

R Meetup Group – April 1, 2017

Using Git and GitHub
Ray Harris



Git

- **Distributed Version Control System (DVCS)**
- **VCS Examples:**
 - Microsoft Visual Source Safe (VSS) (centr)
 - Concurrent Versioning System (CVS) (centr)
 - Subversion (SVN) (centr)
 - Perforce
 - Git (de-centr)
- **Created by Linus Torvalds in 2005**
- **Git: def'n: “unpleasant person” (British)**



- **VCSes enable:**
 - Track who changed what, when...
 - Multiple parallel branches of code: PROD, Feature Branches, Maintenance Branches, Experimental Branches
 - Collaboration between team members per branch
- **Separate from building, configuring, deploying, tracking defects (via separate tools)**



Centralized Version Control Systems

- **VSS / CVS / SVN:**
 - Each user only has one copy of one set of files
 - “Source” copy of the files are “locked” on the server
 - “Unlock” / “Checkout” files to work on them
 - Checked Out files cannot be worked on by anyone else until checked in
 - Server tracked “deltas” between files



Decentralized Version Control System: Git

- **Git:**

- Each user has a clone of “the” repository
- Each user has an entire copy of the entire repository containing the entire history of all changes
- In other words, each user has * EVERYTHING*
- Do not * need * a centralized (Gold Standard) server
- But, have a Gold Standard server for “safety's sake” and for convenience




Getting / Installing Git (git-scm.com)

https://git-scm.com


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 **git** --distributed-even-if-your-workflow-isnt

Git is a [free and open source](#) distributed version control system designed to handle everything from small to very large projects with speed and efficiency.

Git is [easy to learn](#) and has a [tiny footprint with lightning fast performance](#). It outclasses SCM tools like Subversion, CVS, Perforce, and ClearCase with features like [cheap local branching](#), convenient [staging areas](#), and [multiple workflows](#).


 **Learn Git in your browser for free with Try Git.**






About

The advantages of Git compared to other source control systems.




Documentation

Command reference pages, Pro Git book content, videos and other material.



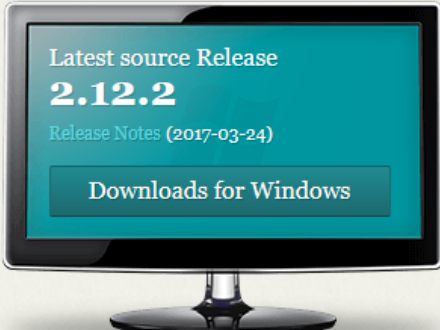
Downloads

GUI clients and binary releases for all major platforms.



Community

Get involved! Bug reporting, mailing list, chat, development and more.




Latest source Release
2.12.2
[Release Notes \(2017-03-24\)](#)
[Downloads for Windows](#)

Getting / Installing Git

<https://git-scm.com/download/win>

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 **git** --everything-is-local

Search entire site...

About

Documentation

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GUI Clients

Logos

Community

The entire [Pro Git book](#) written by Scott Chacon and Ben Straub is available to [read online for free](#). Dead tree versions are available on [Amazon.com](#).

Downloading Git



Your download is starting...

You are downloading the latest (**2.12.2**) **64-bit** version of **Git for Windows**. This is the most recent [maintained build](#). It was released **3 days ago**, on 2017-03-27.

If your download hasn't started, [click here to download manually](#).

Other Git for Windows downloads

Git for Windows Setup
[32-bit Git for Windows Setup](#).
[64-bit Git for Windows Setup](#).

Git for Windows Portable ("thumbdrive edition")
[32-bit Git for Windows Portable](#).
[64-bit Git for Windows Portable](#).

The current source code release is version **2.12.2**. If you want the newer version, you can build it from [the source code](#).

Git Hosting Alternatives/Pricing


	SPACE	#USERS	PUBLIC <u>REPOs</u>	PRIVATE <u>REPOs</u>
<u>GITLAB</u>	Unlimited	Unlimited	Unlimited (free)	Unlimited (free)
<u>BITBUCKET</u>	Unlimited	Free up to 5 \$1 per mo per user (HOST on own server: SMALL: 25 users - \$1,800) (HOST on own server: <u>ENT</u> : 500 users - \$16,000 per year)	Unlimited	Unlimited
<u>GITHUB</u>	Unlimited	Unlimited	Unlimited (free)	\$7 per mo (ORG: \$9 per user per mo <u>ENT</u> : \$21 per user per mo)
<u>ASSEMBLA</u>	1GB 5GB 20GB 40GB	Free \$24 per mo/12 users \$49 per mo/30 users \$99 per mo/50 users	Unlimited	Unlimited
https://git.wiki.kernel.org/index.php/GitHosting				

GitHub Account

GitHub, Inc. (US)https://github.com


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Sign in or Sign up



Built for developers

GitHub is a development platform inspired by the way you work. From open source to business, you can host and review code, manage projects, and build software alongside millions of other developers.

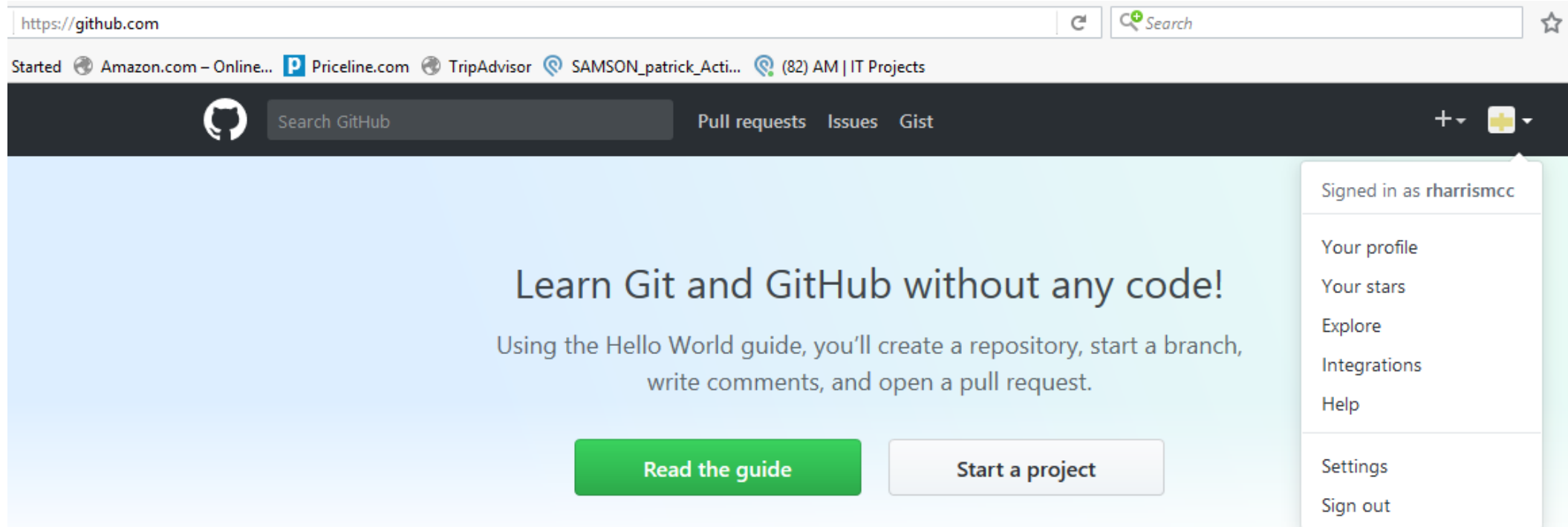
Use at least one letter, one numeral, and seven characters.

[Sign up for GitHub](#)

By clicking "Sign up for GitHub", you agree to our [terms of service](#) and [privacy policy](#). We'll occasionally send you account related emails.



GitHub Account



The screenshot shows the GitHub homepage in a web browser. The browser's address bar displays 'https://github.com'. The page features a dark navigation bar with the GitHub logo, a search bar, and links for 'Pull requests', 'Issues', and 'Gist'. A user menu is open on the right, showing the user is signed in as 'rharrismcc' and listing options like 'Your profile', 'Your stars', 'Explore', 'Integrations', 'Help', 'Settings', and 'Sign out'. The main content area has a light blue background with the heading 'Learn Git and GitHub without any code!' and a subtext explaining the 'Hello World' guide. Two buttons, 'Read the guide' and 'Start a project', are positioned below the text.

https://github.com

Search GitHub

Pull requests Issues Gist

Signed in as **rharrismcc**

- Your profile
- Your stars
- Explore
- Integrations
- Help
- Settings
- Sign out

Learn Git and GitHub without any code!

Using the Hello World guide, you'll create a repository, start a branch, write comments, and open a pull request.


[Read the guide](#) [Start a project](#)



Create a new repository

A repository contains all the files for your project, including the revision history.

Owner

 rharrismcc ▾

Repository name

/ r_workshop_20170401 ✓

Great repository names are short and memorable. Need inspiration? How about **redesigned-octo-parakeet**.

Description (optional)

Presentation at the R Meetup Group Workshop on April 1, 2017



Public

Anyone can see this repository. You choose who can commit.



Private

You choose who can see and commit to this repository.

☐ **Initialize this repository with a README**

This will let you immediately clone the repository to your computer. Skip this step if you're importing an existing repository.

Add .gitignore: **None** ▾

Add a license: **None** ▾



Create repository



Quick setup — if you've done this kind of thing before



Set up in Desktop

or

HTTPS

SSH

https://github.com/rharrismcc/r_workshop_20170401.git

We recommend every repository include a [README](#), [LICENSE](#), and [.gitignore](#).

...or create a new repository on the command line

```
echo "# r_workshop_20170401" >> README.md
git init
git add README.md
git commit -m "first commit"
git remote add origin https://github.com/rharrismcc/r_workshop_20170401.git
git push -u origin master
```



...or push an existing repository from the command line

```
git remote add origin https://github.com/rharrismcc/r_workshop_20170401.git
git push -u origin master
```



...or import code from another repository

You can initialize this repository with code from a Subversion, Mercurial, or TFS project.

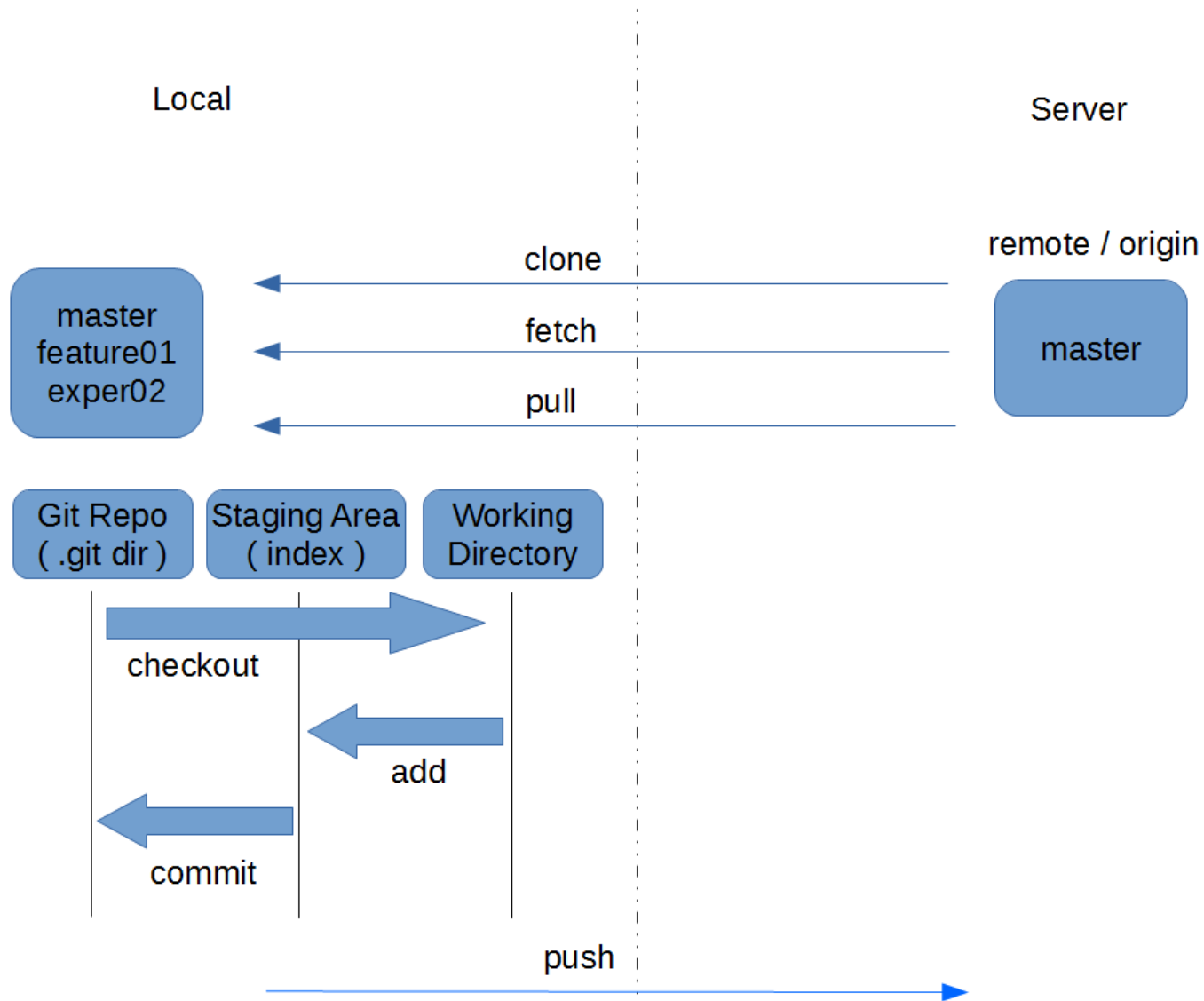
[Import code](#)

.gitignore Resources

- List of .gitignore files by language:
 - <https://github.com/github/gitignore>
 - <https://github.com/github/gitignore/blob/master/R.gitignore>
 - <https://github.com/github/gitignore/blob/master/VisualStudio.gitignore>
 - <https://github.com/github/gitignore/blob/master/Java.gitignore>
 - <https://github.com/github/gitignore/blob/master/C.gitignore>
 - <https://github.com/github/gitignore/blob/master/Perl.gitignore>
 - GENERATOR: <https://www.gitignore.io/>



Git



Git Basic / Common Commands

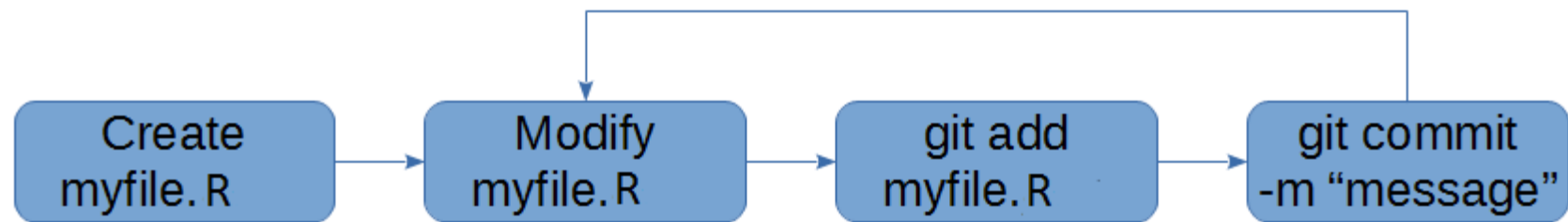
- **Basic Commands:**

- `git init`
- `git add .`
- `git commit -m "Added all files"`
- `git remote add origin https://github.com/ACCOUNT/PROJECTNAME.git`
- `git push -u origin master`

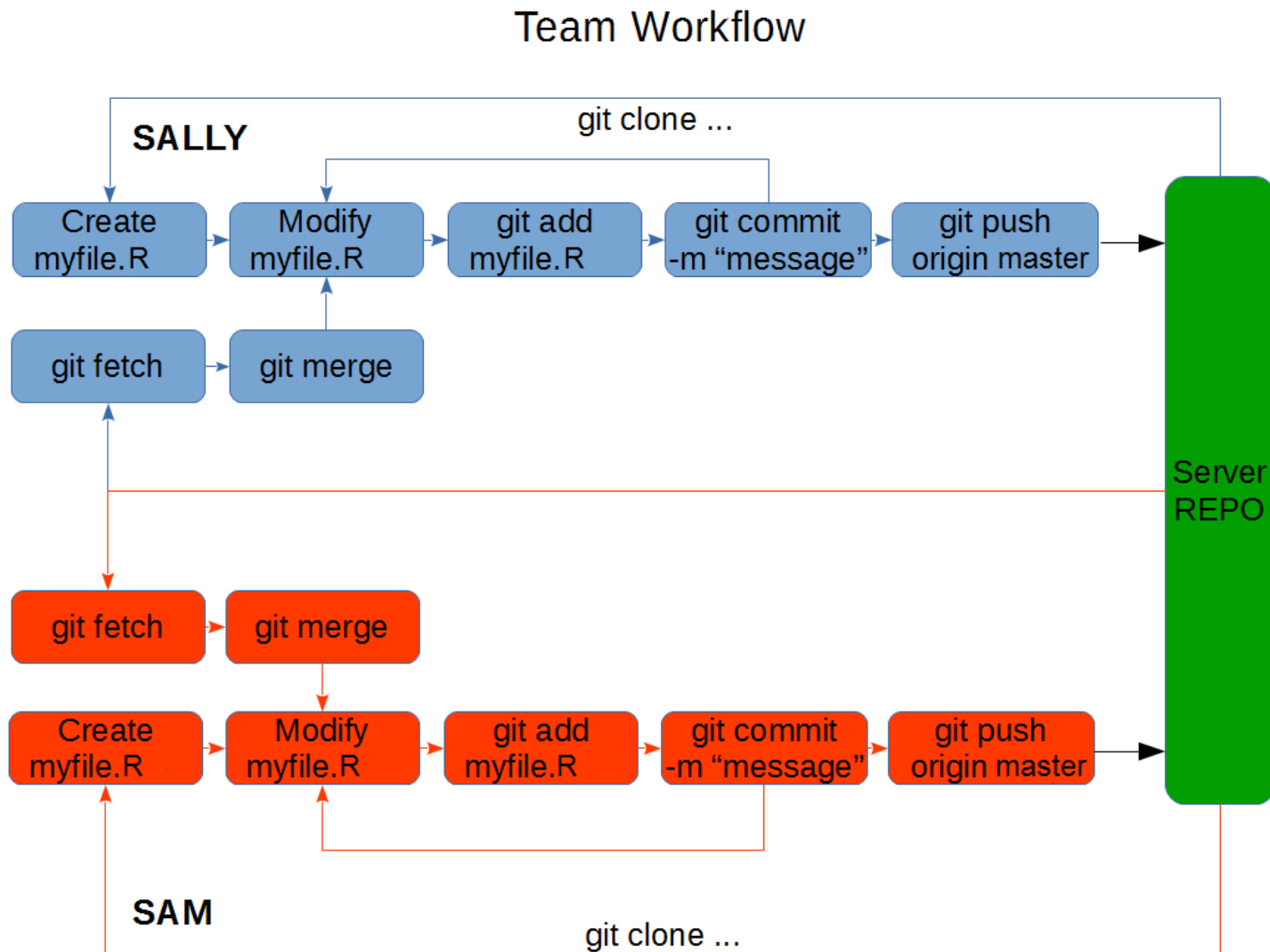


Git Individual Workflow Example

Everyday Workflow



Git Team Workflow example



Git Cheat Sheet URLs

- <https://www.git-tower.com/blog/git-cheat-sheet/>
- <http://ndpsoftware.com/git-cheatsheet.html>
- https://www.atlassian.com/dms/wac/images/landing/git/atlassian_git_cheatsheet.pdf
- <http://www.cheat-sheets.org/saved-copy/git-cheat-sheet.pdf>
- <http://zeroturnaround.com/rebellabs/git-commands-and-best-practices-cheat-sheet/>
- <https://services.github.com/kit/downloads/github-git-cheat-sheet.pdf>
- <https://scotch.io/bar-talk/git-cheat-sheet>
- <http://www.patrickzahnd.ch/wp-content/uploads/2014/02/git-transport-v1.pdf>
- <https://github.com/mattharrison/Git-Supervisual-Cheatsheet/blob/master/gitcheat.png>
- <https://jan-krueger.net/wordpress/wp-content/uploads/2007/09/git-cheat-sheet.pdf>



Git GUI Clients (Linux)

- LIST: <https://git-scm.com/download/gui/>
- Git Gnome
- <https://wiki.gnome.org/Apps/Gitg>
- Giggle
- <https://wiki.gnome.org/Apps/giggle/>
- Git GUI
- <https://www.kernel.org/pub/software/scm/git/docs/git-gui.html>
- QGit
- <http://digilander.libero.it/mcostalba/#Download>



Git GUI Clients (Windows)

- LIST: <https://git-scm.com/download/gui/>
- Tortoise Git
- <https://tortoisegit.org/>
- GITHUB FOR Windows
- <https://github-windows.s3.amazonaws.com/GitHubSetup.exe>
- SourceTree
- <https://downloads.atlassian.com/software/sourcetree/windows/>
- Aurees
- <https://aurees.com/download>



Git GUI Clients (MAC)

- LIST: <https://git-scm.com/download/gui/>
- GitBox
- <http://d1oa71y4zxyi0a.cloudfront.net/gitbox-1.6.2-m1.zip>
- GitXDev
- <https://rowanj.github.io/gitx/>
- GitUP
- <http://gitup.co/>
- <https://s3-us-west-2.amazonaws.com/gitup-builds/stable/GitUp.zip>
- Fork
- <https://git-fork.com/update/files/Fork.dmg>



Git GUI Clients (Cross Platform)

- SmartGit
- <http://www.syntevo.com/smartgit/download>
- GitKraken
- <https://www.gitkraken.com/download>
- Tower
- <https://www.git-tower.com/windows/>
- Git Cola
- <https://git-cola.github.io/downloads.html>
- GitEye
- <https://www.collab.net/downloads/giteye>
- Git Ahead
- <https://scitools.com/gitahead/>

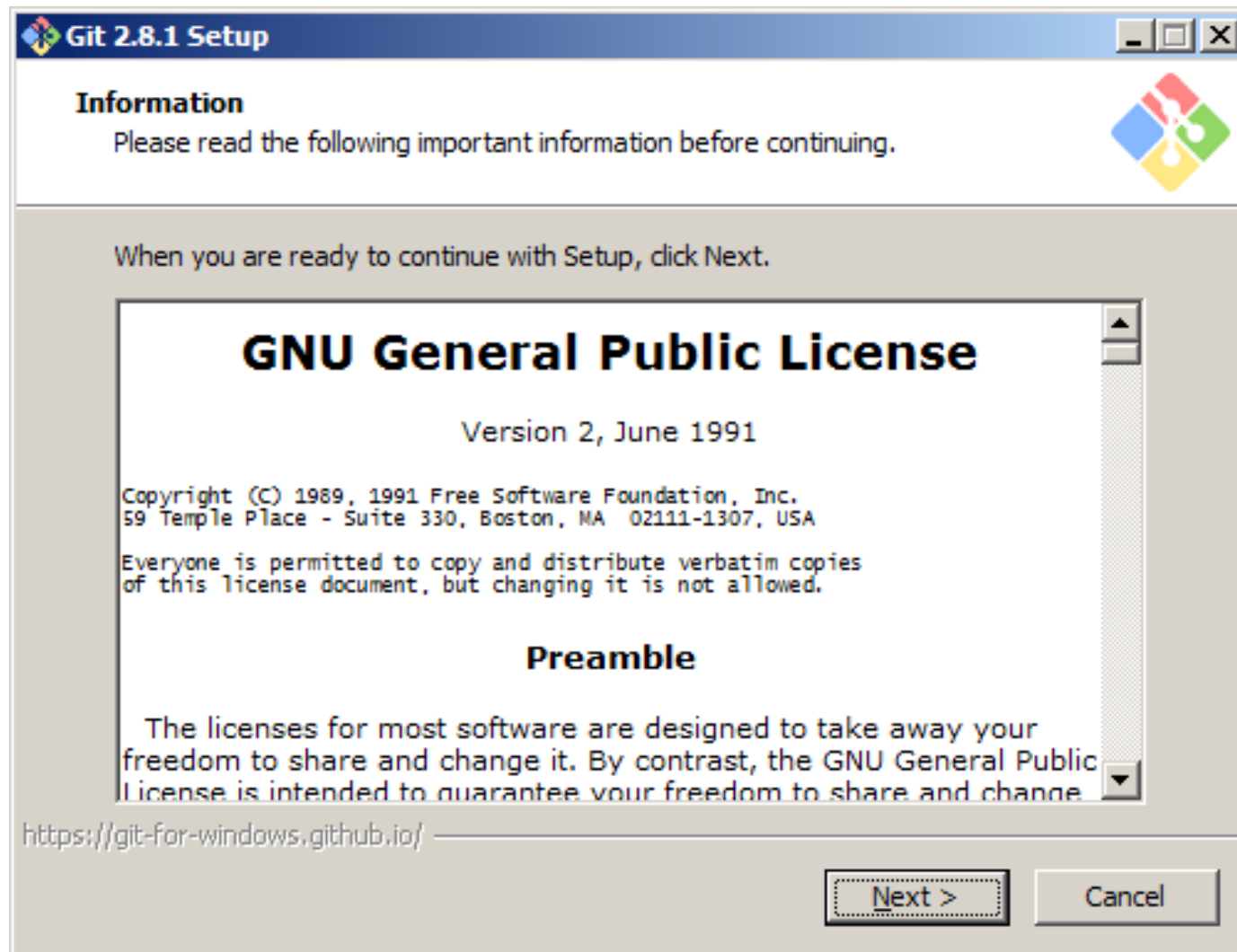


Appendix A – REPO With Presentation

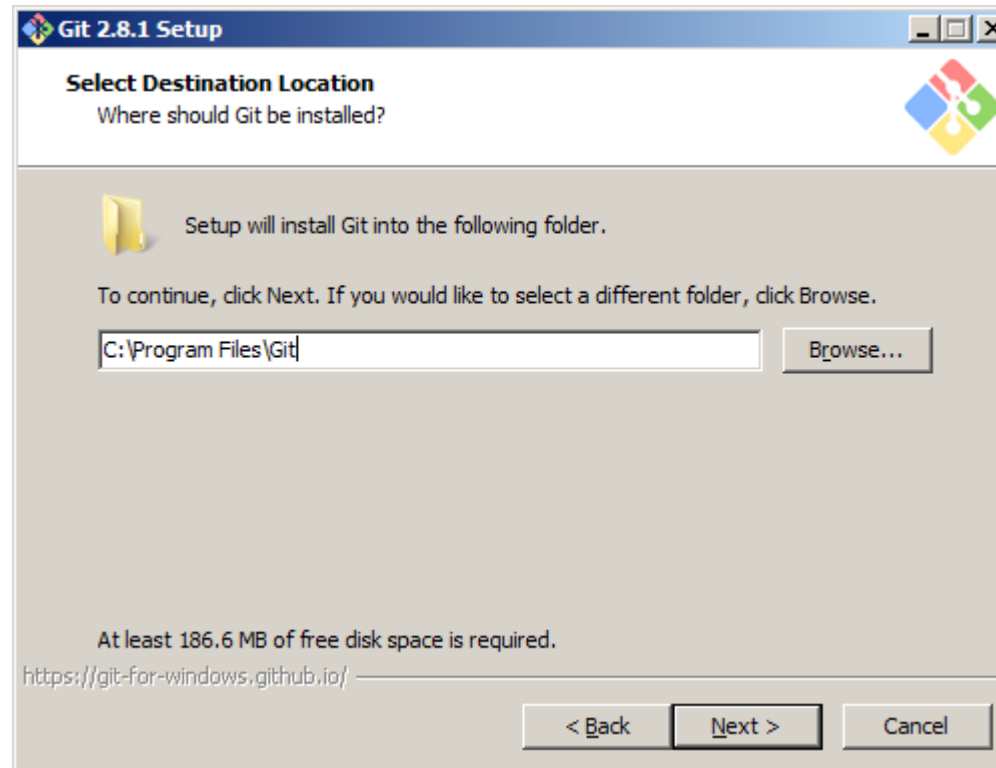
- Git Book:
- <https://git-scm.com/book/en/v2>
- Repository to download presentation/resources:
- git clone
https://github.com/rharrismcc/r_workshop_20170401.git



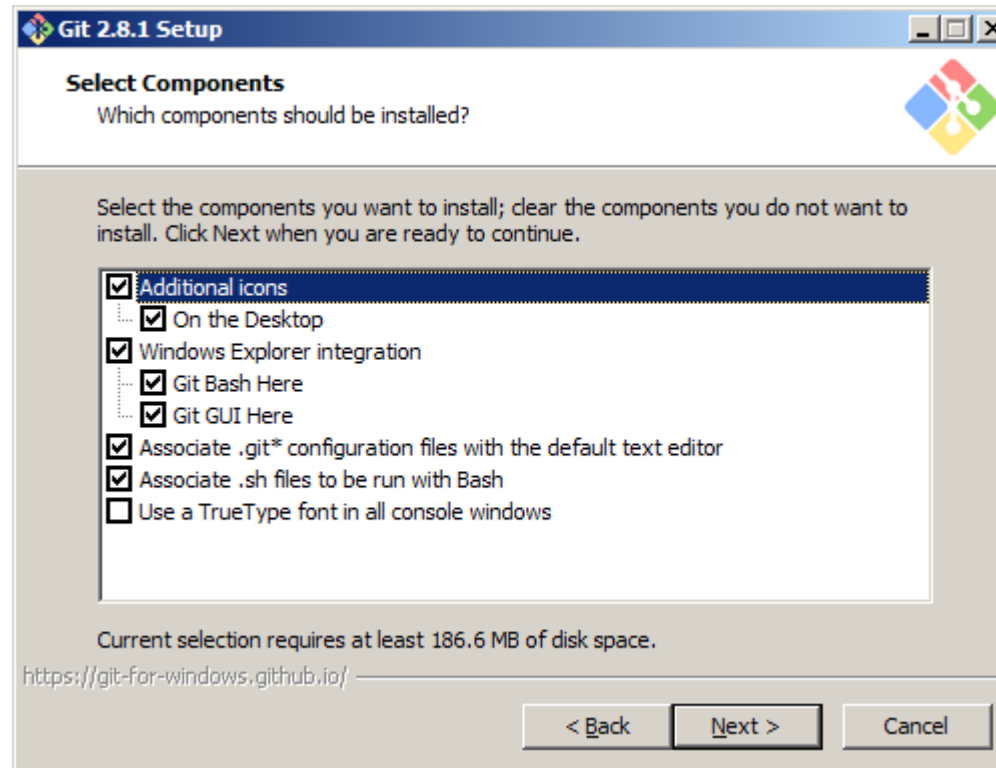
Appendix B – Installing Git



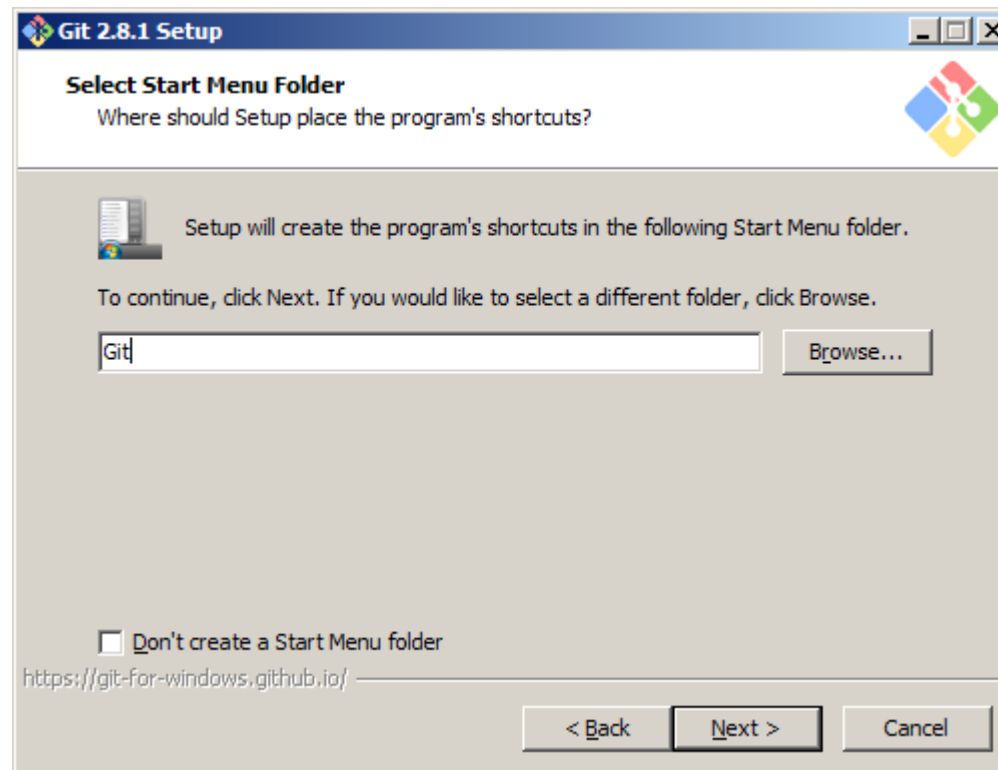
Appendix B – Installing Git



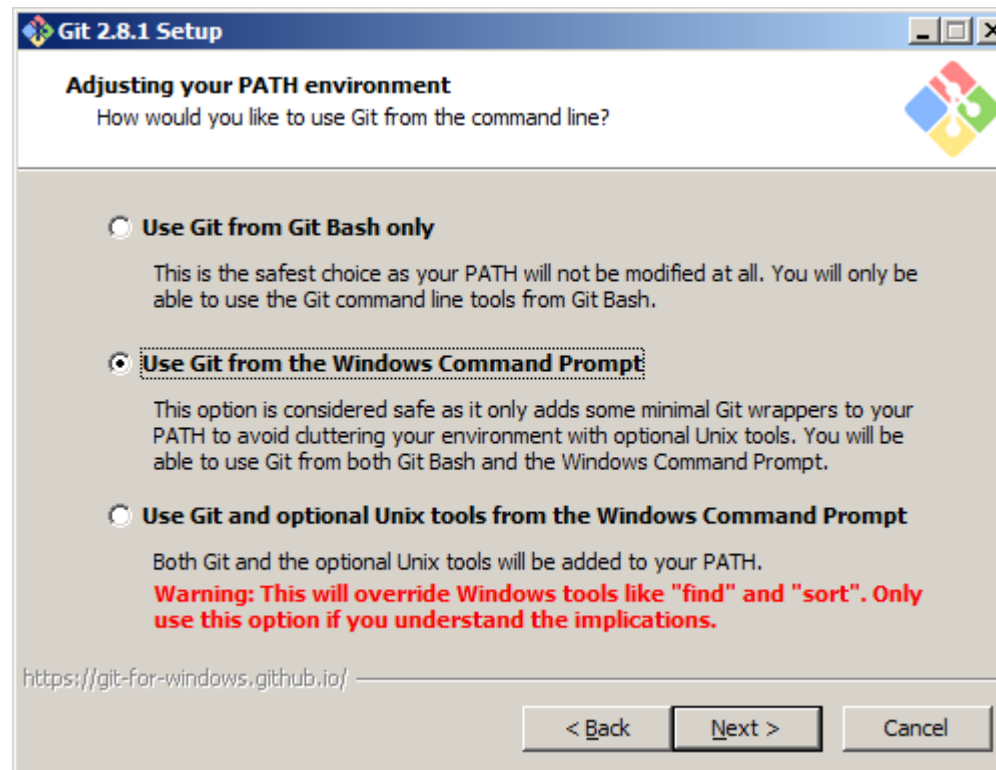
Appendix B – Installing Git



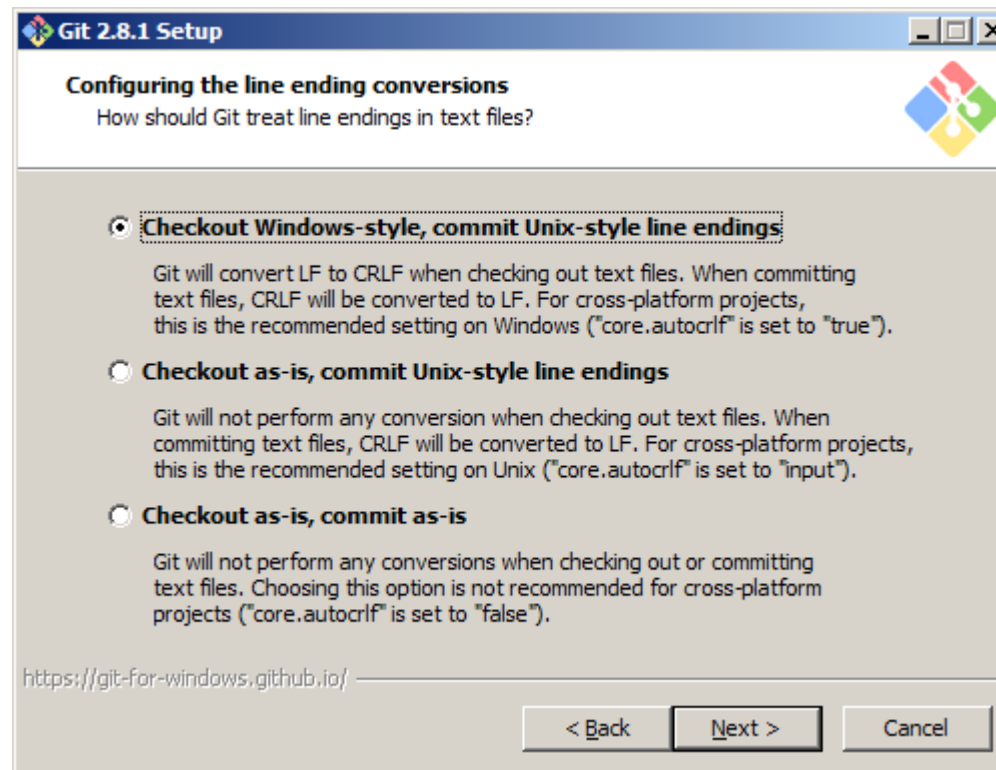
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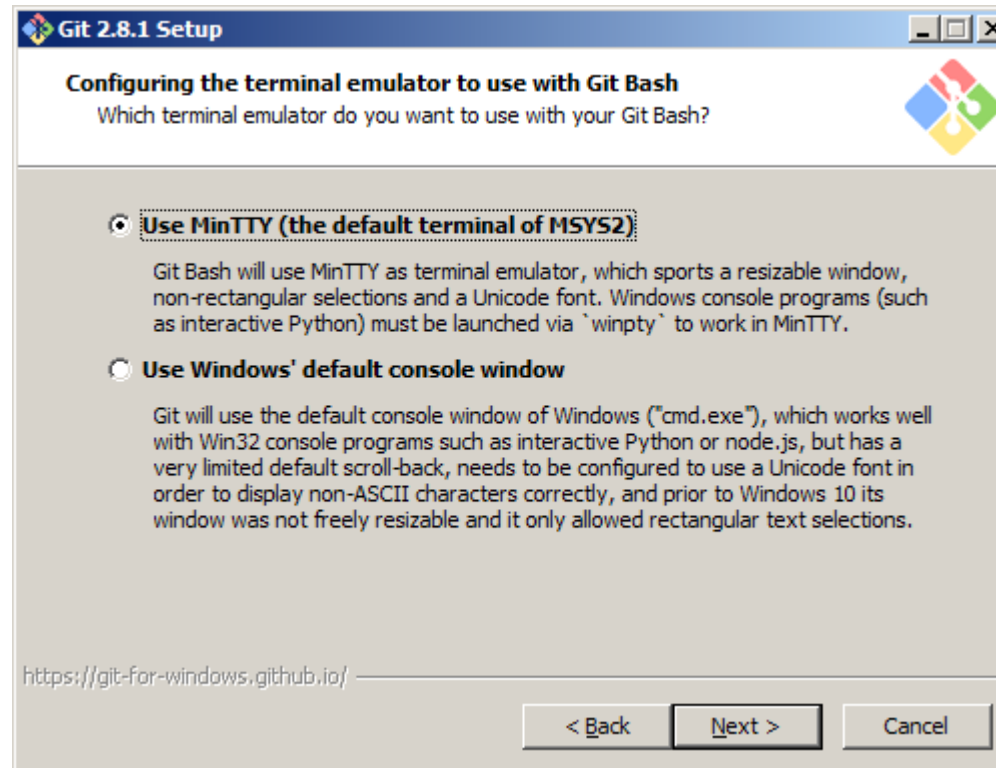
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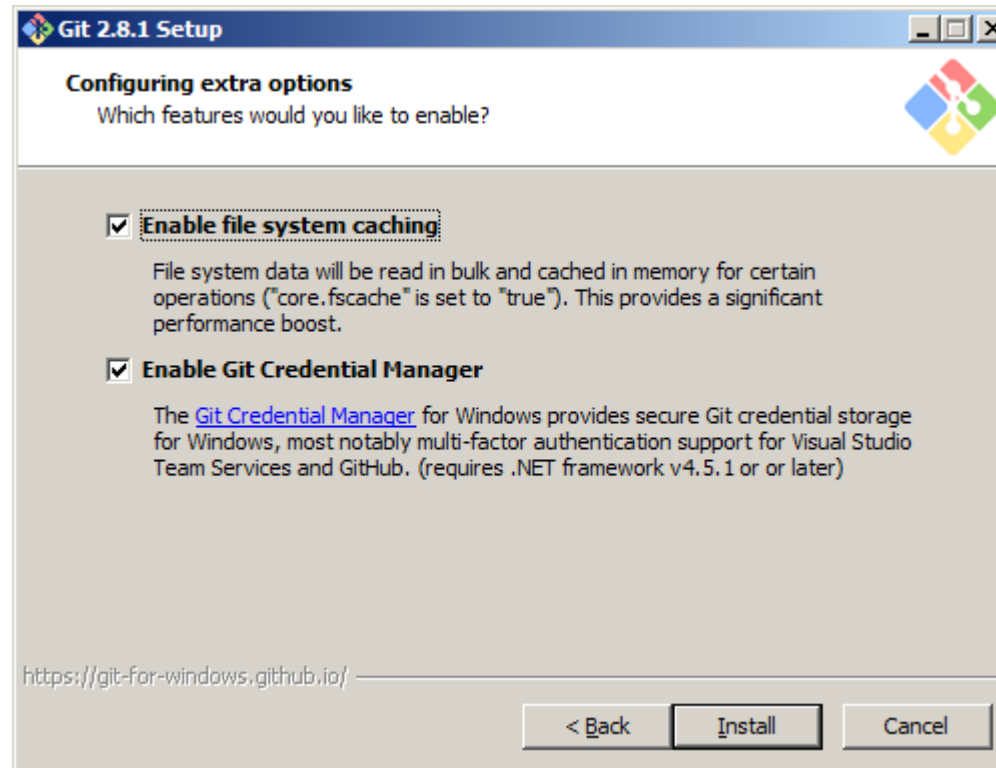
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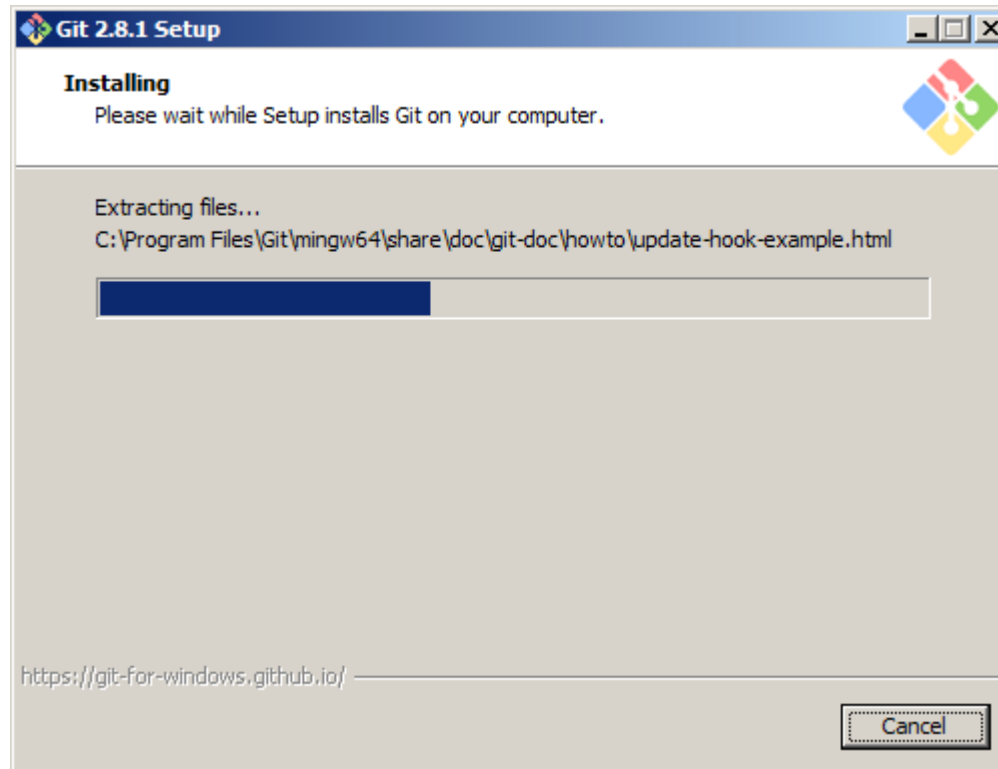
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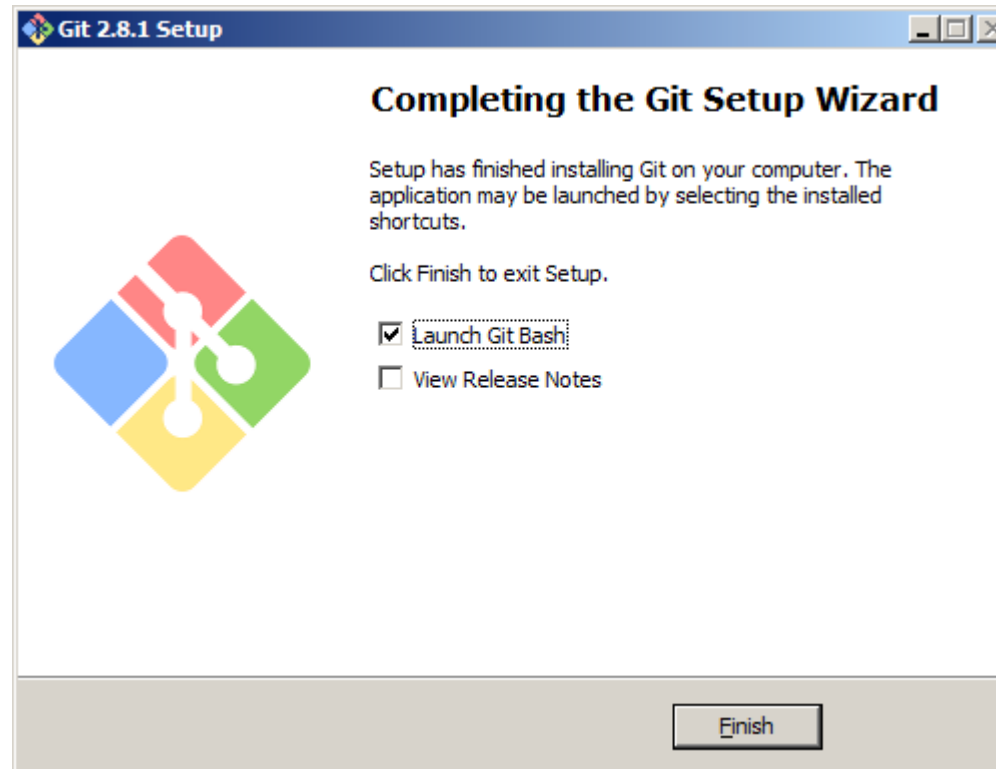
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