Git collaboration best practices

Quentin D. Read

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Goals for today

- Discuss the rationale behind using version control and a few possible use cases
- Share experiences, good and bad
- Explore using Git integration in RStudio
- Show some examples from Quentin's work and from the SESYNC-CI GitHub

Why use it? or better, why not use it?

- Everyone uses version control – this is a way to formalize it

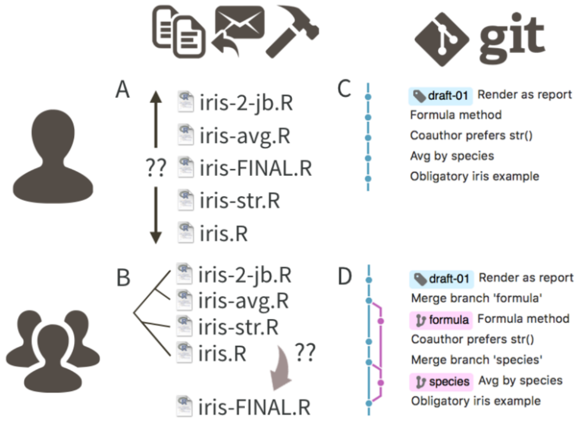


Figure 1: A: Solo work with DIY version control via filename. B: Collaborative work with DIY version control. C: Solo work with Git. D: Collaborative work with Git.

Why use it? or better, why not use it?

- Project management
- It is your project's web presence, and part of your personal web presence
- In some fields it is almost an expectation that you will have an active GitHub site
- Part of a suite of open science tools

Arguments against

- It does take some buy-in from everyone participating
- (perceived to have) a steep learning curve

Stories?

- Does anyone have any good stories or horror stories?

Use cases

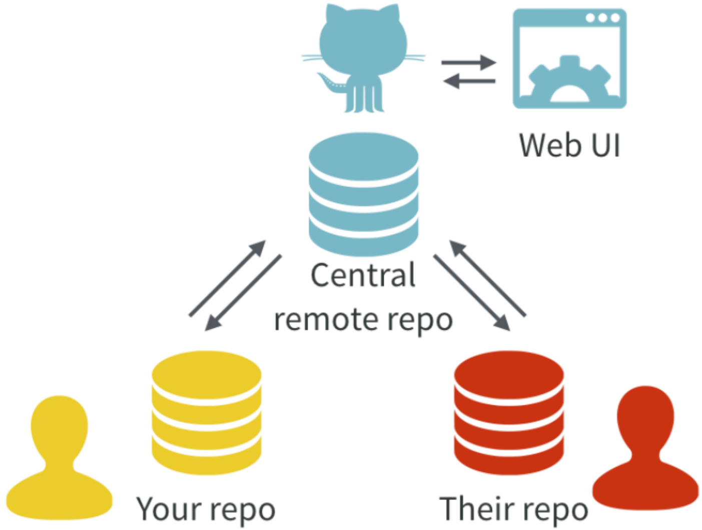
During

- use it solo to organize your work
- multiple team members can contribute to a repository simultaneously

After

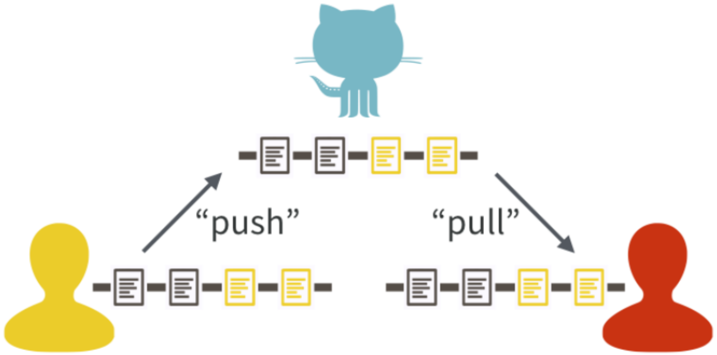
- publish a repository to the web (for open/reproducible science)
  - *Note*: this may require ongoing maintenance!

How it works

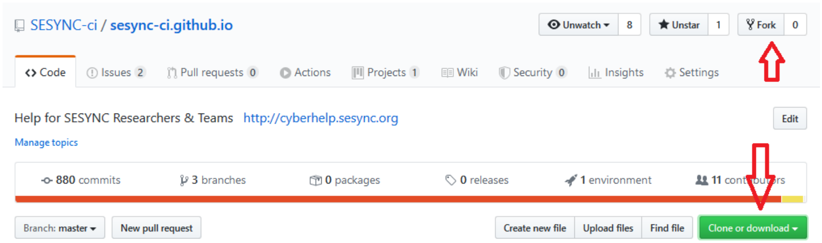


- git vs GitHub vs GitLab?
- What's a repo(sitory)?

Pulling and pushing



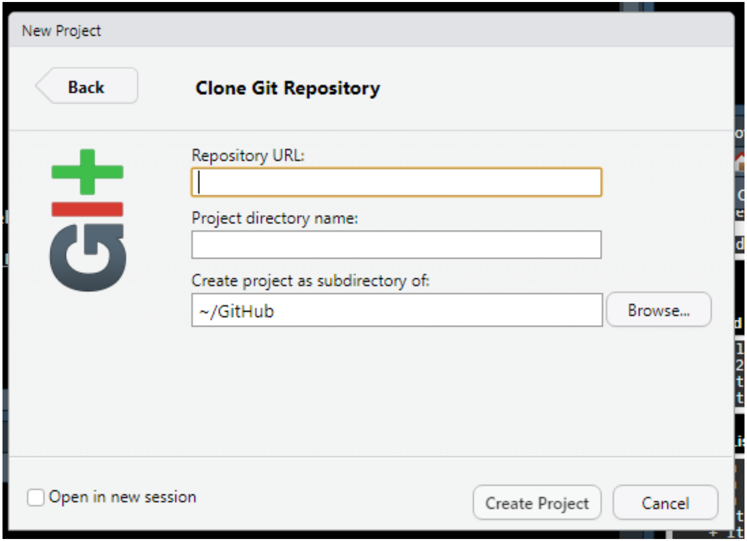
Forking and cloning



Help for SESYNC Researchers & Teams http://cyberhelp.sesync.org

Git in RStudio: creating a project

- RStudio uses "projects" to organize your work
  - projects correspond to repos


New Project

Back

Clone Git Repository

Repository URL:

Project directory name:

Create project as subdirectory of:
~/GitHub

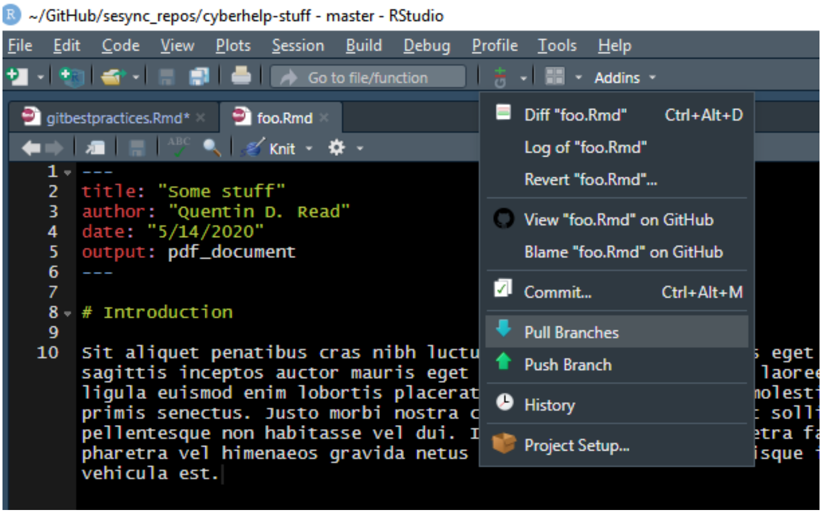
Browse...

Open in new session

Create Project

Cancel

Git in RStudio: pull before new work!



```
---
title: "Some stuff"
author: "Quentin D. Read"
date: "5/14/2020"
output: pdf_document
---

# Introduction

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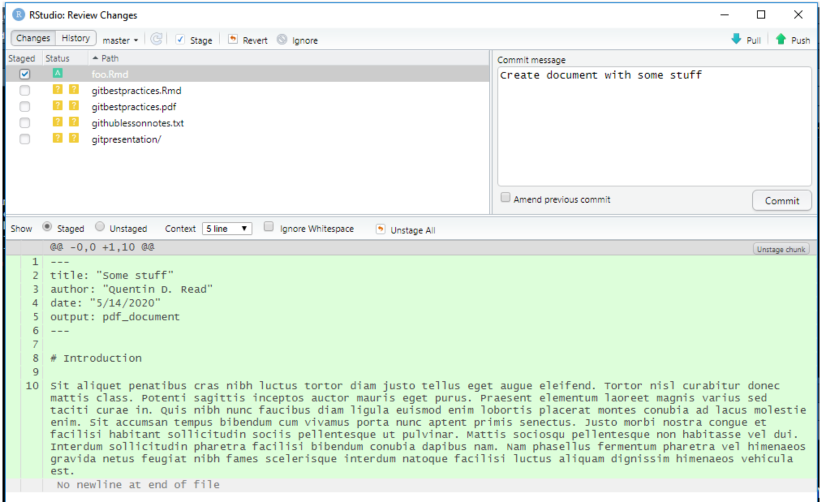
Git in RStudio: committing changes



Staged	Status	Path
✓	A	foo.Rmd
	? ?	gitbestpractices.Rmd
	? ?	gitbestpractices.pdf
	? ?	githublessonnotes.txt
	? ?	gitpresentation/

Commit message

```
Create document with some stuff
```

Amend previous commit

Show [✓ Staged] Unstaged

```
@@ -0,0 +1,10 @@
---
title: "Some stuff"
author: "Quentin D. Read"
date: "5/14/2020"
output: pdf_document
---

# Introduction

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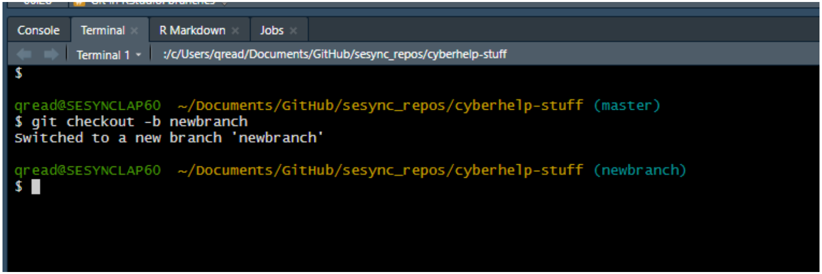
Git in RStudio: branches

- Creating new branches must be done through the terminal or on the GitHub website


Console
Terminal
R Markdown
Jobs
Terminal 1
:/c/Users/qread/Documents/GitHub/sesync_repos/cyberhelp-stuff

```
$

qread@SESYNCLAP60  ~/Documents/GitHub/sesync_repos/cyberhelp-stuff (master)
$ git checkout -b newbranch
Switched to a new branch 'newbranch'

qread@SESYNCLAP60  ~/Documents/GitHub/sesync_repos/cyberhelp-stuff (newbranch)
$
```

Example: Q's personal GitHub

- https://github.com/qdread
  - **DISCLAIMER**: this does not entirely embody best practices!!!

Example: SESYNC Cyberinfrastructure GitHub

- https://github.com/sesync-ci/
  - Project containing all lessons in curriculum – good demonstration of project management
  - rslurm package – note the issues and pull requests

(Semi)-advanced topic: issues and pull requests

- Can be used either internally or externally
  - Internally to track tasks for project management
  - Externally for community members to contribute to your project

SESYNC resources

- basic git lesson
- all quick start, FAQ, and help pages tagged with git
- document with resources on learning GitHub Pages – this is still a draft in progress!

Outside resources

- Using zenodo to get a DOI for your published git repository
- Hadley Wickham's book on packages
- Excuse me, do you have a moment to talk about version control? Excellent paper by Jenny Bryan, which I shamelessly copied from for this presentation