

A tour of Git and GitHub

Nicolas Escobar

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What's Git?

- ▶ Git \neq GitHub
- ▶ Git = version control.
- ▶ GitHub = collaboration + sharing.

Git is a way to keep track of *some* of the changes of *some* the contents of a directory.

The full record of those changes is called a *repository* or *repo*.
I'll focus on Git first.

How do I use Git?

- ▶ It ships out of the box for Mac and Linux machines.
- ▶ Easy to install in Windows*.
- ▶ CLI, VSCode and RStudio.

Why would I use Git?

- ▶ A lot of people use it.
- ▶ A lot of systems are integrated with it.
- ▶ It has more features than OneDrive.
- ▶ Local system.

Ideal everyday Git

- ▶ Issue
- ▶ Make and save changes
- ▶ Stage the changes you want to keep
- ▶ Commit

Commit messages

Everytime you commit, you have to create a message. It's like an email to yourself:

- ▶ Timestamp
- ▶ Author
- ▶ Subject line
- ▶ Body
- ▶ Line by line changes in staged files

Git is flexible

Git it's just a bunch of notes to yourself.

- ▶ Work 9-5.
- ▶ Stage everything
- ▶ Commit message: "my update"
- ▶ Work on *one* issue
- ▶ Stage only changes related to that issue
- ▶ Write informative commit message

What's the point?

- ▶ You have something that works on Monday
- ▶ You work all week to add something to it
- ▶ You realize on Friday that you broke it

Now you can:

- ▶ Check commit messages to see at which commit you broke it
- ▶ Send the entire project back to the commit before that

Why would you need branches?

Motivation:

- ▶ `lm` + base R plot.
- ▶ You need *ggplot*
- ▶ You want `glm`

You want to work in parallel.

Branch workflow

- ▶ Create an experimental branch
- ▶ Implement `glm`
- ▶ Commit (c_1)
- ▶ Implement `ggplot`
- ▶ Commit (c_2)

Branch workflow continued

- ▶ Merge (this commits, c_3)
- ▶ Test
- ▶ It worked
- ▶ Go on based on c_3
- ▶ It didn't work
- ▶ Revert to c_2

What does Git do?

- ▶ `.git` directory
- ▶ Each commit has a unique ID.
- ▶ HEAD pointer

Limitations

- ▶ Works best for text files (.R, .txt, ...)
- ▶ Not great for large files