

Microsoft Learn
Student Ambassadors



Virtual Training Series on Fundamentals of Git & GitHub

Command Line & Git Environment

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What is CLI?



Textual User Interface

Manage files & utilities via text representations

Operating System Services

Operating systems come with a native CLI (command interpreter) for accessing OS functions and services

OS Shells

Command Prompt (DOS) & Windows Shell (PowerShell)
Bash / sh / zsh (Unix based)

Read-Eval-Print-Loop == REPL

Takes single user inputs, executes them,
Returns the result to the user, loops over

Popular Command Processors/Interpreters

```
C:\WINDOWS\system32\cmd.exe
C:\WINDOWS\system32>DEBUG COMMAND.COM
-SCS:0 FFFF "XLX"
0B61:9380
0B61:B426
D 9380
0B61:9380 58 4C 58 0D 0A 91 43 6F-70 69 65 73 20 6F 6E 65 XLX...Copies one
0B61:9390 20 6F 72 20 6D 6F 72 65-20 66 69 6C 65 73 20 74 or more files t
0B61:93A0 6F 20 61 6E 6F 74 68 65-72 20 6C 6F 63 61 74 69 o another locati
0B61:93B0 6F 6E 2E 0D 0A 0D 0A 43-4F 50 59 20 5B 2F 41 20 on.....COPY I/A
0B61:93C0 ce I/A
0B61:93D0 source
0B61:93E0 I+ ..
0B61:93F0 nation
-Q
C:\WINDOWS\system32>DEBUG COMMAND.COM
-Q
C:\WINDOWS\system32>XLX
'XLX' is not recognized as an internal or external command,
operable program or batch file.
C:\WINDOWS\system32>_
```

Command Prompt

```
Windows PowerShell
Copyright (C) Microsoft Corporation. All rights reserved.

PS C:\Users\cipri> help

TOPIC
    Windows PowerShell

SHORT DESCRIPTION
    Displays help about windows powershell cmdlets and concepts.

LONG DESCRIPTION
    Windows PowerShell Help describes Windows PowerShell cmdlets,
    functions, scripts, and modules, and explains concepts, including
    the elements of the Windows PowerShell language.
```

PowerShell

```
MS-DOS Prompt
Auto
Microsoft(R) Windows 95
(C)Copyright Microsoft Corp 1981-1996.

C:\WINDOWS>command.com /?
Starts a new copy of the Windows Command Interpreter.

COMMAND [[drive:]path] [device] [/E:nnnnn] [/L:nnnn] [/U:nnn] [/P] [/MSG]

[drive:]path JM.
[device] ; and output.
[/E:nnnnn] ites.

/L:nnnn Specifies input buffer length (requires /P as well).
(nnnn should be between 128 and 1,024).
/U:nnn Specifies the input buffer length (requires /P as well).
(nnn should be between 128 and 255).
/P Makes the new Command Interpreter permanent (can't exit).
/MSG Stores all error messages in memory (requires /P as well).
/LOW Forces COMMAND to keep its resident data in low memory.
/K Steps through the batch program specified by /C or /K.
/C command Executes the specified command and returns.
/K command Executes the specified command and continues running.
```

Command.com

```
chris@ubuntu: ~
chris@ubuntu:~$ bash --version
GNU bash, version 4.3.46(1)-release (x86_64-pc-linux-gnu)
Copyright (C) 2013 Free Software Foundation, Inc.
License GPLv3+: GNU GPL version 3 or later <http://gnu.org/licenses
This is free software: you are free to change and redistribute it.
There is NO WARRANTY.
chris@ubuntu:~$
```

Terminal(Bash)

Shells, Bash & Terminal

- A Computer Program

Exposes an operating system's services to a human user .
Ex- File Management, Process management, configuration etc.

- An Interface

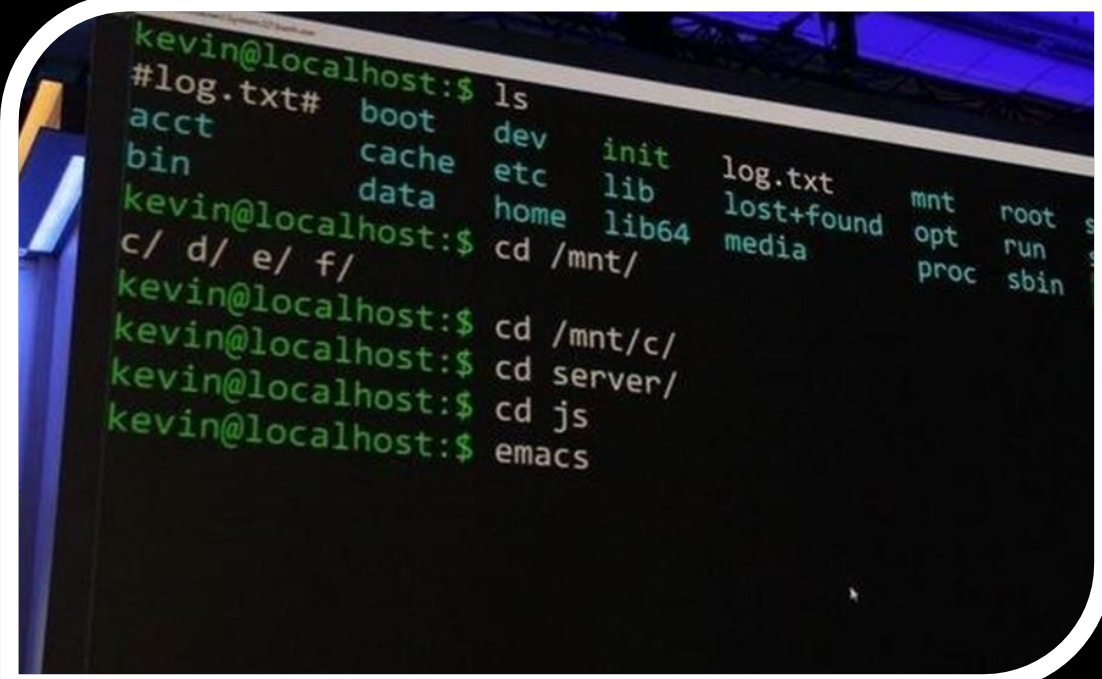
Shells act as an interface between a CLI or GUI and the kernel.
Ex- cmd.exe (CLI), /bin/bash (CLI) and explorer.exe (GUI)

- Literally A Shell

It is the outermost layer covering around the operating system's kernel

- Bash

Bourne Again Shell is a flavor of shell in Unix systems.
It is run on the program called Terminal



```
kevin@localhost:~$ ls
#log.txt# boot  dev  init  log.txt  mnt  root  s
acct  cache  etc  lib  lost+found  opt  run
bin  data  home  lib64  media  proc  sbin
c/ d/ e/ f/
kevin@localhost:~$ cd /mnt/
kevin@localhost:~$ cd /mnt/c/
kevin@localhost:~$ cd server/
kevin@localhost:~$ cd js
kevin@localhost:~$ emacs
```

Unix Family

UNIX is an operating system which was first developed in the 1960s at Bell Labs using C language

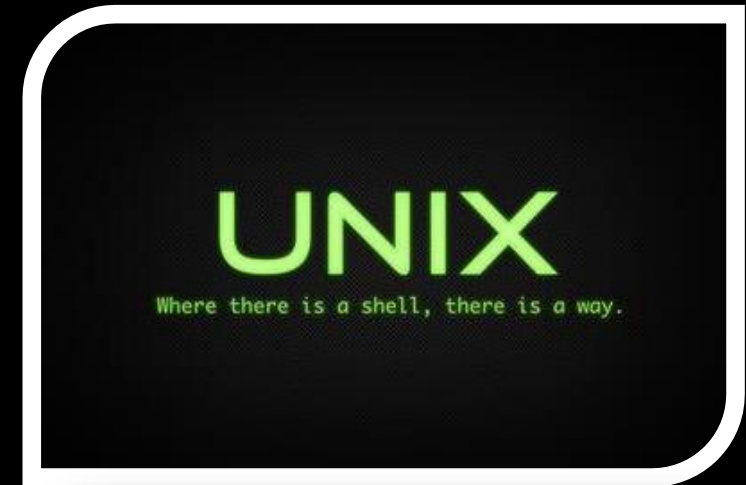
Unix Had 3 parts –

Kernel : Center hub of the operating system

Shell: Acts as an interface between the user and the kernel

Program : Set of tasks programmed to solve a problem

Some popular derivatives of Unix – Linux Kernel based distros, macOS, FreeBSD etc.



Git Bash

Git Bash is an emulation of a Unix shell for Windows.

Git commands are run in Linux, Windows use Git Bash to perform git operations

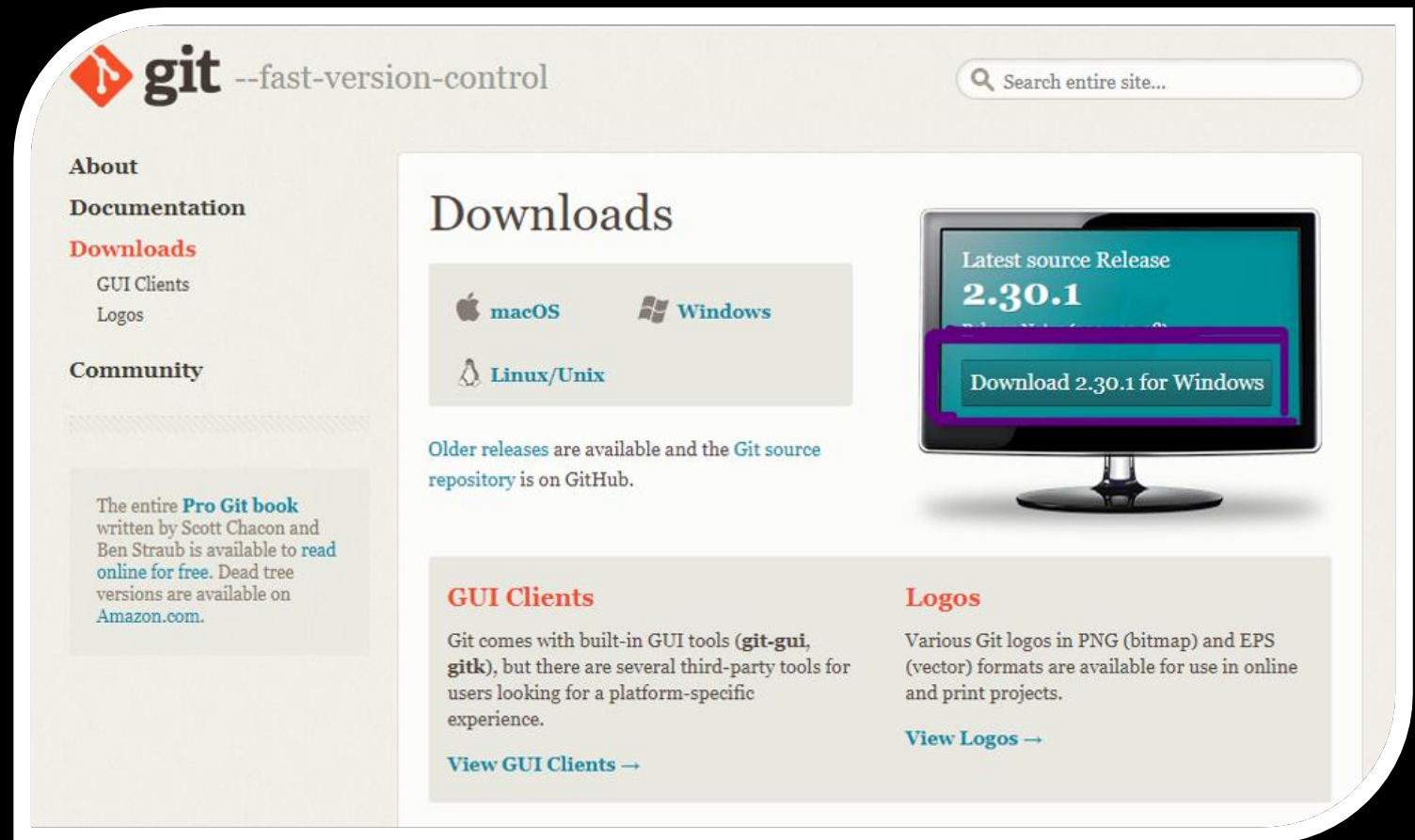
Git Bash supports Git Commands & Unix based commands

Download Git Bash for windows –
<https://git-scm.com/download>

```
MINGW64:/c/dev/charmspace/iq-api
Grunzkes@Pantheon MINGW64 /c/dev/charmspace/iq-api (master)
$ which python
/c/apps/python/3.6.0/python
Grunzkes@Pantheon MINGW64 /c/dev/charmspace/iq-api (master)
$ python -V
Python 3.6.3
Grunzkes@Pantheon MINGW64 /c/dev/charmspace/iq-api (master)
$ pipenv shell
Grunzkes@Pantheon MINGW64 C:/dev/charmspace/iq-api
$ which python
bash: which: command not found
Grunzkes@Pantheon MINGW64 C:/dev/charmspace/iq-api
$ python -V
bash: python: command not found
Grunzkes@Pantheon MINGW64 C:/dev/charmspace/iq-api
$ exit
exit
Launching subshell in virtual environment. Type 'exit' to return.
```

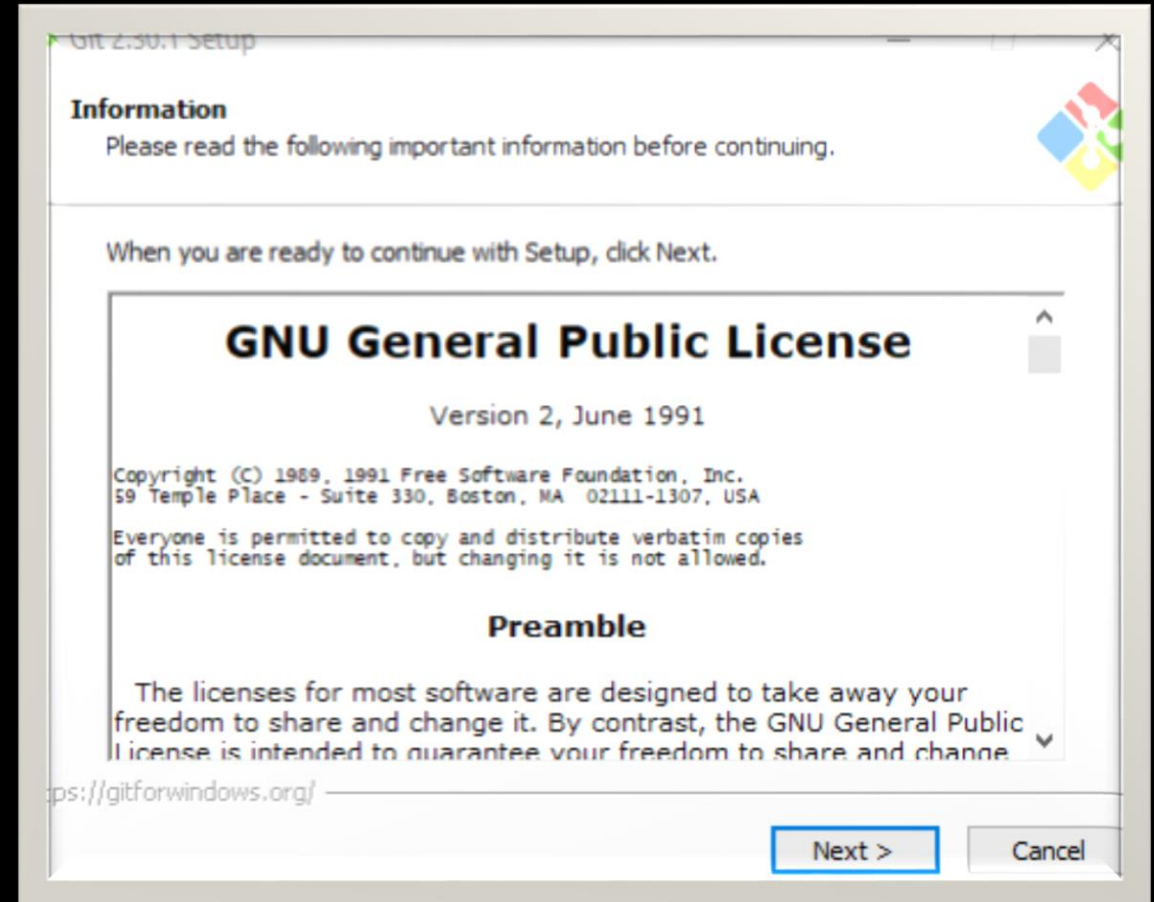

Git Environment Setup

- Navigate to website
- Choose your preferred build based on your OS



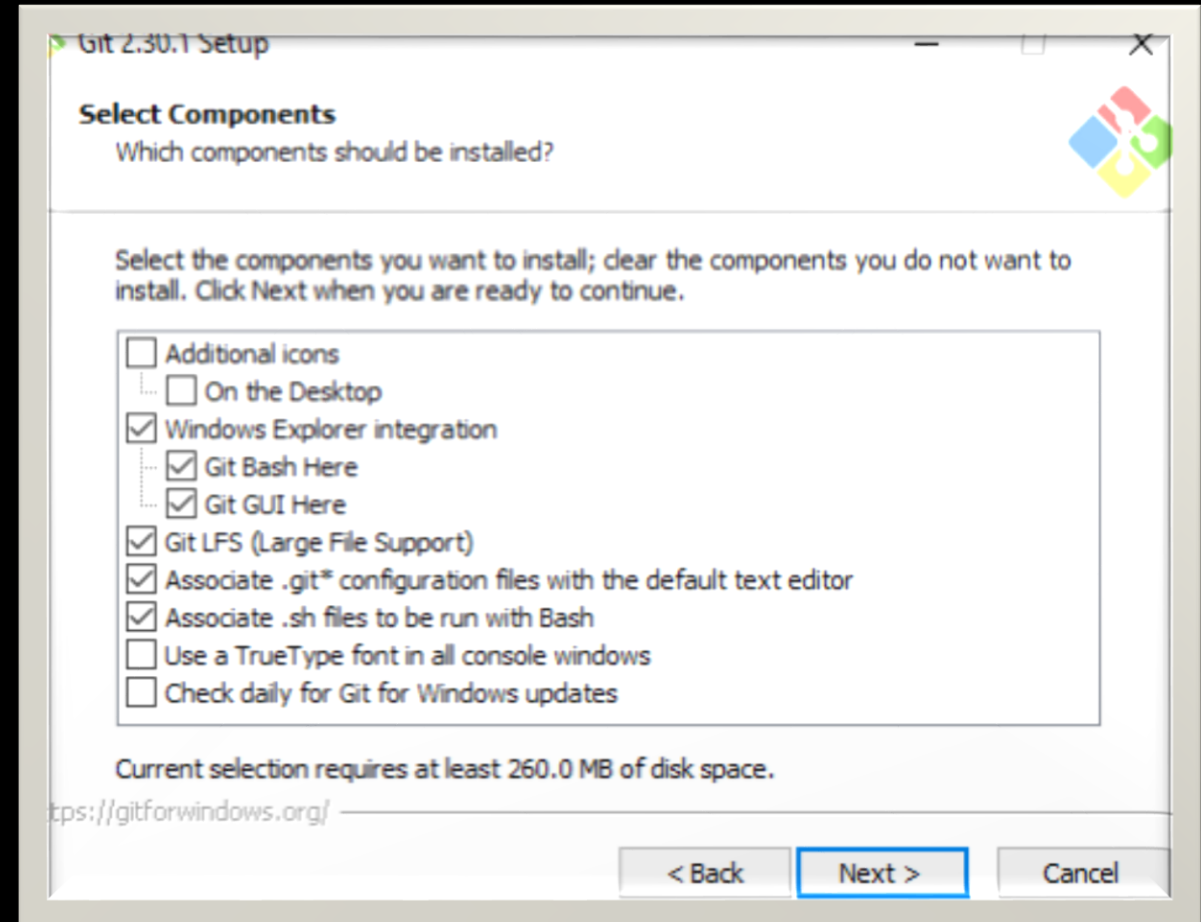
Git Environment Setup (Cont.)

- Make sure to exit all running programs
- Run the setup file



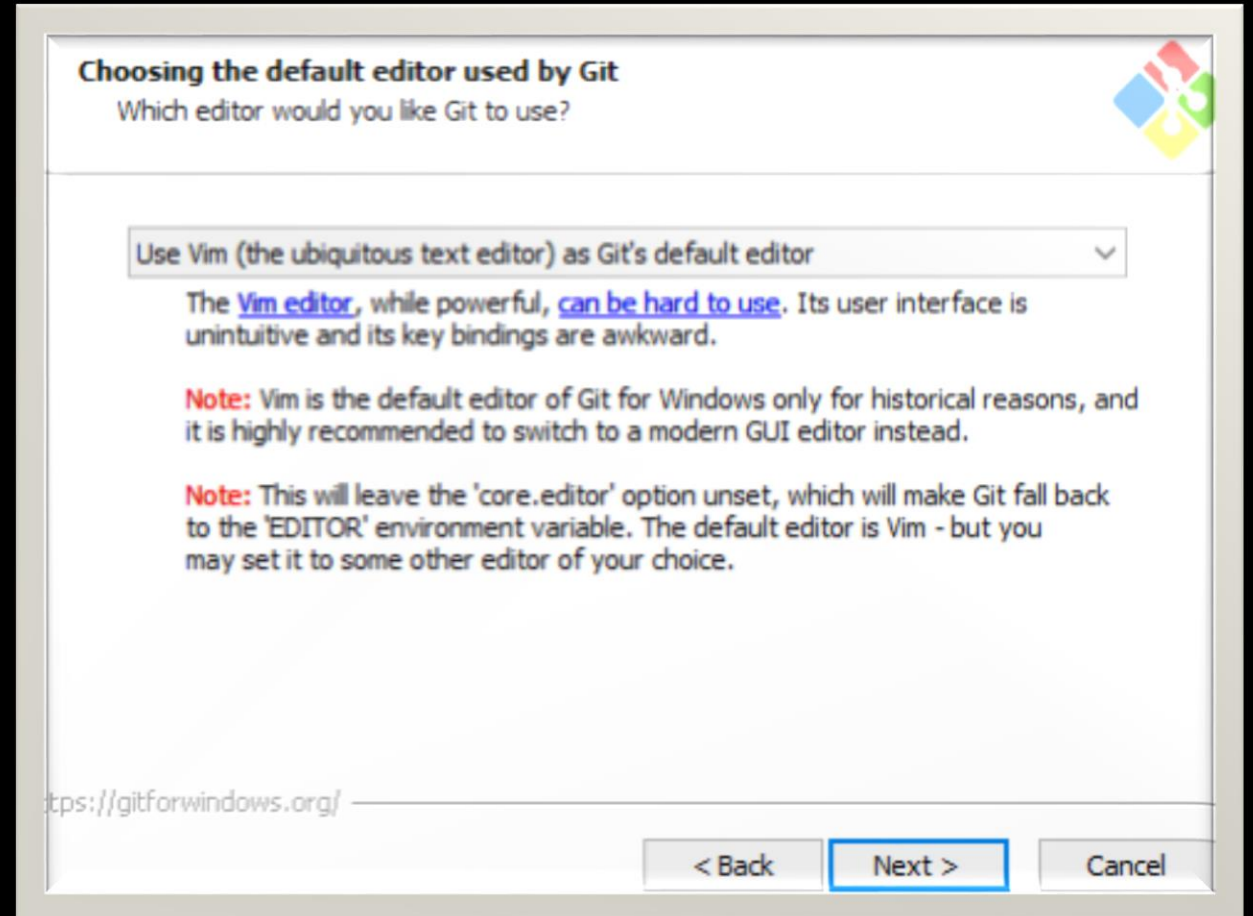
Git Environment Setup (Cont.)

- Select installation path
- Leave Components section as it is



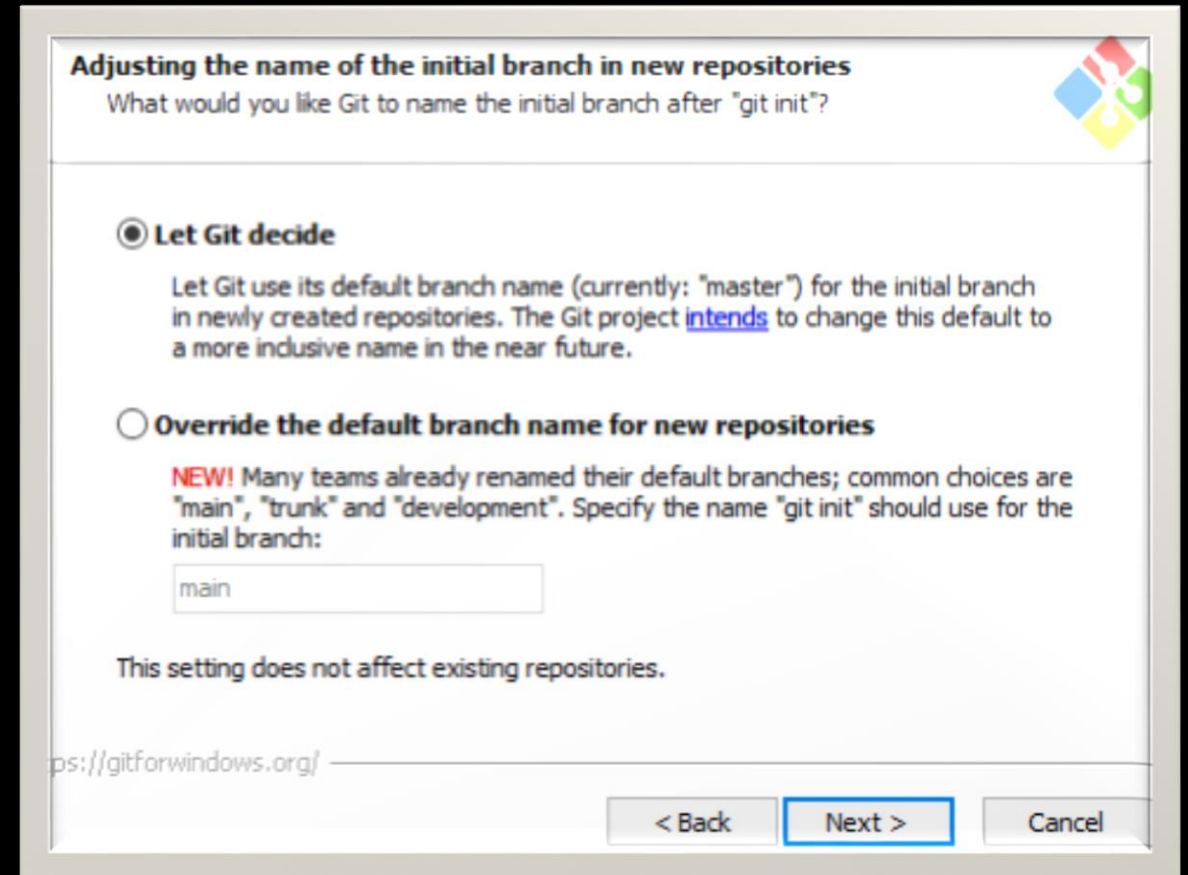
Git Environment Setup (Cont.)

- Choose your editor wisely
- If you are comfortable with Vim, go with that
- If you are new to CLI editors, you can choose windows notepad
- If you prefer other editors (Sublime, notepad++), you can configure that here or later



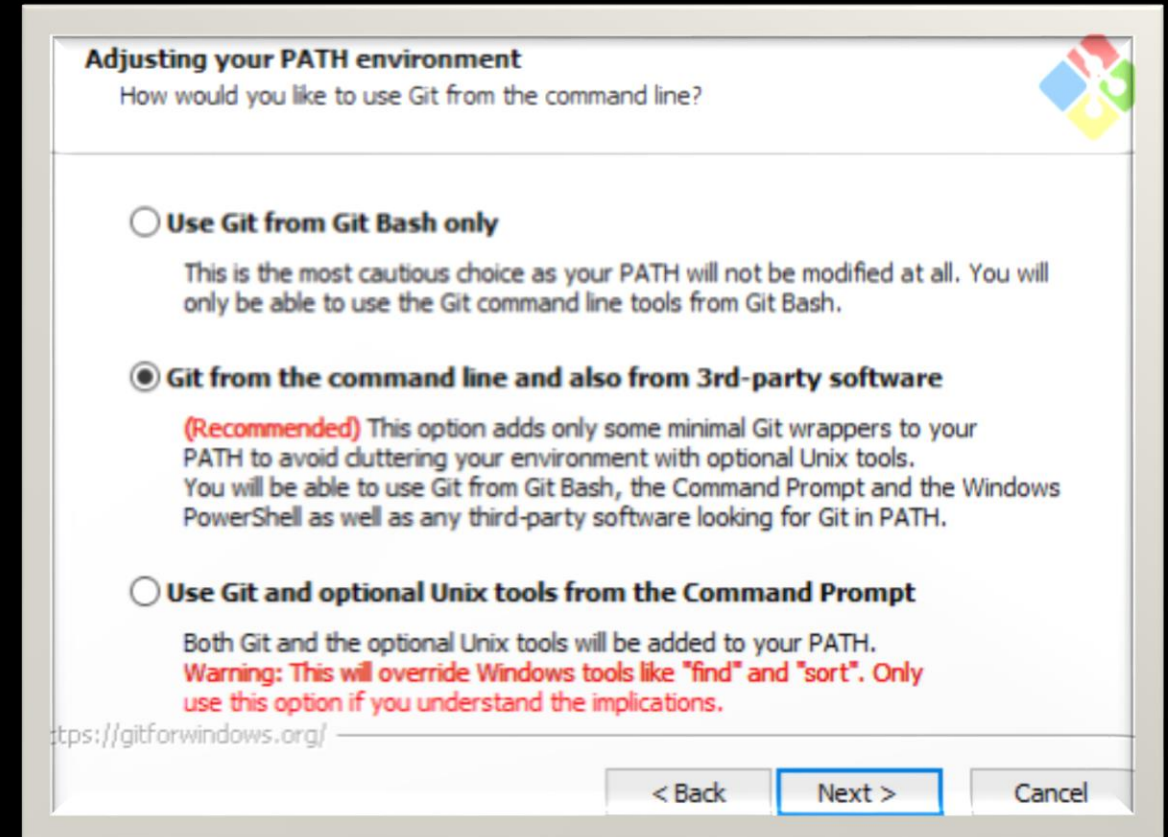
Git Environment Setup (Cont.)

- If you are a complete newbie, choose *'let git decide'*
- Else you can specify the legacy *'master branch'* to use



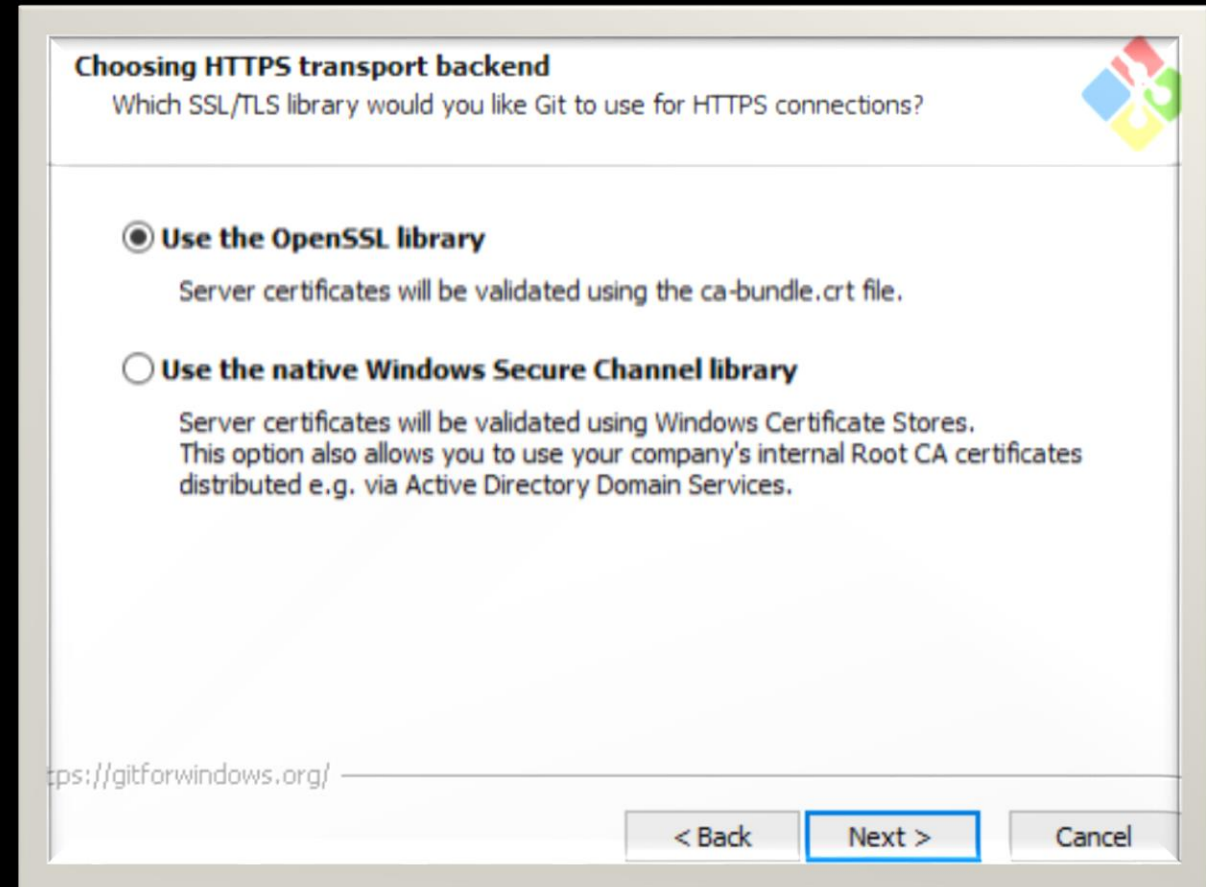
Git Environment Setup (Cont.)

- Under '*Adjusting PATH Variable*' section, choose the recommended option



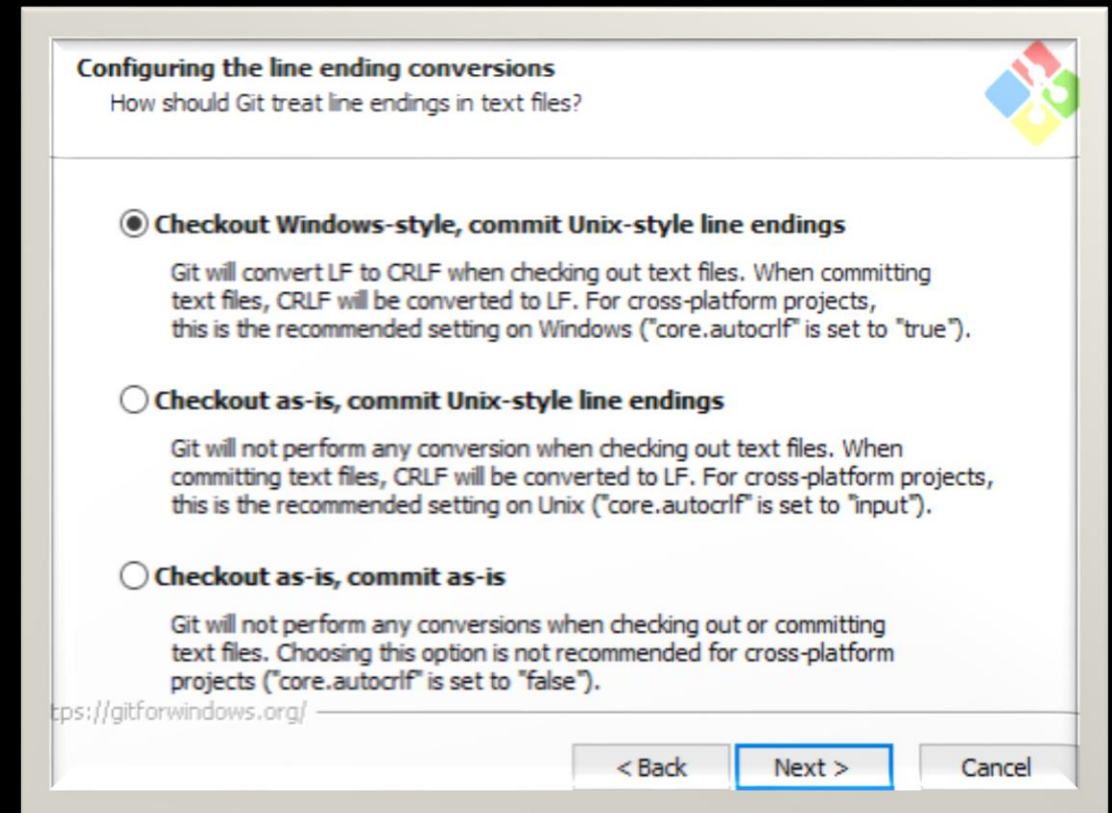
Git Environment Setup (Cont.)

- Under '*HTTPS transport backend*' section, choose **OpenSSL**
- If you have auth Certificates under your company's root CA certificates



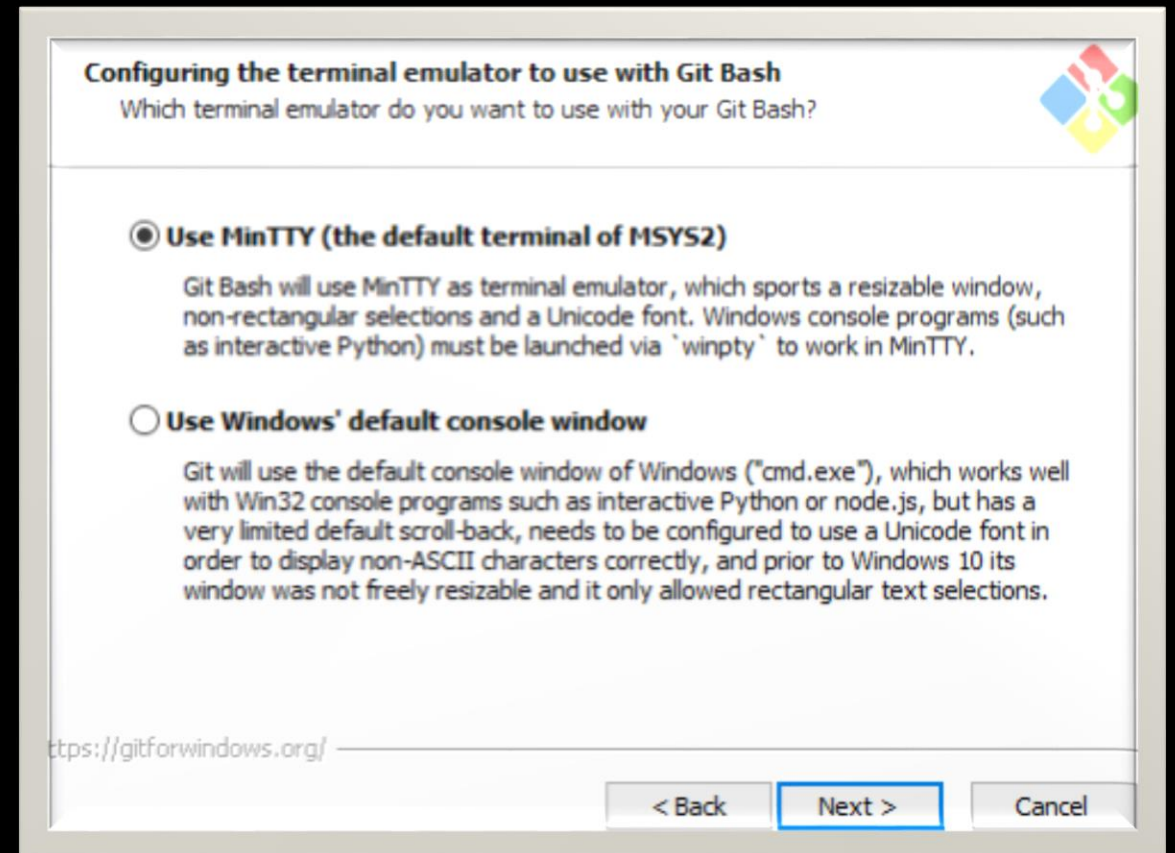
Git Environment Setup (Cont.)

- Under the '*Line-ending configuration*' section-
 - Choose 1st option if you are on Windows
 - Choose 2nd option if you are on Linux based distros
 - Using 3rd option is not recommended



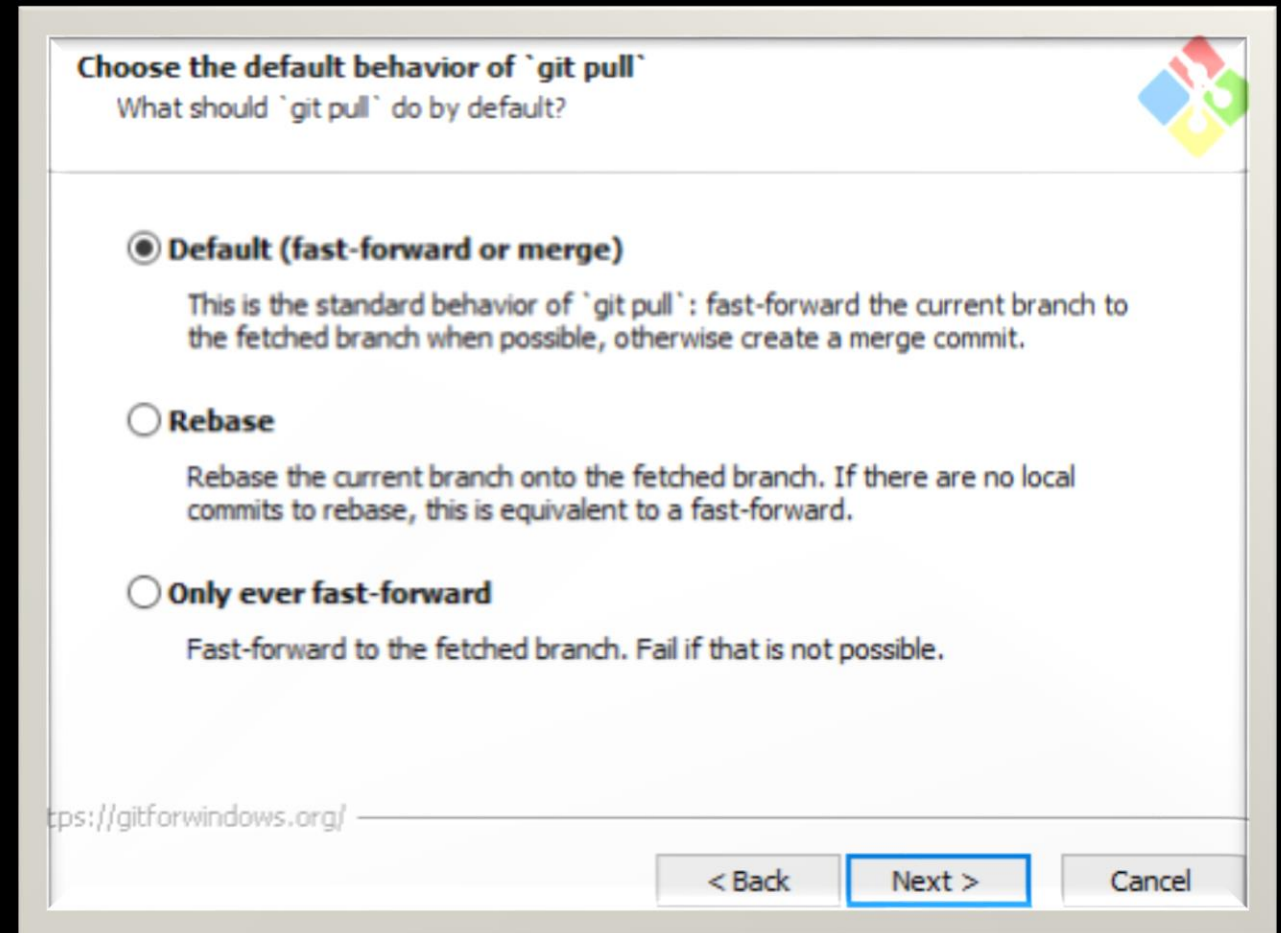
Git Environment Setup (Cont.)

- Under the '*Terminal Emulator configuration*' section, choose **MinTTY** emulator (MSYS2 package)



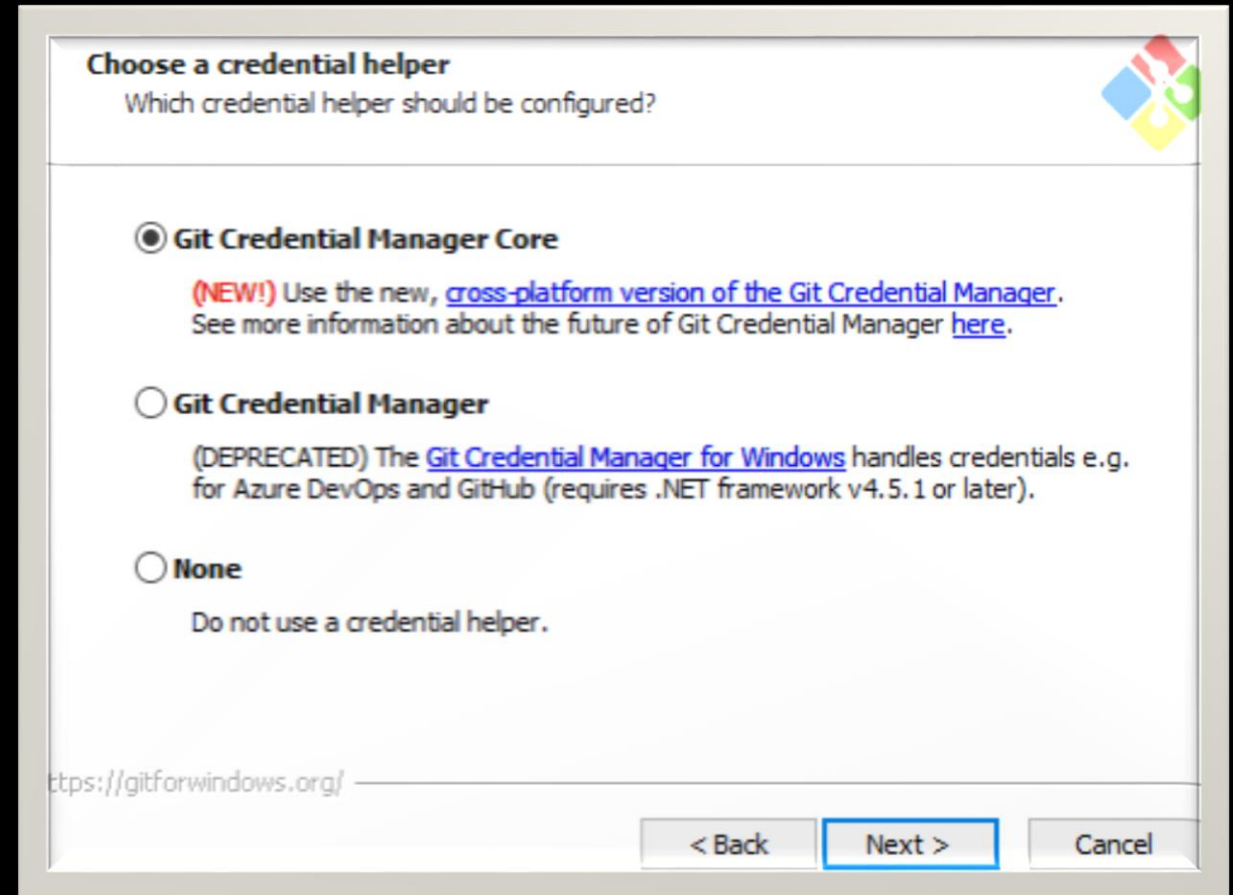
Git Environment Setup (Cont.)

- Under the '*git-pull default behavior*' section, choose **default**



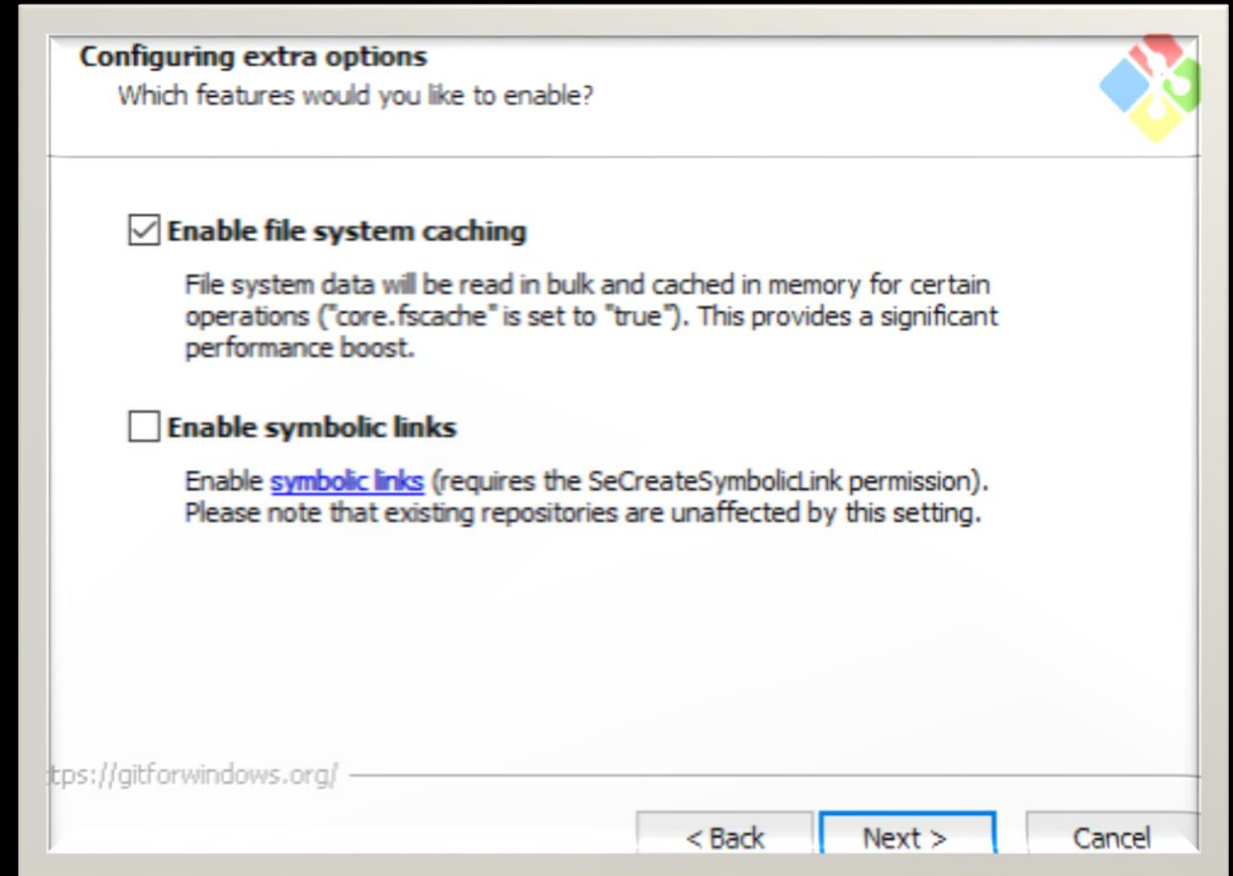
Git Environment Setup (Cont.)

- Under the '*Choose credential manager*' section, choose the **newest one**



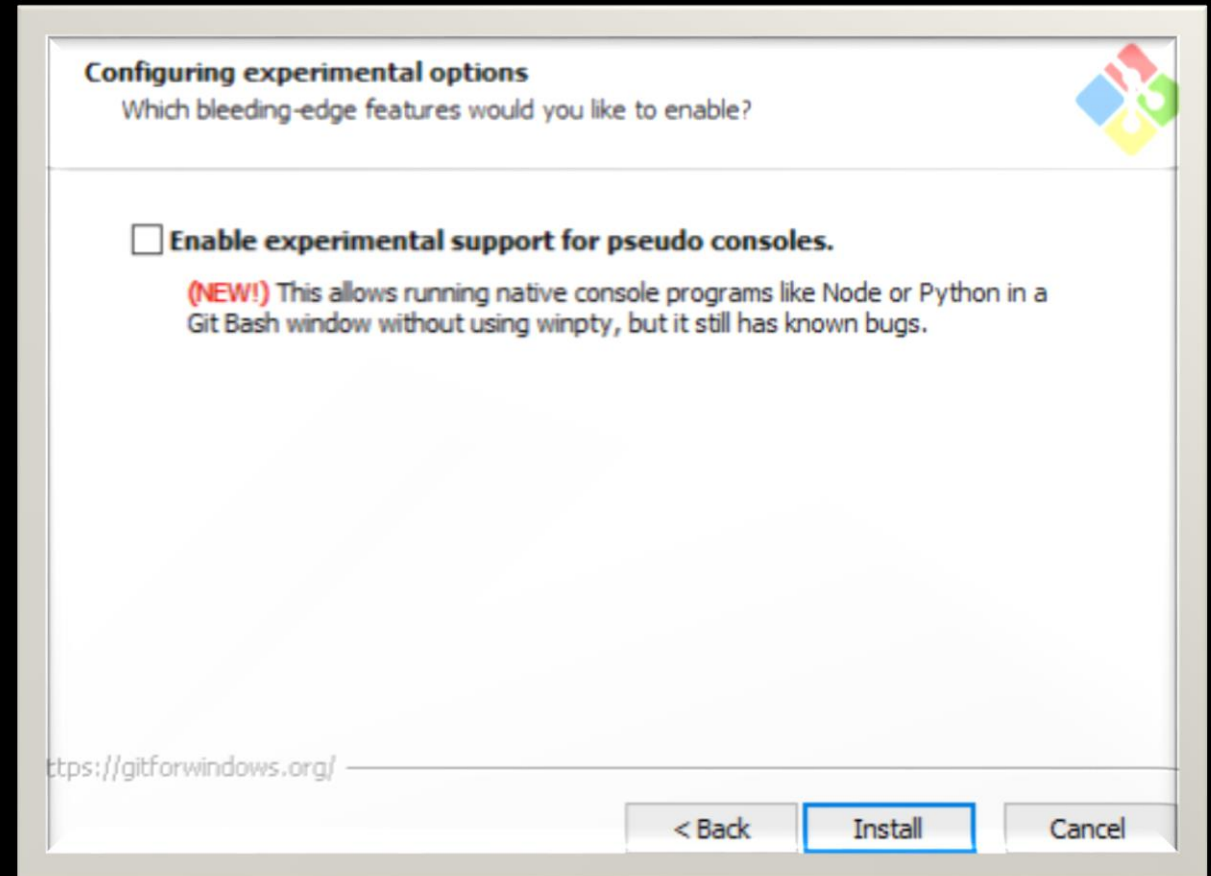
Git Environment Setup (Cont.)

- Under the '*Choose extra options*' section, leave it as it is



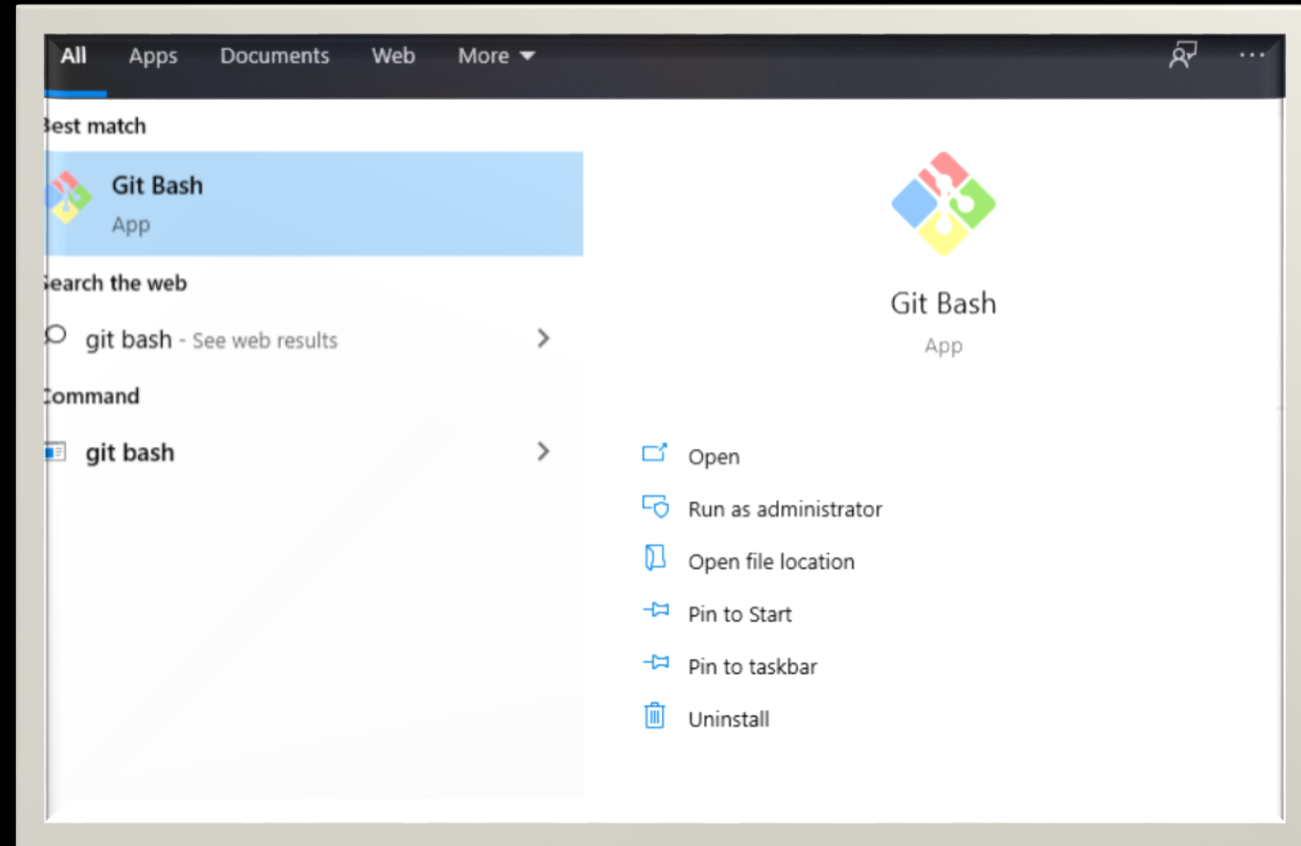
Git Environment Setup (Cont.)

- Under the '*experimental options configuration*' section, leave it as it is
- Click **Install** and wait for the installer to complete installation



Git Environment Setup (Cont.)

- Search for '**Git Bash**' to validate git bash installation
- Open **CMD** and run '*git – version*' to verify it is accessible from CLI
- Click on '**Git Bash**' icon to launch and get started with Git



Try out some Unix commands

Change directory

`cd directoryName`

Upper level directory

`cd ..`

Print working directory

`pwd`

List files

`ls`

View file using cat

`cat filename`

Open file using notepad

`notepad filename`

Copy file

`cp filename newlocationpath`

Move file

`mv filename newlocation`

Create new folder

`mkdir foldername`

Remove folder

`rmdir foldername`

Remove file


`rm filename`

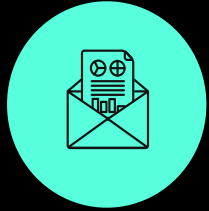
Remove file by force

`rm -rf filename`

Learning Resources

Plenty of places to have fun with command line!

- Basic Unix commands - [Basic UNIX commands \(stanford.edu\)](#)
 - A-Z index of Linux Command Line - [An A-Z Index of the Linux command line - SS64.com](#)
 - MS-DOS **Command.com** CLI commands - <https://www.computerhope.com/overview.htm>
 - Windows Command-line reference A-Z - [Windows commands | Microsoft Docs](#)
 - Try out the awesome PowerShell - [Table of Basic PowerShell Commands](#)
- 
- A decorative graphic at the bottom of the slide consisting of two horizontal lines. The top line is blue and the bottom line is purple. Both lines have three small dots of the same color as the line itself, spaced out along their length.



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That's All From Me!

