatic Configure Script Builder (2.1x ser
	mingw32-autoconf2.1	doc		2.13-4	Automatic Configure Script Builder (2.1x ser
MinGW Contributed	mingw32-autoconf2.1	lic		2.13-4	Automatic Configure Script Builder (2.1x ser
MinGW Autotools	mingw32-autoconf2.5	bin	2.68-1	2.68-1	Automatic Configure Script Builder (2.5x/2.6
MSYS	mingw32-autoconf2.5	doc		2.68-1	Automatic Configure Script Builder (2.5x/2.6
MSYS Base System MinGW Developer Toolkit	mingw32-autoconf2.5	lic		2.68-1	Automatic Configure Script Builder (2.5x/2.6
	Please select a package fro	om the lis	t above, to view relat	ed data.	

Figure 11. Selecting `All Packages' and `MinGW' in the `MinGW Installation Manager' window.

2.11 Click on `mingw-autoconf' (`bin' class only) in the upper-right pane in the `MinGW Installation Manager' window. In the drop-down menu that appears, select `Mark for Installation' (figure 12).

Installation Package Settings			1	1	He
Basic Setup	Раскаде	Class		Repository Version	Description
All Packages	mingw32-autoconf	bin	10-1	10-1	Wrapper scripts for autoconf commands
MinGW	Unmark	lic		10-1	Wrapper scripts for autoconf commands
MinGW Base System	Mark for Installation	bin	2.13-4	2.13-4	Automatic Configure Script Builder (2.1x series
MinGW Libraries	Mark for Reinstallation	doc		2.13-4	Automatic Configure Script Builder (2.1x series
MinGW Contributed	Mark for Upgrade	lic		2.13-4	Automatic Configure Script Builder (2.1x series
MinGW Autotools	Mark for Removal	bin	2.68-1	2.68-1	Automatic Configure Script Builder (2.5x/2.6x s
MSYS	mingw32-autoconf2.5	doc		2.68-1	Automatic Configure Script Builder (2.5x/2.6x s
MSYS Base System	mingw32-autoconf2.5	lic		2.68-1	Automatic Configure Script Builder (2.5x/2.6x s
MinGW Developer Toolkit	•	-			► In the second s
MSYS System Builder			Г., н. н. Г.		
	General Description Dep	endencie	s Installed Files Ve	rsions	
	Wrapper scripts for auto	oconf co	mmands		
		n adapt t	he packages to many	kinds of UNIX-like sy	to automatically configure software source cod stems without manual user intervention. Autocor
					operating system features that the package ca
	use, in the form of M4 ma	cro calls.	However, THIS pac		operating system features that the package ca
		cro calls.	However, THIS pac		operating system features that the package ca
	use, in the form of M4 ma	cro calls.	However, THIS pac		operating system features that the package ca
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	use, in the form of M4 ma	cro calls.	However, THIS pac		operating system features that the package ca
	use, in the form of M4 ma	cro calls.	However, THIS pac		operating system features that the package ca
	use, in the form of M4 ma	cro calls.	However, THIS pac		operating system features that the package ca
	use, in the form of M4 ma	cro calls.	However, THIS pac		operating system features that the package ca
	use, in the form of M4 ma	cro calls.	However, THIS pac		operating system features that the package ca ole wrapper, that automatically redirects to eithe

Figure 12. Selecting and Marking items for installation in 'MinGW Installation Manager' window.

2.12 Select the `Installation' menu and choose the `Apply Changes' menu item (figure 13).

Installation Package Settings		_			Help
Update Catalogue	Package	Class	Installed Version	Repository Version	Description 🔺
Mark All Upgrades	🐑 mingw32-autoconf	bin		10-1	Wrapper scripts for autoconf commands
Apply Changes	mingw32-autoconf	lic		10-1	Wrapper scripts for autoconf commands
Quit Alt+F4	mingw32-autoconf2.1	bin		2.13-4	Automatic Configure Script Builder (2.1x s
MinGW Contributed	mingw32-autoconf2.1	doc		2.13-4	Automatic Configure Script Builder (2.1x s
MinGW Contributed MinGW Autotools	mingw32-autoconf2.1	lic		2.13-4	Automatic Configure Script Builder (2.1x s
MSYS	mingw32-autoconf2.5	bin		2.68-1	Automatic Configure Script Builder (2.5x/2
MSYS Base System	mingw32-autoconf2 5	doc		2 68-1	Automatic Configure Script Builder (2.5x/2
MinGW Developer Toolkit					
MSYS System Builder	General Description Depe	endencie	s   Installed Files   Ve	rsions	
	No package selected.				
	Please select a package from	m the lis	above, to view relate	ed data.	
1					
<u> </u>	1				

Figure 13. Preparing to install MinGW build tools for GCL.

2.13 The 'Schedule of Pending Actions' modal dialog box appears. Click the 'Apply' button in this dialog box.

Packages chosen and applied in steps 2.7 through 2.13 (above) will be downloaded and installed. The process usually required about five minutes during writing of these directions.

When the process is completed, the `Close' button in the `Applying Selected Changes' dialog box will become active. Click the `Close' button to finish installation (figure 14).

🏇 MinGW Installation Manager				
Installation Package Settings				Help
Basic Setup Package	Class	Installed Version	Repository Version	Description
All Applying Scheduled Changes				Wrapper scripts for autoconf commands
				Wrapper scripts for autoconf commands
All changes were applied successfully; you may r	now clo	se this dialogue.		Automatic Configure Script Builder (2.1x s
Close dialogue automatically, when activity is	comple	ata	Close	Automatic Configure Script Builder (2.1x s
Close dialogue automatically, when activity is	compi	ste.		Automatic Configure Script Builder (2.1x s
- Details				Automatic Configure Script Builder (2.5x/2
install: libxml2-2.7.6-1-msys-1.0.13-dll-2.tar	.lzma			Automatic Configure Scrint Builder (2 5x/2
installing libxml2-2.7.6-1-msys-1.0.13-dll-2. install: libexpat-2.0.1-1-msys-1.0.13-dll-1.ta	tar.lzı	ma		
installing libexpat-2.0.1-1-msys-1.0.13-dll-1	.tar.1:	zma		
install: libcrypt-1.1_1-3-msys-1.0.13-dll-0.ta installing libcrypt-1.1_1-3-msys-1.0.13-dll-0		7 m a		
install: libgdbm-1.8.3-3-msys-1.0.13-dll-3.tar	.lzma			
installing libgdbm-1.8.3-3-msys-1.0.13-dll-3. install: libbz2-1.0.6-1-msys-1.0.17-dll-1.tar.	tar.lzı lzma	ma		
installing libbz2-1.0.6-1-msys-1.0.17-dll-1.t	ar.lzm	a		
<pre>install: msysCORE-1.0.18-1-msys-1.0.18-ext.tar installing msysCORE-1.0.18-1-msys-1.0.18-ext.</pre>		ma		
install: bzip2-1.0.6-1-msys-1.0.17-bin.tar.lzm installing bzip2-1.0.6-1-msys-1.0.17-bin.tar.	a			
install: bash-3.1.17-4-msys-1.0.16-bin.tar.lzm	a			
installing bash-3.1.17-4-msys-1.0.16-bin.tar. install: msys-base-2013072300-msys-bin.meta	lzma			
installing msys-base-2013072300-msys-bin.meta				
install: autoconf2.5-2.68-1-mingw32-bin.tar.lz installing autoconf2.5-2.68-1-mingw32-bin.tar				
install: autoconf2.1-2.13-4-mingw32-bin.tar.lz	ma			
installing autoconf2.1-2.13-4-mingw32-bin.tar install: autoconf-10-1-mingw32-bin.tar.lzma	.Izma			
installing autoconf-10-1-mingw32-bin.tar.lzma			-	
ų				

Figure 14. Close the 'Applying Scheduled Changes' dialog box.

- 2.14 Close the `MinGW Installation Manager' window.
- 2.15 Create a shortcut to the file named `msys.bat' in the following directory: c:\MinGW\msys\1.0\ and move that shortcut to your desktop. This will allow you to launch the MSYS shell.

NOTE: You can assign the icon in the file named 'c:\MinGW\msys\1.0\msys.ico' to this shortcut. This may make it easier to identify the shortcut on your desktop.

2.16 Edit PATH environment variable to make MinGW tools available. The method for accomplishing this varies across operating systems. Follow directions below specific to your computer's operating system.

### Windows 8

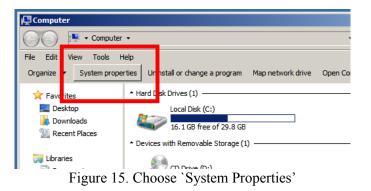
I don't yet have access to a Win8 machine and have not been able to verify the process for setting the PATH on that OS. RSN...

In the meantime, please refer to the following URL, inserting ;c:\MinGW\bin;c:\mingw\msys\1.0\bin; for what is offered in step 3 of the directions at the following URL.

http://computertutorialsonline.com/change-path-environment-variable-in-windows-8

#### Windows 7

- 1. Click the 'Start' menu button and select 'Computer' on the right-side of the Start Menu.
- 2. Choose 'System Properties' from the window's context menu (figure 15).



3. Click Advanced system settings in the dialog box that appears (figure 16).

_							
I	<mark>⊻</mark> C	ontrol	Panel\/	All Cont	rol Pa	nel I	e
1	G	0-	-	Control	Panel	→ All	c
	File	Edit	View	Tools	Help		
	_		Panel Ho				
	۱ 🕑	Device N	1anager				
	🖲 I	Remote	settings	;			
L	-						
	<u>و</u>	Advance	ed syste	m settin	<u>15</u>		

Figure 16. Choose 'Advanced system settings'

4. Choose the `Advanced' tab in the `System Properties' dialog box then click the `Environment Variables...' button (figure 17).

🕎 Control Panel\All Cor	trol P
System Properties	×
Computer Name   Hardvare Advanced   System Protection   Remote	
Computer Name   Handvale - Novanced   System Protection   Remote	1
You must be logged on as an rammarator to make most of these change	s.
Performance	-
Visual effects, processor scheduling, memory usage, and virtual memory	
Settings	
User Profiles	
Desktop settings related to your logon	
Desktop settings related to your logon	
Settings	
	<u>'</u>
Startup and Recovery	-
System startup, system failure, and debugging information	
Settings	
Environment Variables.	
OK Cancel App	ly .
See also	

Figure 17. Accessing 'Environment Variables...' settings.

5. Click on PATH in the `Environment Variables' window, then choose the `Edit' button (figure 18).

omputer Name   Hardware   Advanced   System Protection   Remote   nvironment Variables   > User variables for dwiniecki
User variables for dwiniecki
Variable Value
Path C:\Program Files\CVSNT\;c:\mingw\bin\;
TMP %USERPROFILE%\AppData\Local\Temp

Figure 18. Accessing the PATH Environment Variable.

6. In the 'Edit User Variable' dialog box (figure 19), add the following text.

NOTE: The Variable Value should go at the <u>end</u> of the Path string. Semi-colons are required.

### Variable Name: Path

Variable Value: ; c:\MinGW\bin; c:\mingw\msys\1.0\bin;

🖳 Control Panel \All Cor	ntrol Panel I
System Properties	× • All
Computer Name Hardware Advanced System Protection Remote	
	×
Edit User Variable	
Variable name: Path	
Variable value: C:\Program Files\CVSNT\;c:\mingw\bin\;	
OK Cancel	
	·

Figure 19. Adding required PATH details in the 'Edit User Variable' dialog box.

7. Close each of the opened dialog boxes as indicated in table 1 below.

Table 1. Closing Dialog Boxes After Setting Win7 Path		
Dialog Box Title	Close By Doing This	
Edit User Variable (figure 19)	Click the `OK' button	
Environment Variables (figure 18)	Click the `OK' button	
System Properties (figure 17)	Click the `OK' button	
Control Panel\All Control Panel Items\System (figure 16)	Click the Close Box ('X' button in the window's title bar)	

#### Windows XP

- 1. Click the `Start' menu button and select `Control Panel' on the right-side of the Start Menu.
- 2. Double-click the 'System' control panel item (figure 20).



3. Click the 'Advanced' tab in the 'System Properties' dialog box, then click the 'Environment Properties' button (figure 21).

	🚱 Control Panel				
stem Properti	es			t 	?×
System Re		tomatic Updal		nemote	
General	Computer Name	Har	dware [	Advanced	
You must be lo	ogged on as an Admin	istrator to mał	ke most of th	ese changes.	4
Performance					
Visual effects	, processor schedulin	g, memory us	age, and virt	ual memory	J¢
				<u>S</u> ettings	
User Profiles					Pi
Desktop sett	ngs related to your log	jon			6
				S <u>e</u> ttings	
					l ni F
-Startup and F Sustem start	lecovery p, system failure, and	debugging in	formation		
System start	p, system railore, and	debagging in	ronnation		
				Se <u>t</u> tings	S
	Environment	Variables	E <u>r</u> ror R	eporting	
		ок	Cancel	Apply	

Figure 21. Accessing 'Environment Variables' in Windows XP

4. Select the `Path' variable then click the `Edit' button in the `Environment Variables' dialog box (figure 22).

🔂 Con	trol Panel		
stem Properties	- 10 - 10 - 1	? ×	1
System Restore	Automatic Updates	Remote	B (1
Environment Variable	5	? ×	
	118 - 11		
<u>U</u> ser variables for Do			9
Variable	Value		utomatic Updates
Path	C:\Program Files\CVSNT\;c:\msys\1	015	updates
TEMP	C:(Program Hies(Cool)(1),C:(IIIS)S(1) C:(Documents and Settings)Don Wi		
TMP	C:\Documents and Settings\Don Wi	nieck	<b>\$</b> =
			nternet
			Dptions
	<u>N</u> ew <u>E</u> dit	<u>D</u> elete	
<u>System variables</u> —			nters and
Variable	Value		Faxes
ComSpec	C:\WINDOWS\system32\cmd.exe		
FP_NO_HOST_C	NO		
NUMBER_OF_P	1		Gustan
OS Path	Windows_NT C:\WINDOWS\system32;C:\WINDC		System
Faci	C.(WINDOWS(393tenioz),C.(WINDO	······	
	New Edit	Delete	
	ОК	Cancel	

Figure 22. Preparing to edit your Path Environment Variable.

5. In the 'Edit User Variable' dialog box (figure 23), add the following text.

NOTE: The Variable Value should go at the *end* of the Path string. Semi-colons are required.

```
Variable Name: Path
```

```
Variable Value: ; c: \MinGW\bin; c: \mingw\msys\1.0\bin;
```

stem Properties		? >	의 
System Restore	Automatic Updates	Remote	s 🗞 🗙
Environment Variable	25	?×	
II.			
Edit User Variable	_	?×	
Variable <u>n</u> ame:	Path		omatic Date aı dates
Variable <u>v</u> alue:	me;C:\MinGW\bin;c:\mingw\msys	(1.0\bin;	چ 🗟
	OK	ancel	
			ernet Keyt itions

Figure 23. Adding required PATH details in the 'Edit User Variable' dialog box.

6. Close each of the opened dialog boxes as indicated in table 2 below.

Table 2. Closing Dialog Boxes After Setting WinXP Path		
Dialog Box Title	Close By Doing This	
Edit User Variable (figure 21)	Click the `OK' button	
Environment Variables (figure 20)	Click the `OK' button	
System Properties (figure 19)	Click the `OK' button	
Control Panel (figure 18)	Click the Close Box (the 'X' button in the window's title bar)	

2.17 Verify your MinGW installation by double-clicking the MSYS icon on your desktop (step 2.15, above) and entering the following command into the MinGW shell.

gcc -v

The last line in output produced by the command above should be `gcc version 4.8.1 (GCC)'.

NOTE: If this is not the case, remove the directory into which you installed MinGW (see step 2.4 above and the note immediately preceding step 2.4 above) and repeat all components of step 2 above, taking care to verify the process.

You are now finished installing tools for building GCL. Directions for acquiring source for GCL and building it are included below.

### 3. CLONE CURRENT GCL USING Git

- 3.1 Choose or create a directory into which you will download/clone the most current GCL code (I created c:\\_git).
- 3.2 Launch the Git Bash shell by double-clicking its icon on your desktop (figure 4, above).
- 3.3 Change to the directory you created in step 3.1 above (for example, "cd c:/\_git")
- 3.4 Enter the following command to initiate the clone process.

git clone git://git.sv.gnu.org/gcl.git

NOTE: You will see the clone process proceed in the MinGW Git shell (figure 24). When the '\$' prompt reappears in the MinGW Git shell, the process is complete and a GCL code has been saved in a directory named "gcl" in the directory specified in steps 3.1 through 3.3 above.

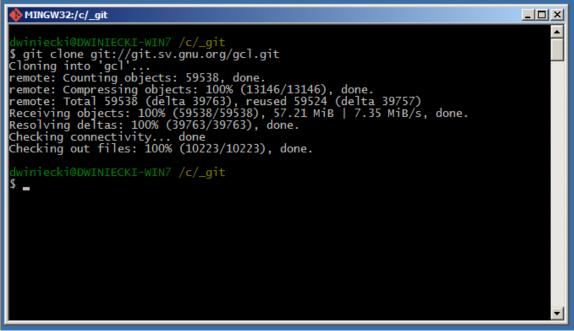


Figure 24. The Git clone process

### 4. SELECT/CHECKOUT GCL VERSION TO BUILD

4.1 While still in the Git Bash shell, change to the `gcl' directory with the following command:

cd gcl

4.2 Remove system files not needed for Win32 build processes with the following command:

rm gcl/debian/control\*

4.3 Checkout the version of GCL you will be building with a command formatted as follows (this command is case-sensitive and must contain underscore characters as shown):

git checkout Version 2 6 10

NOTE: You will see the checkout process proceed in the MinGW Git shell (figure 25, below). When the '\$' prompt reappears in the shell you are ready to build the version of GCL checked out in step 4.3 above.

MINGW32:/c/_git/gcl	
dwiniecki@DWINIECKI-WIN7 /c/_git \$ cd gcl	
dwiniecki@DWINIECKI-WIN7 <mark>/c/_git/gcl</mark> \$ rm gcl/debian/control*	
dwiniecki@DWINIECKI-WIN7 /c/_git/gcl \$ git checkout Version_2_6_10 : Checking out files: 100% (8175/8175), done. Branch Version_2_6_10 set up to track remote branch Version_2_6_10 from origin Switched to a new branch 'Version_2_6_10'	n
dwiniecki@DWINIECKI-WIN7 /c/_git/gcl (Version_2_6_10) \$	
	-

Figure 25. Checking out a version of GCL from cloned files

### 5. BUILDING GCL USING MSYS AS THE HOST

NOTE: The following assumes you have successfully completed steps 1 through 4 above.

- 5.1 Launch the MSYS shell using the icon created in step 2.15 above.
- 5.2 At the MSYS '\$' prompt, change to the `gcl' directory in which you cloned GCL source code (see steps 3.1 3.3 above), for example:

cd c:/\_git/gcl/gcl

You are now ready to build GCL

NOTE: Speed of the process indicated in step 5.3a or 5.3b (below) will vary with the power of your computer. It takes takes about 12 minutes on my 2.2GHz dual core machine.

5.3a If you want to build the CLtL1 variant, enter the following command:

./configure && make && make install

5.3b If you want to build the ANSI variant, enter the following command:

./configure --enable-ansi && make && make install

5.4 When the '\$' prompt reappears in the MinGW shell, verify the process was successful by entering one of the following commands at the MSYS '\$' prompt, depending on the version of GCL you have just attempted to build:

For the CLtL1 version, type the following:

./unixport/saved\_gcl.exe

For the ANSI version, type the following:

./unixport/saved\_ansi\_gcl.exe

The result of these commands should be as shown in figure 26.

NOTE: If after completing the above you see any other output than shown in figure 26, please perform steps 5.5 through 5.9 to produce a log of the build process that can be sent to the GCL maintainers for diagnosis. Otherwise, read the NOTEs indicated below and proceed to step 6.

NOTE: After confirming that the build process has completed successfully, type (bye) or (by) at the GCL prompt to close GCL.

NOTE: BFD fasloading, Stratified Garbage Collection (SGC) readline and GCL-TK do not work under Win32. The build process indicted here provides a GCL executable which will build current versions of available CAS systems.

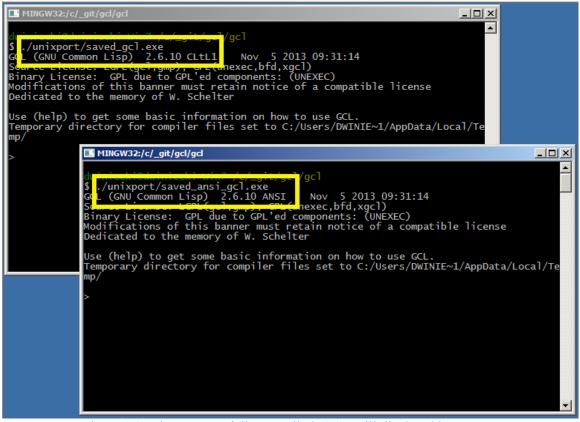


Figure 26. When successfully compiled, GCL will display this on start.

5.5 At the MSYS '\$' prompt, type the following:

make clean

5.6 When the MSYS '\$' reappears, type the following command:

NOTE: You will not see visible output in the MSYS shell for steps 5.6 through 5.8. Output is redirected to the files named in each command.

./configure --enable-ansi &>c:/config.log

5.7 When the MSYS '\$' reappears, type the following command:

make &>c:/make.log

5.8 When the MSYS '\$' reappears, type the following command:

make install &>c:/install.log

5.9 During steps 5.6 through 5.8, files named config.log, make.log, install.log will be saved at the c: \ (root) level of your computer's hard drive.

Copy these files to an E-mail message and send them to the GCL-devel listserv at the following E-mail address.

gcl-devel@gnu.org

You should also include the following information with your E-mail:

- The version of GCL you are attempting to build
- The operating system of the computer on which you are attempting to build GCL
- The software you will build with GCL (for example: ACL2, Axiom, Open-Axiom, Maxima, etc.)

### 6. INSTALLING GCL INFORMATION ACCESSIBLE FROM GCL INTERPRETER

- 6.1 Download the file named gcl.info.tgz from ftp://ftp.gnu.org/pub/gnu/gcl/
- 6.2 Make the following directory path and unpack contents of the above-named file into it:

c:\usr\local\gnu\info

#### 7. RUNNING GCL

You can move the directory containing executable files anywhere on your hard drive.

After moving the directory containing executable files to your desired location, create a shortcut to the executable (either saved\_gcl.exe or saved\_ansi\_gcl.exe) and assign to it the icon located in the ...\gcl\gcl\bin directory.

You can then move the shortcut anywhere (for example, the 'Start' menu or your 'Quick Launch' menu). Invoke the icon to launch GCL.

## 8. CONFIGURE GCL TO RUN IN INFERIOR MODE UNDER EMACS

Follow directions provided by Gordon Novak Jr. at the following URL:

http://www.cs.utexas.edu/users/novak/gclwin.html