R Meetup Group – April 1, 2017

Using Git and GitHub

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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)**

Git

- **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)**

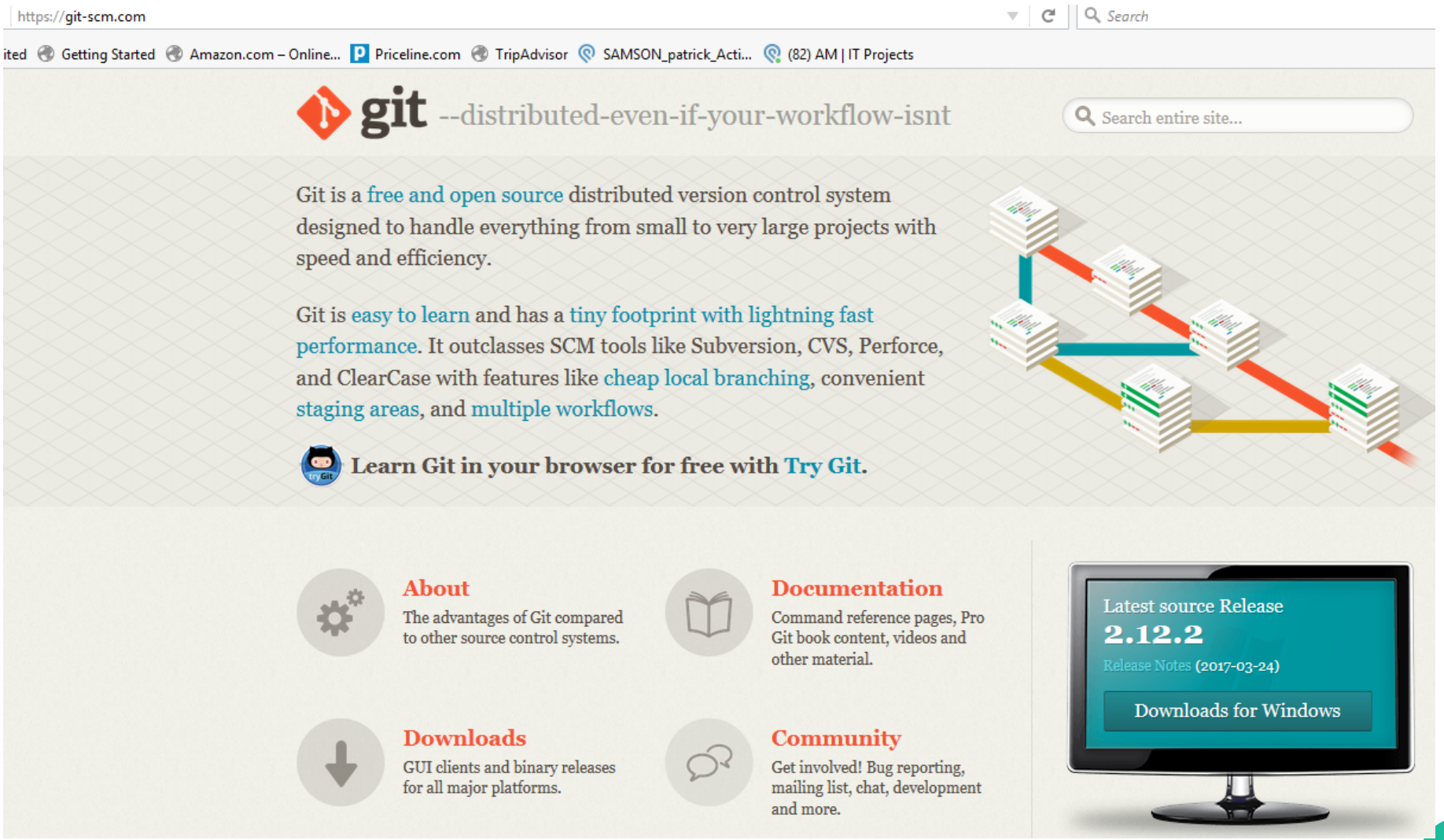
Centralized Version Control Systems

- **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

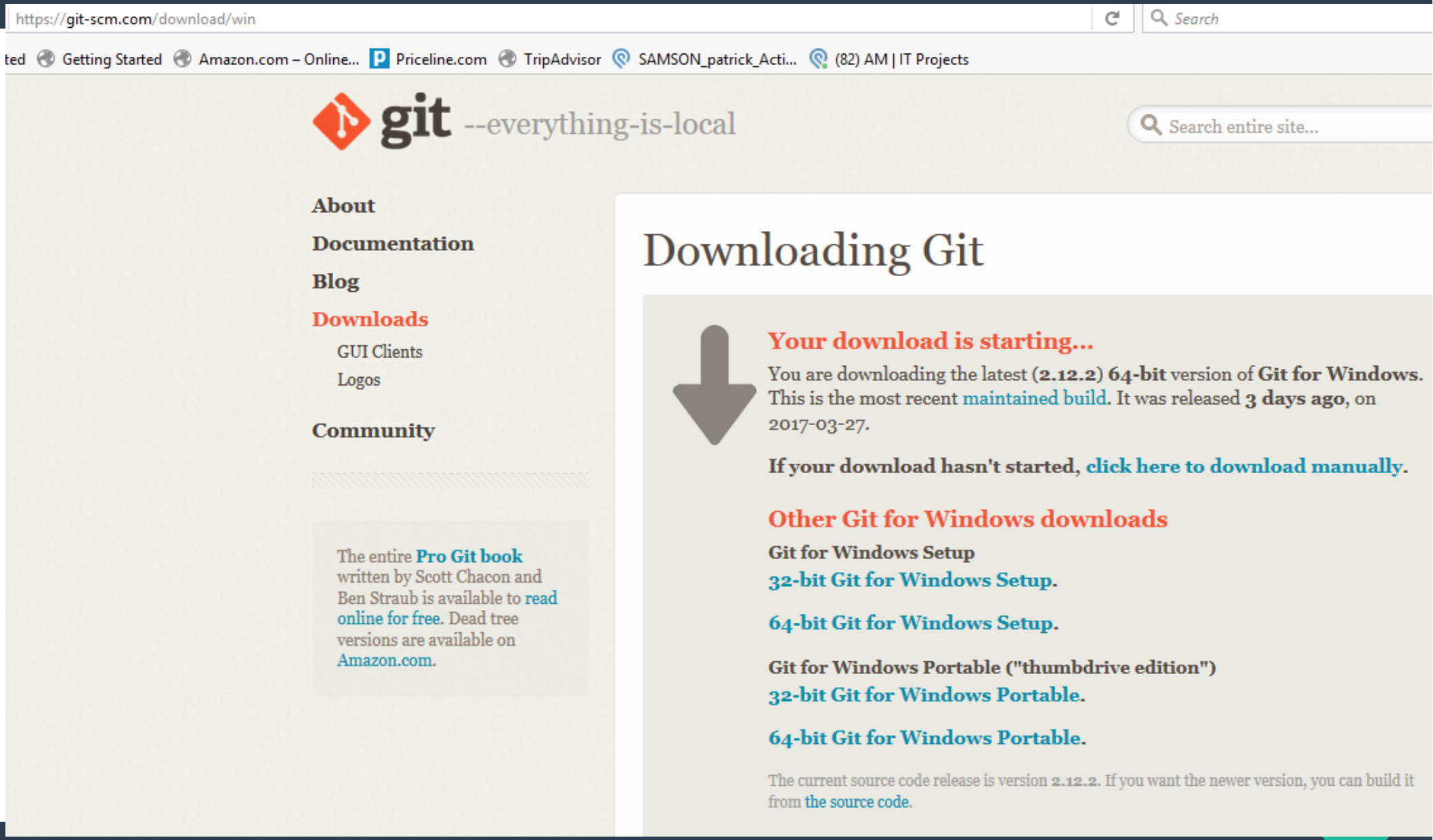
Decentralized Version Control System: Git

- **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)



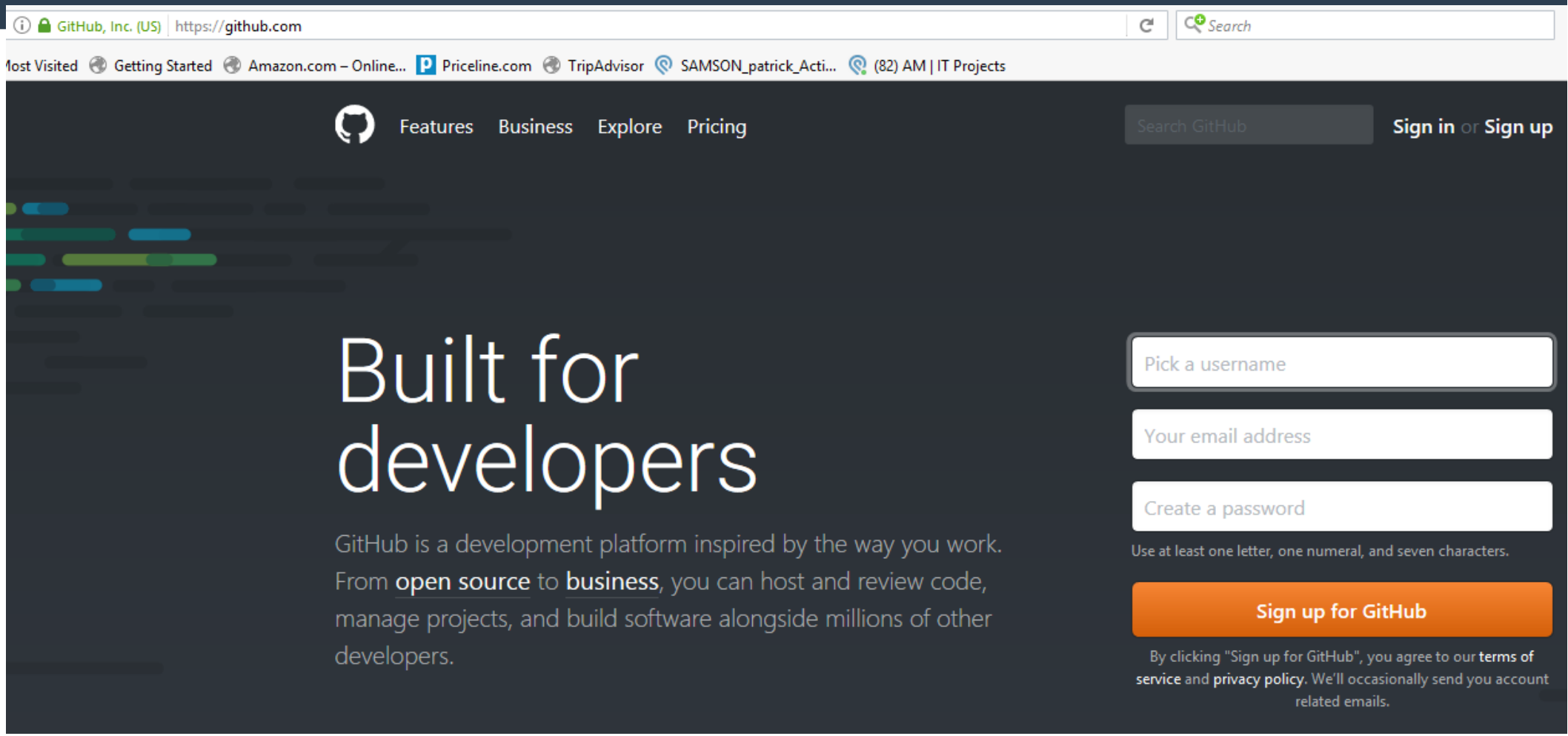
Getting / Installing Git



Git Hosting Alternatives/Pricing

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

GitHub Account



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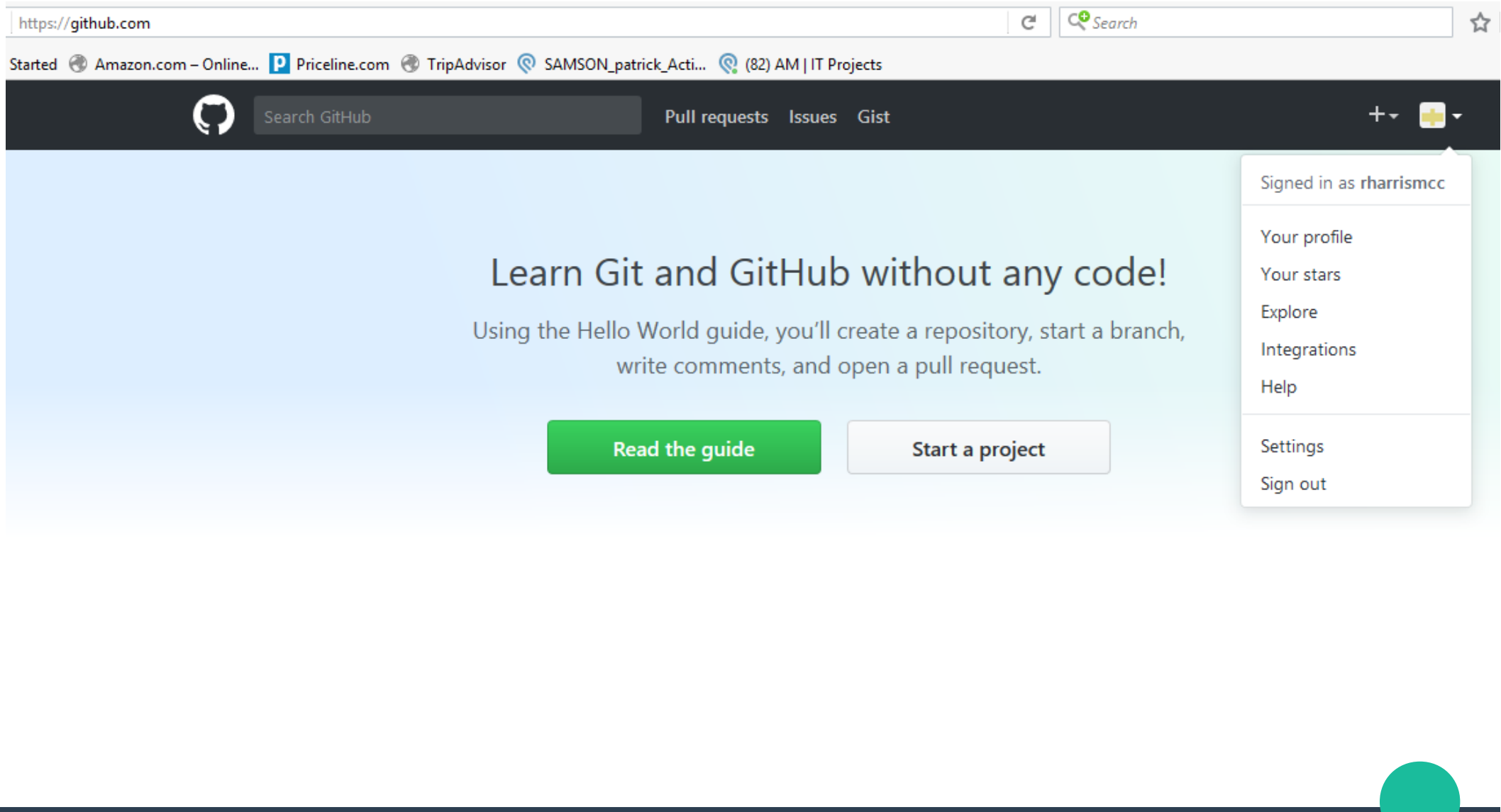
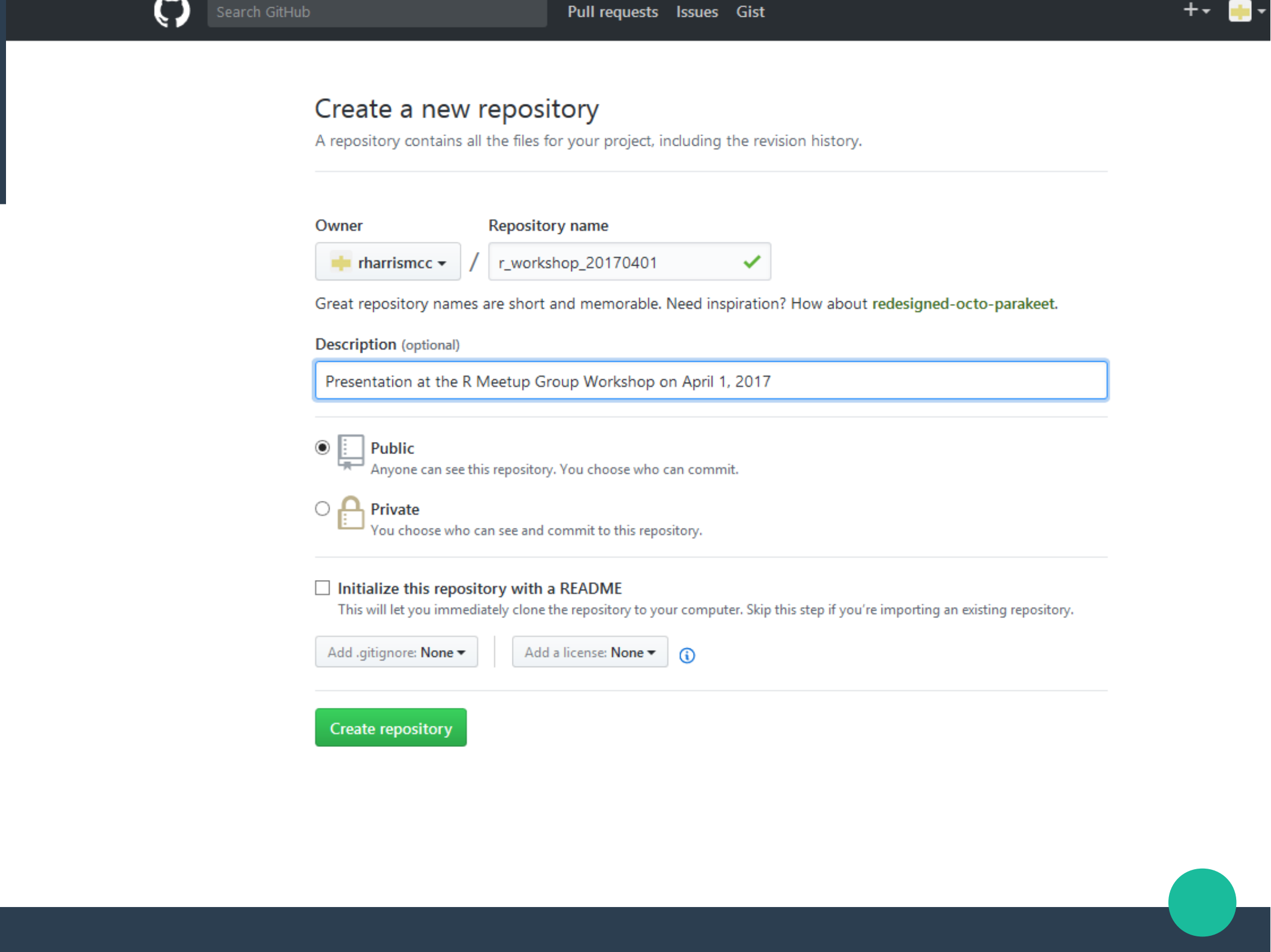



Search GitHub
Pull requests
Issues
Gist
Create a new repository
A repository contains all the files for your project, including the revision history.
Owner
Repository name
rharrismcc
/
r_workshop_20170401
Great repository names are short and memorable. Need inspiration? How about redesigned-octo-parakeet.
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

rharrismcc / r_workshop_20170401

Watch 0 | Star 0 | Fork 0

Code | Issues 0 | Pull requests 0 | Projects 0 | Wiki | Pulse | Graphs | Settings

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.

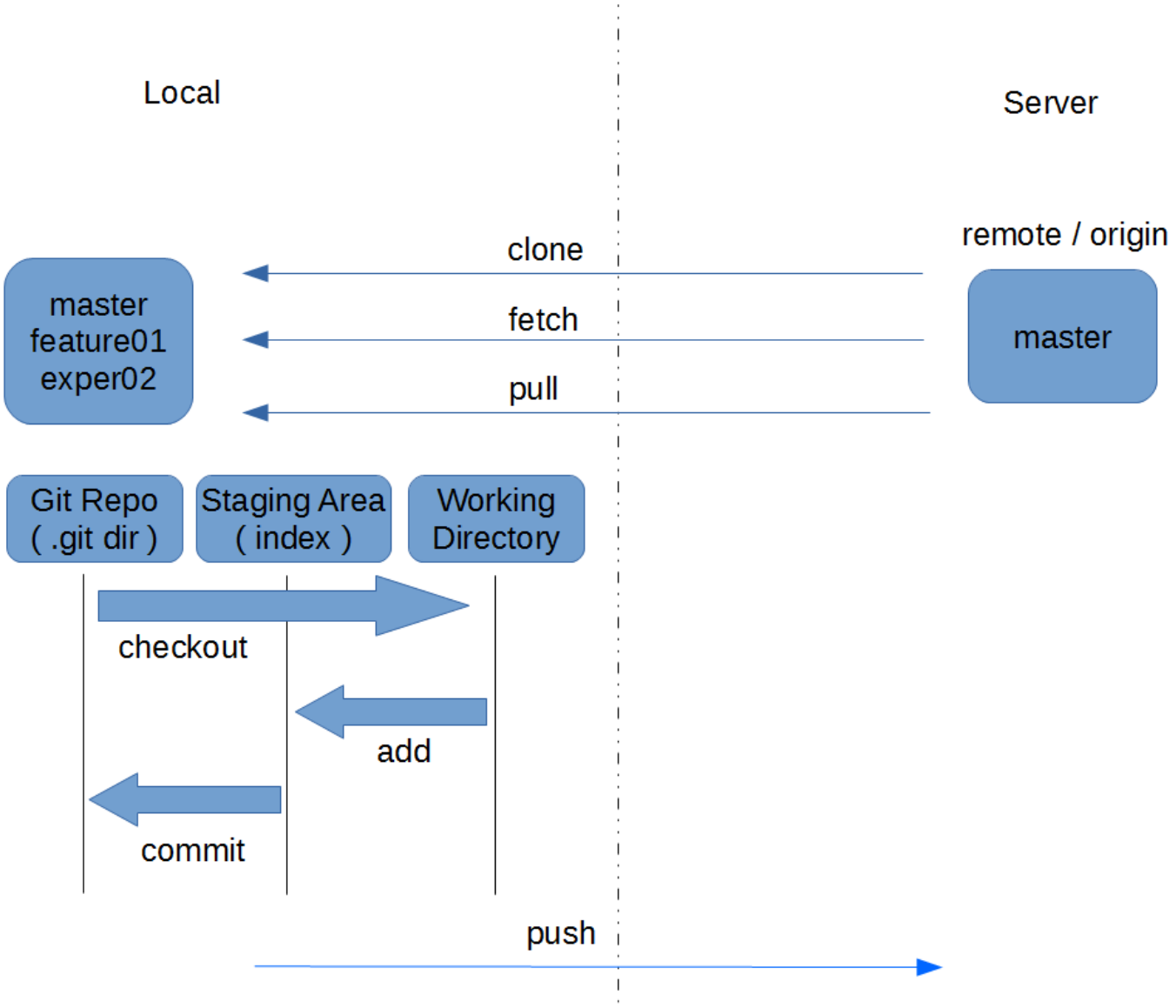
Import code

/r_workshop_20170401/pulls

.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/

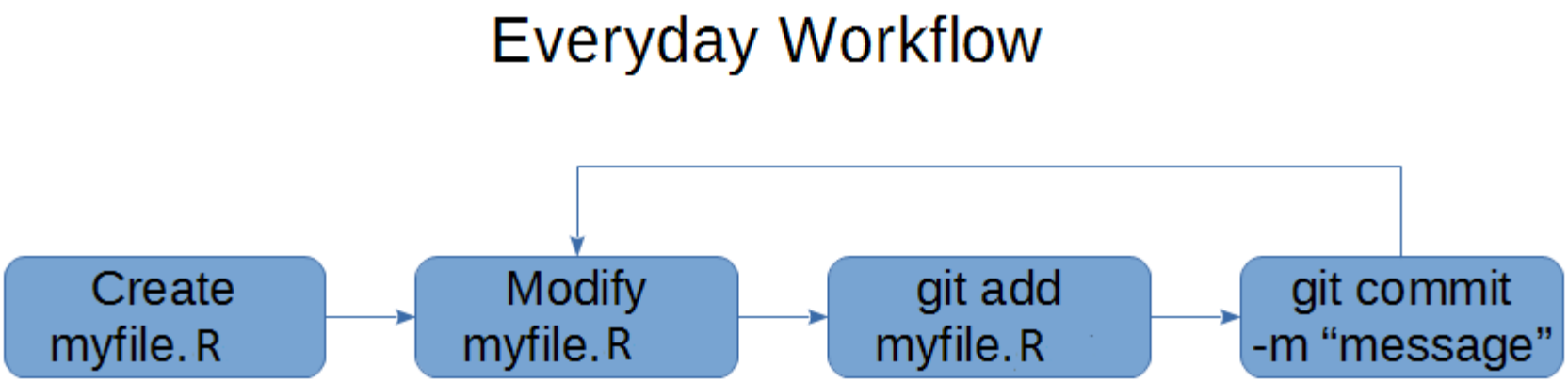
Git


Local
Server
remote / origin
clone
fetch
pull
master
feature01
exper02
master
Git Repo
(.git dir)
Staging Area
(index)
Working
Directory
checkout
add
commit
push

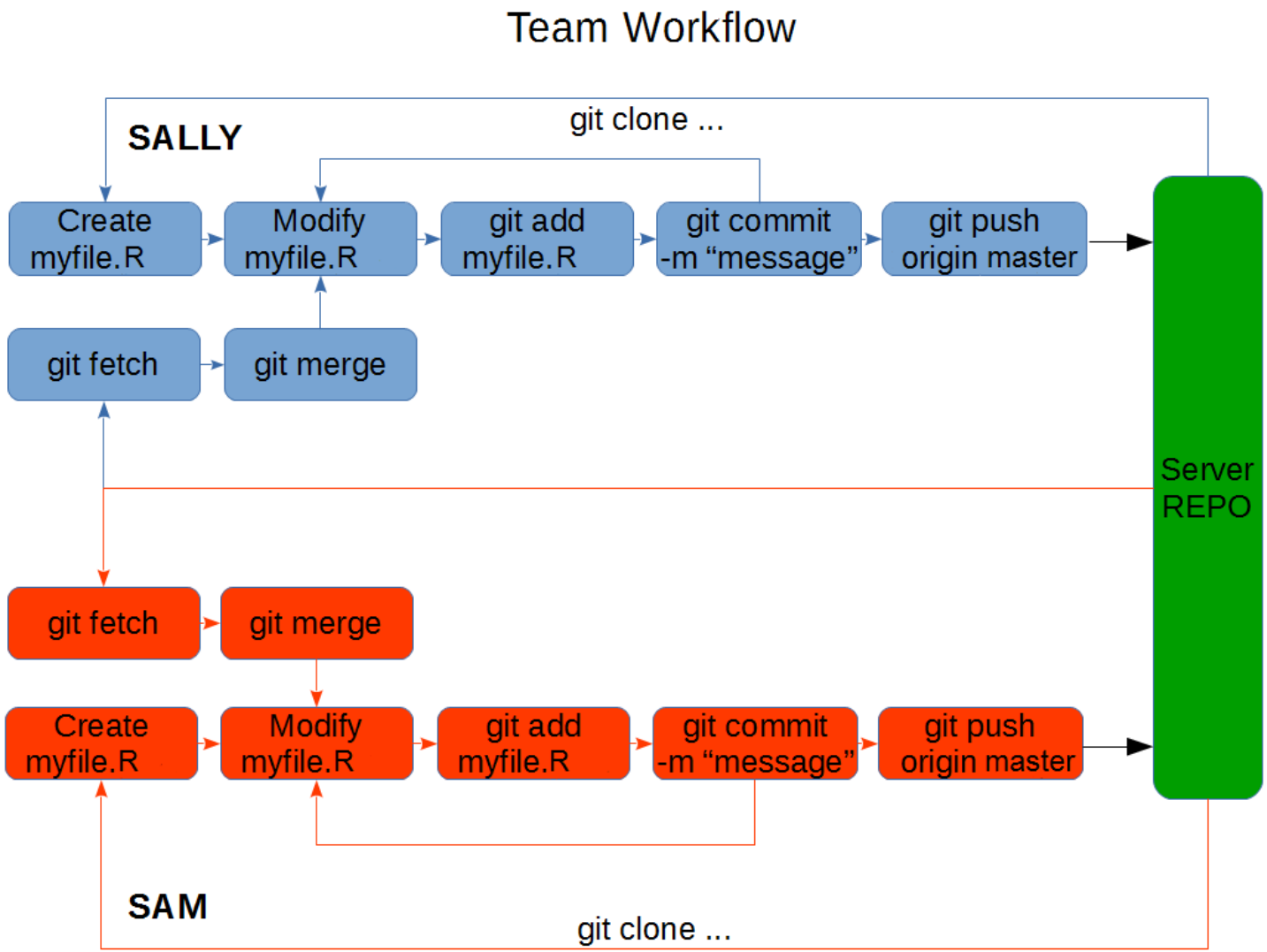
Git Basic / Common Commands

- **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



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-ml.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

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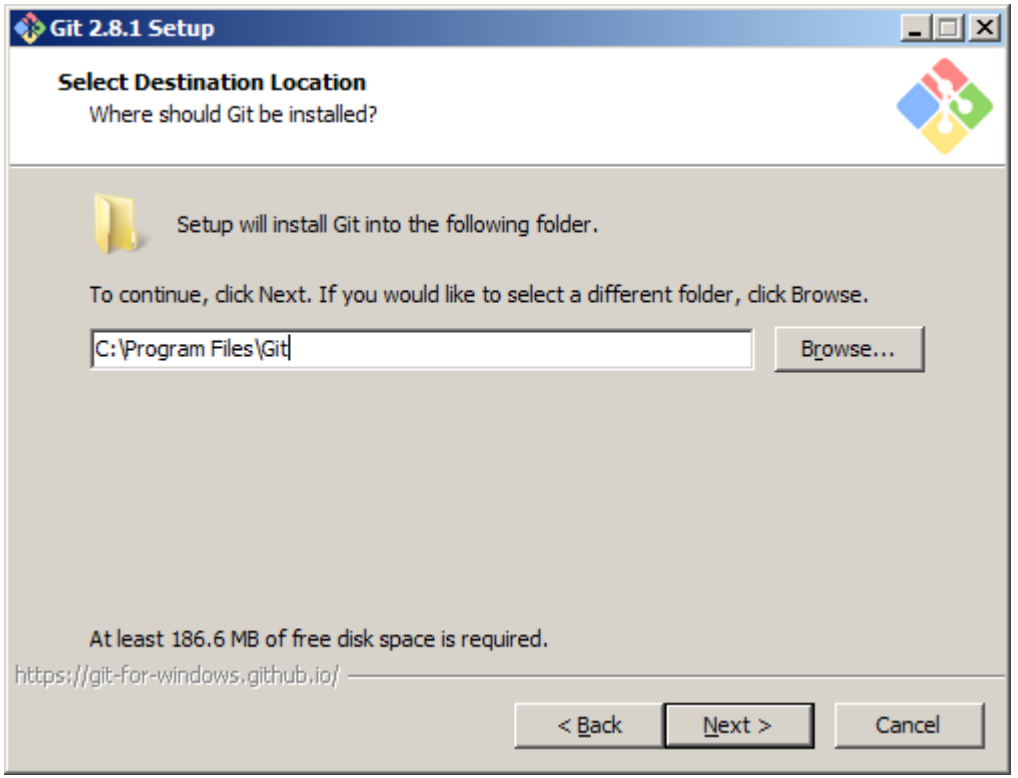

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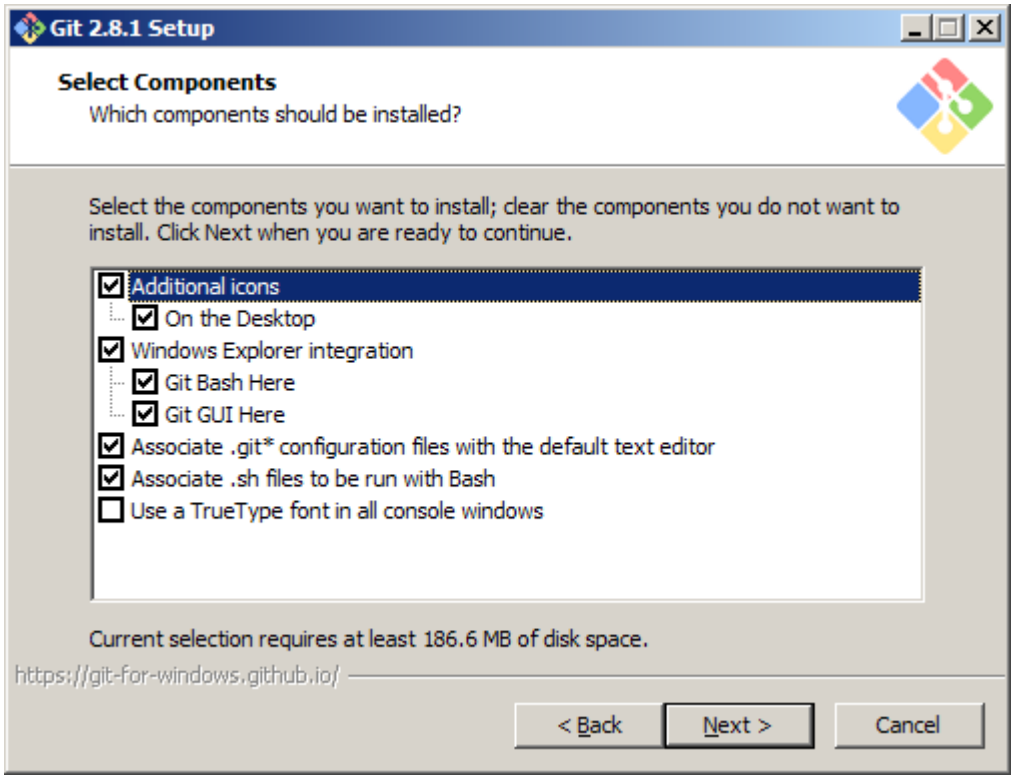

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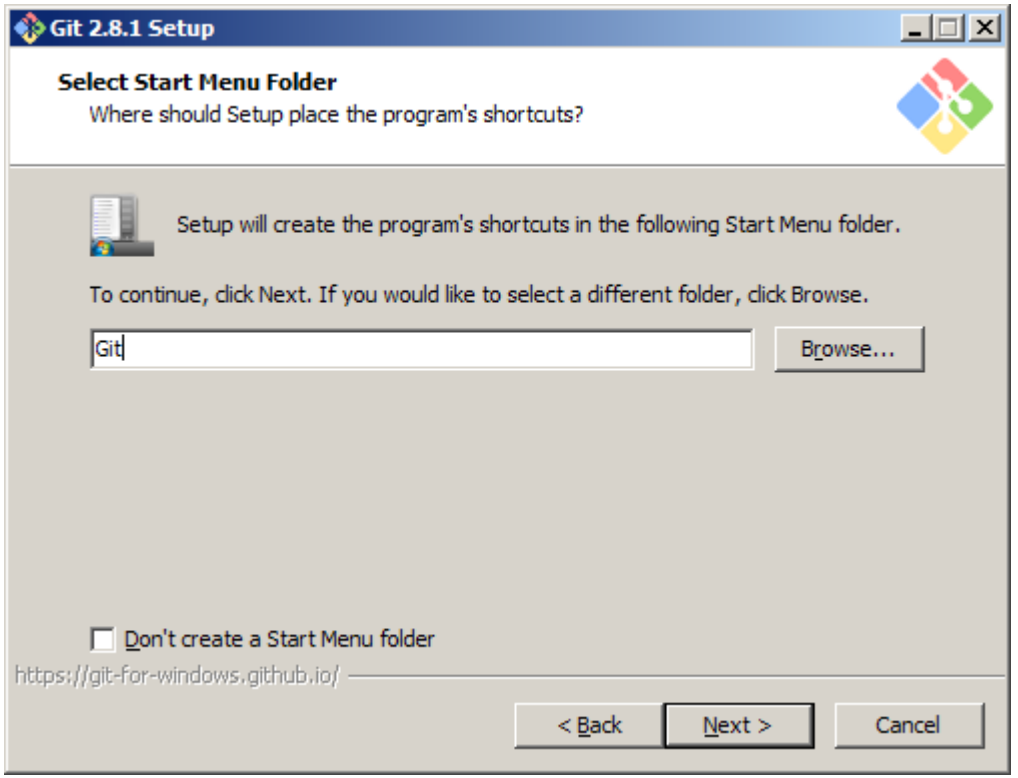

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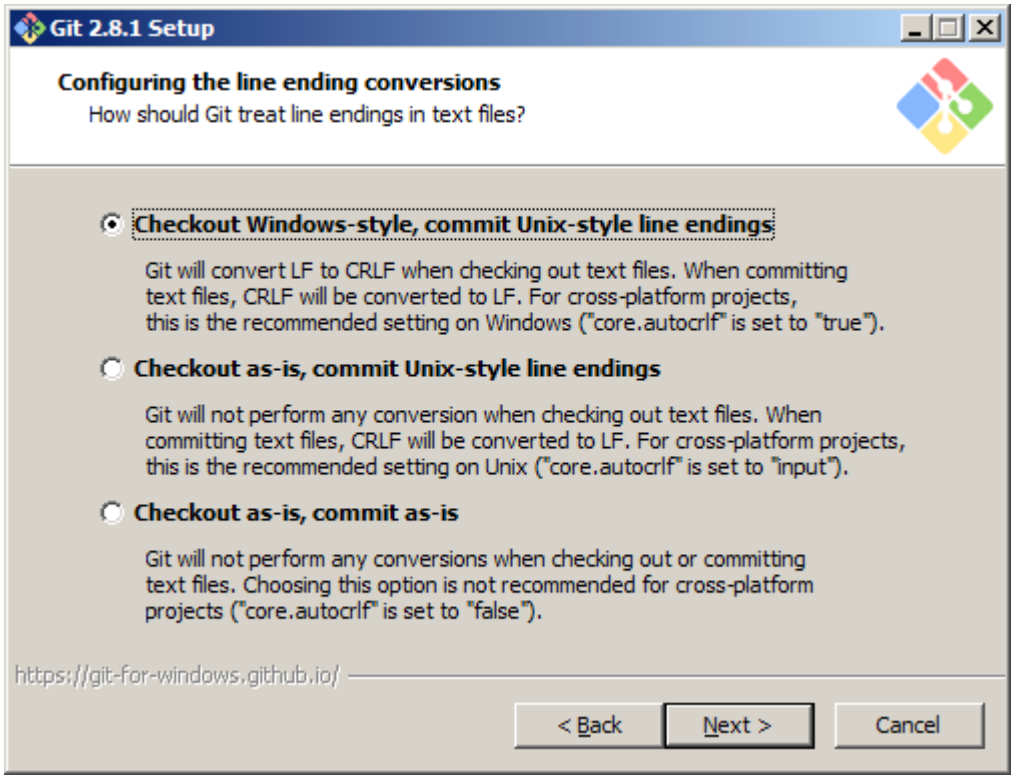

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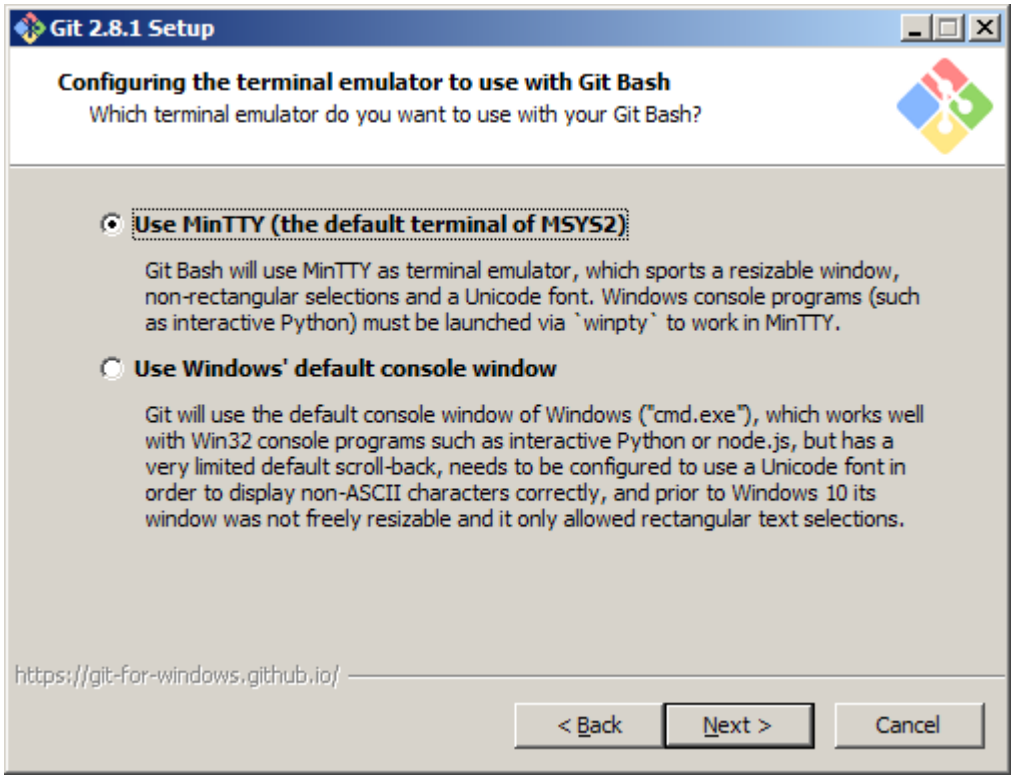

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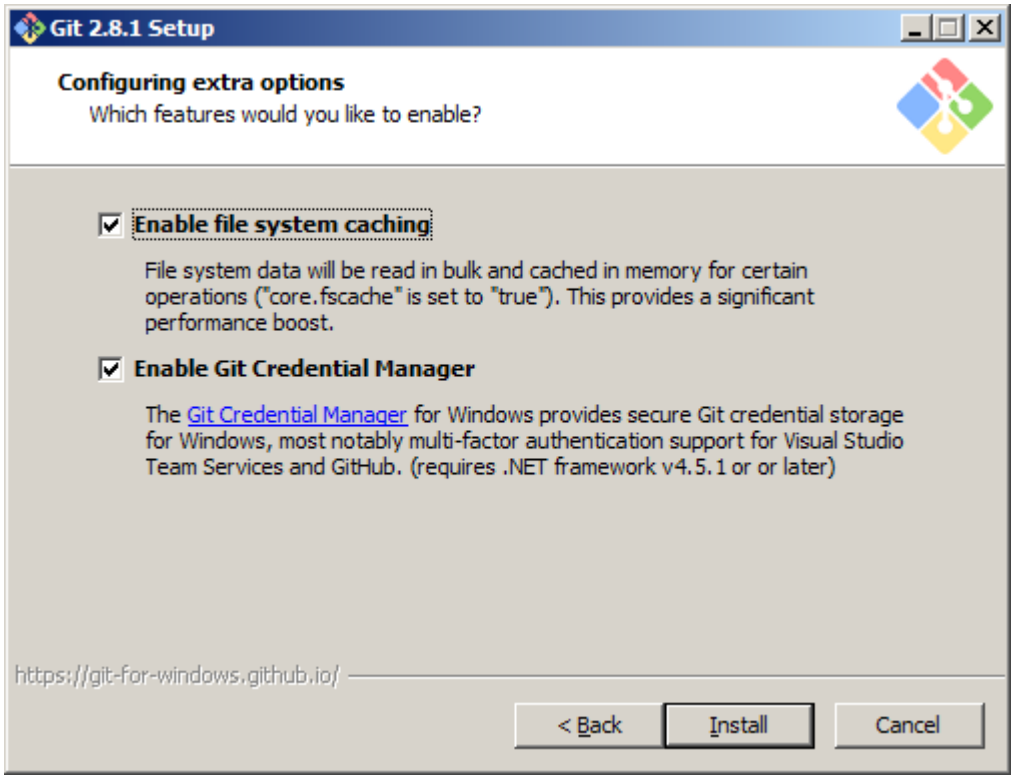

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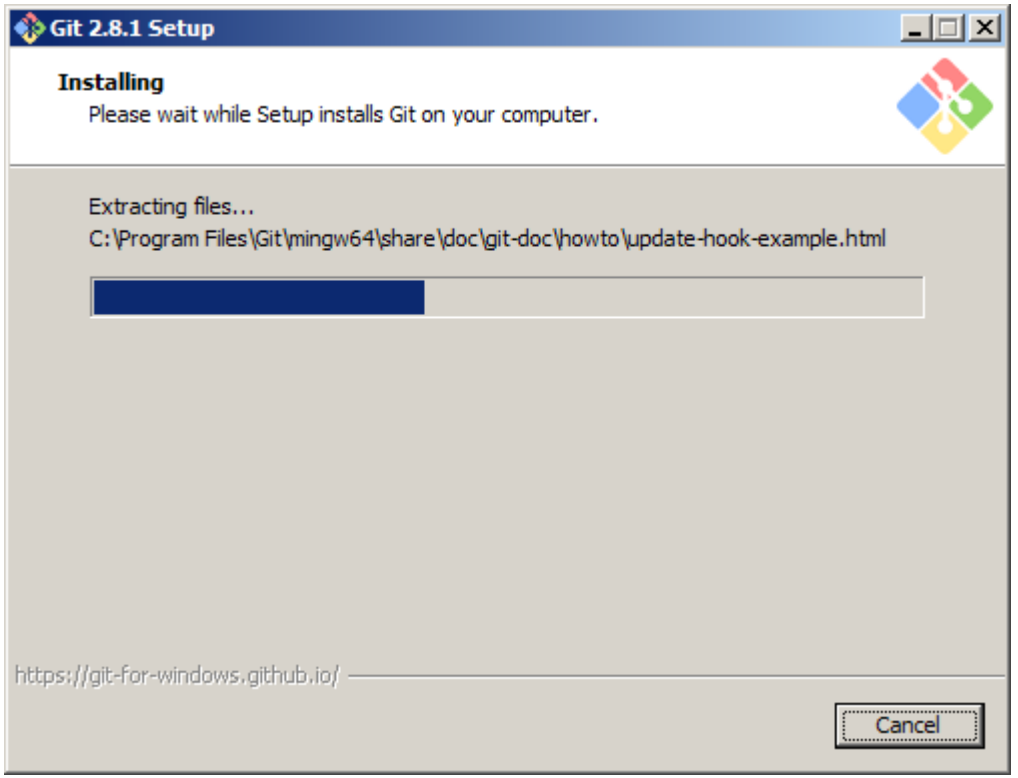

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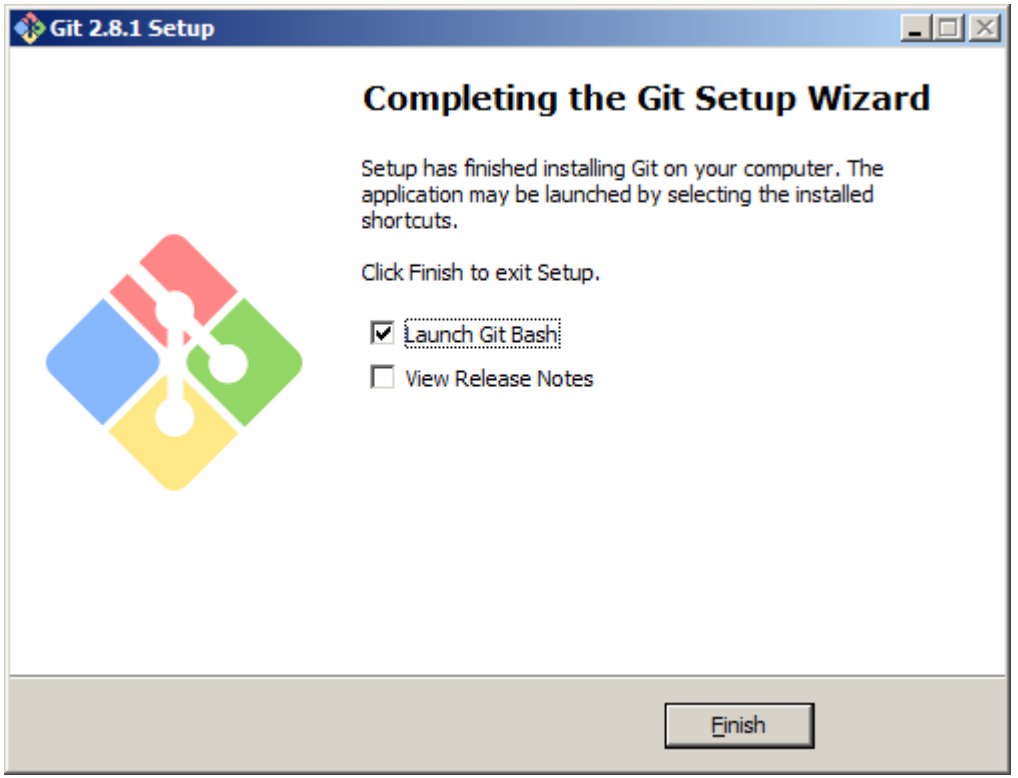

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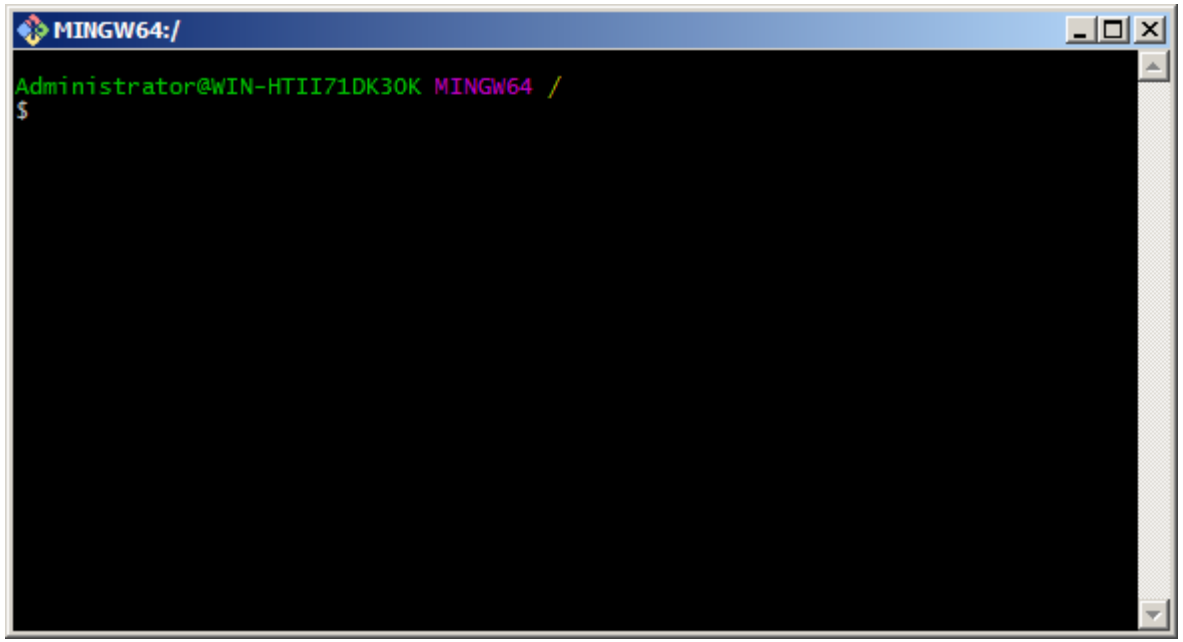

Git

Git