Git and GitHub

A history for your code

1 Why git
2 Set up
3 Commit
4 GitHub
5 Habits



Live poll

Multiple choice

Have you used git or GitHub before?



Scan with your phone

[Join on your phone or laptop: greymonroe.github.io/live-poll-test/submit.html?poll=pls206-git-experience](greymonroe.github.io/live-poll-test/submit.html?poll=pls206-git-experience)

[host screen]

1 Why git
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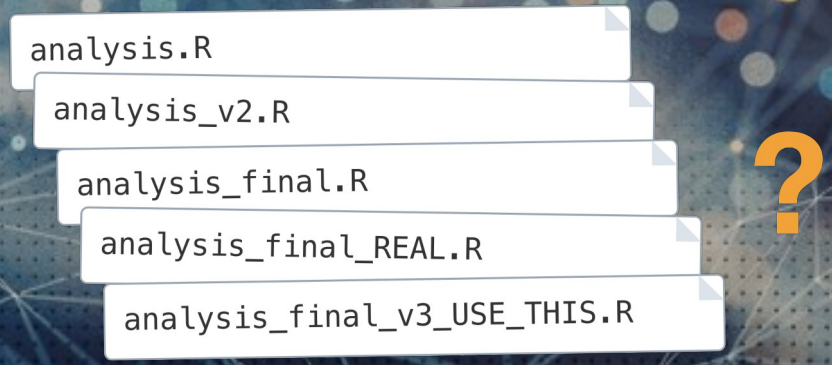
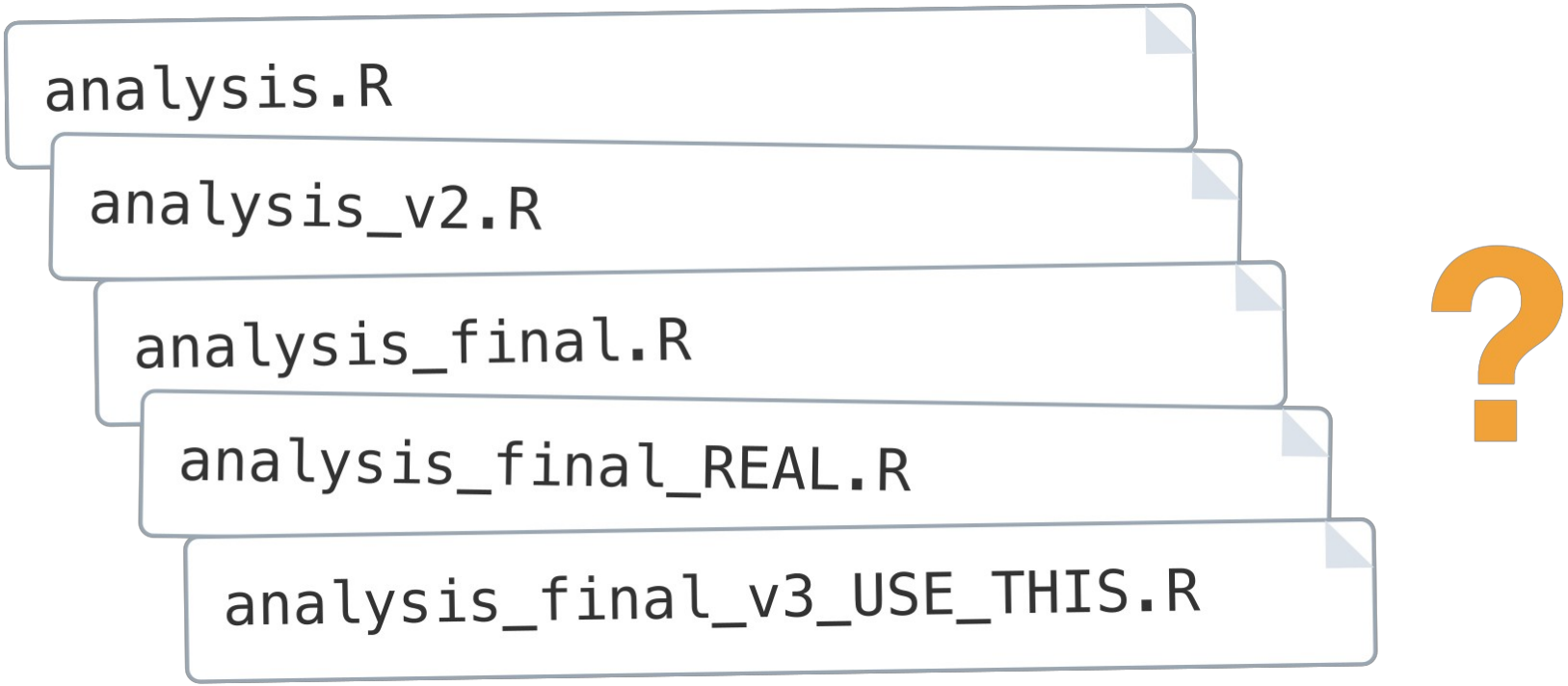
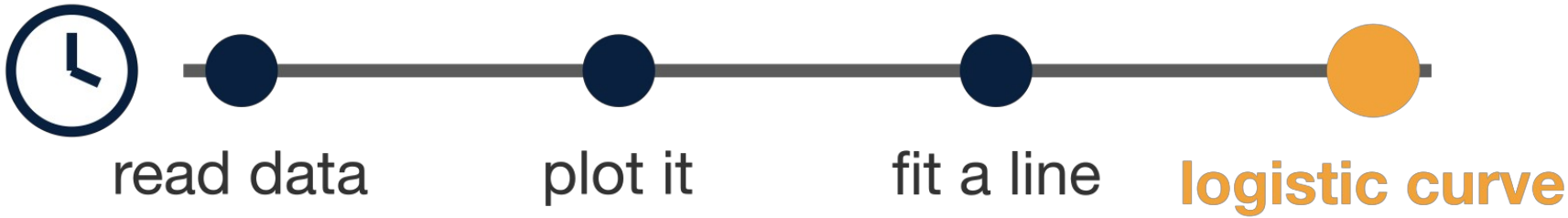


Sound familiar?



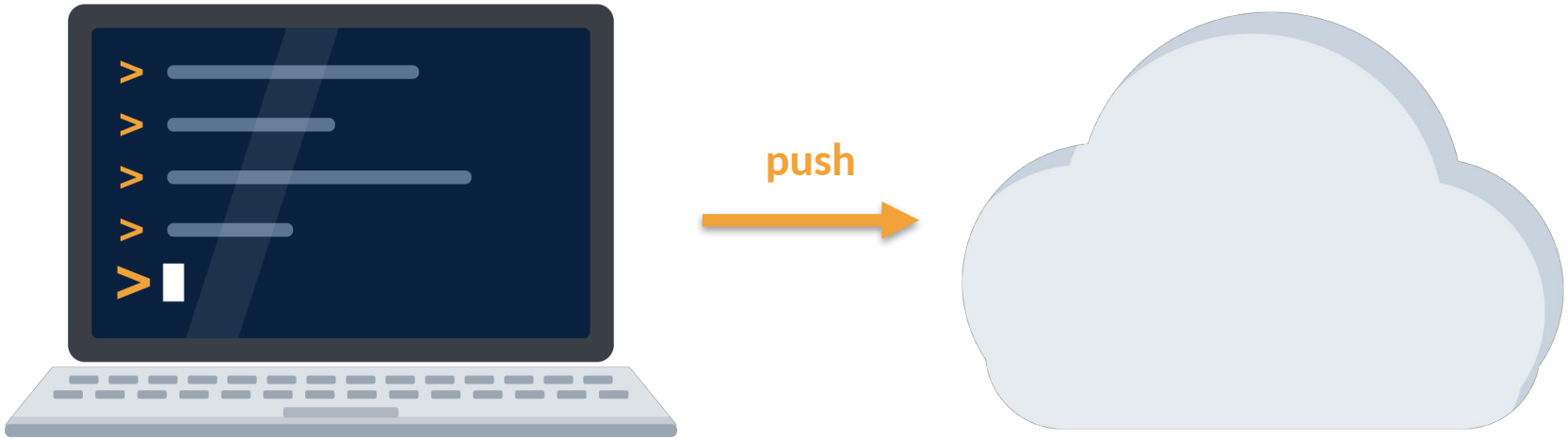
Which one made Figure 3?

Git keeps one file, and every version of it



Each save point is a **commit**, with a note saying why.

git and GitHub are different things



git
the history, on your computer

GitHub
a copy online

1 Why git

▶ **2 Set up**

3 Commit

4 GitHub

5 Habits



Follow along on the course website



greymonroe.github.io/PLS_206/discussions/git-github.html

Step 1 Install git

Mac

Open the Terminal app and type:

```
$ git --version
```

Version number? **Done.**
A pop-up? Click **Install**.

Windows

gitforwindows.org

Download, run, accept every default.

Then **quit and reopen RStudio** so it finds git.

Step 2 Make a free GitHub account



github.com/signup

Pick a username you'd be happy to put on a CV.

Remember the email you use.

Step 3 Install the usethis package

```
> install.packages("usethis")
```

usethis: connects RStudio to git and GitHub

Step 4 Tell git who you are

```
> usethis::use_git_config(user.name = "Your Name",
+                         user.email = "you@ucdavis.edu")
```

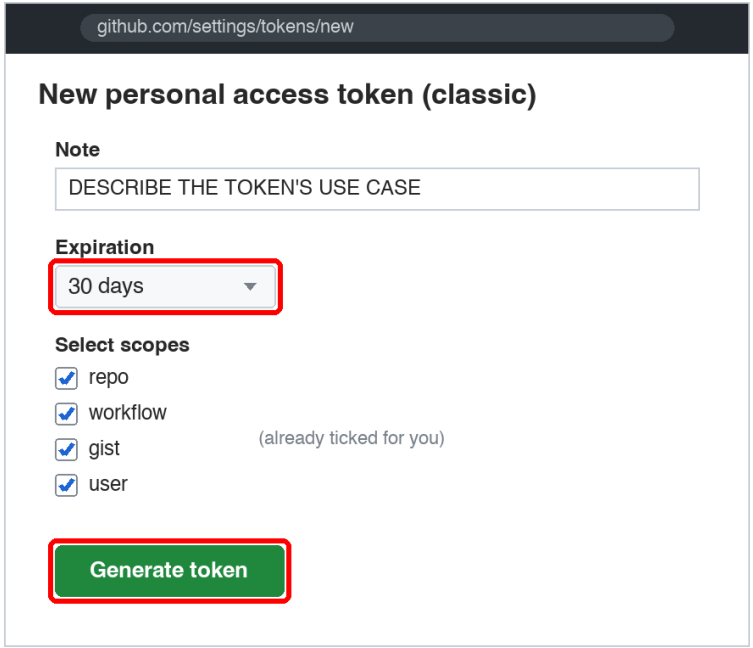
Your real name, and **the email you used for GitHub**.

Step 5 Make a GitHub token

```
> usethis::create_github_token()
```

GitHub opens in your browser

1. Expiration: pick **90 days**
2. Click **Generate token**
3. **Copy** it (starts with ghp_)



You only see the token once, so keep the tab open until step 6.

Step 6 Give the token to RStudio

```
> gitcreds::gitcreds_set()
```

When it asks for a password or token, **paste it** and press Enter.

Step 7 Check it worked

```
> usethis::git_sitrep()
── Git global (user)
• Name: "Grey Monroe"
• Email: "greymonroe@gmail.com"
  ...
── GitHub user
• Default GitHub host: "https://github.com"
• Personal access token for "https://github.com": <discovered>
• GitHub user: "greymonroe"
```

Your name, your email, **<discovered>**, your username: you're set.

Live poll

Multiple choice

How far did your setup get?



Scan with your phone

[Join on your phone or laptop: greymonroe.github.io/live-poll-test/submit.html?poll=pls206-git-progress](greymonroe.github.io/live-poll-test/submit.html?poll=pls206-git-progress)

[host screen]

Stuck?

If you see...	Try
Mac: no git, no pop-up	`xcode-select --install`
RStudio can't find git	Quit and reopen RStudio
Windows: still can't find it	Tools > Global Options > Git/SVN
Token not found	`gitcreds::gitcreds_set()`
PAT has the wrong structure	New token; copy icon; Replace
Something else	`usethis::git_sitrep()`

More help: **happygitwithr.com**

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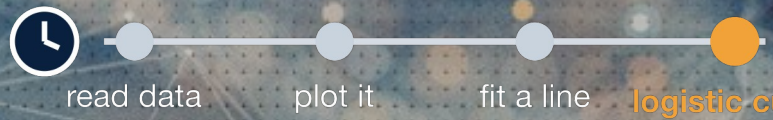


One RStudio Project = one git repository



Name it **pls206-ps4** and click Create Project.

Already have a project?

```
> usethis::use_git()
```

Put a script in the project

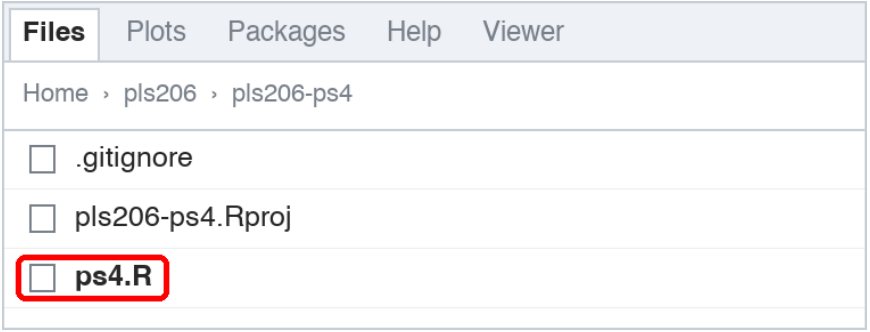
Have a PS4 script already?

Copy the **.R** file into the **pls206-ps4** folder (Finder or File Explorer).

Starting fresh?

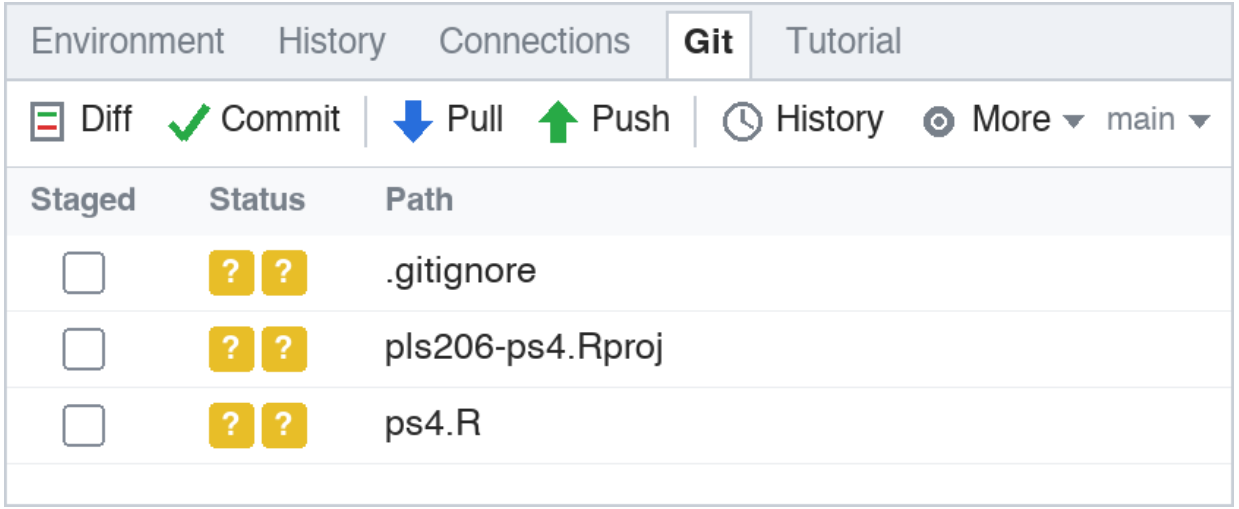
File ▸ New File ▸ R Script

Paste the starter code from the course page, save as **ps4.R**.



It shows up in the Files tab.

The Git tab

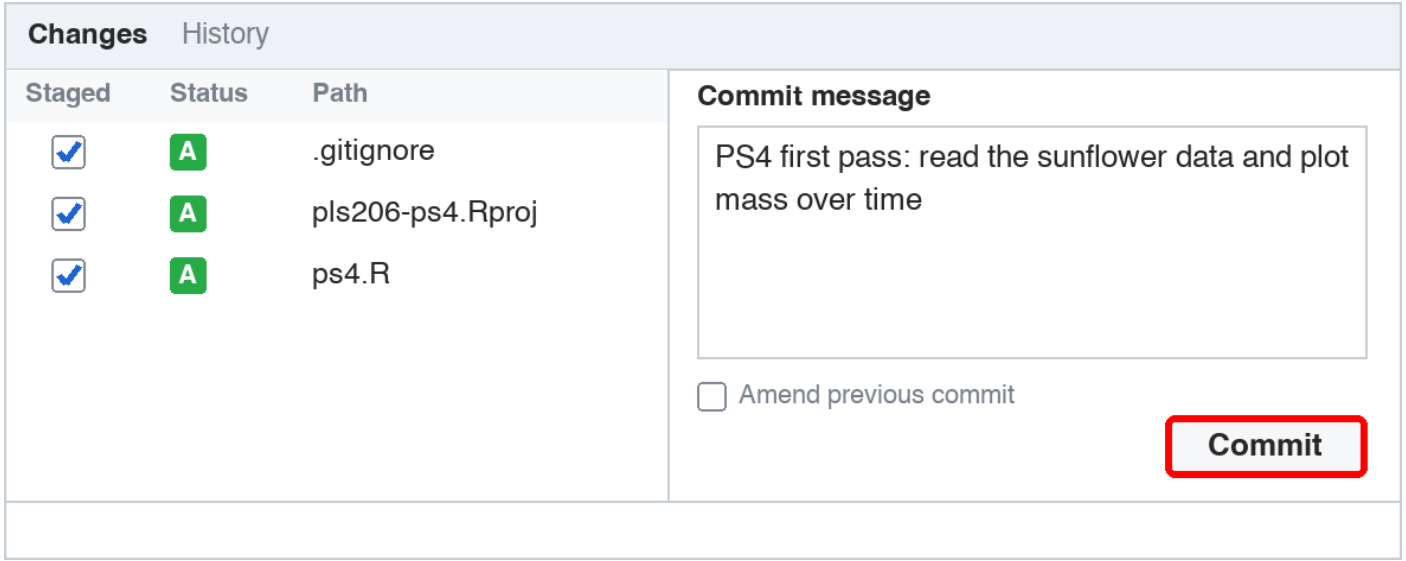


Top right of RStudio.

Every file that changed since the last commit is listed.

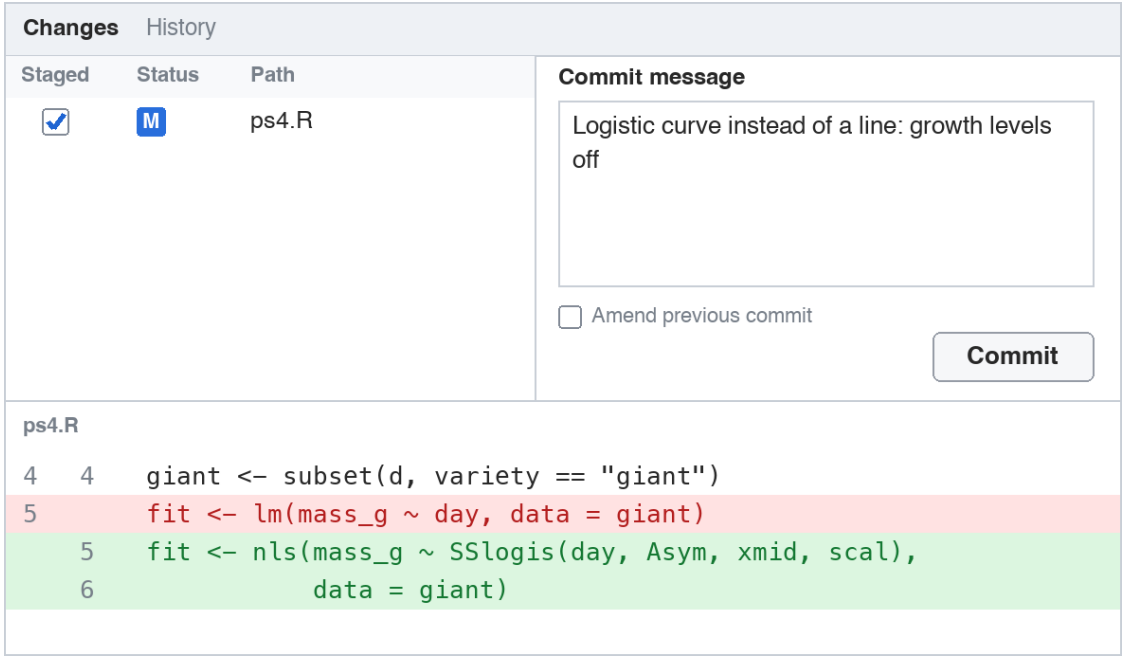
? ? = new, never committed

Commit = tick, write why, click



1 Tick the files 2 Say why 3 Commit

Change something: the diff



Red = removed. **Green** = added.

History: every version, with its note



The **clock icon** in the Git tab. Click a commit to see what changed.

Broke something? Go back

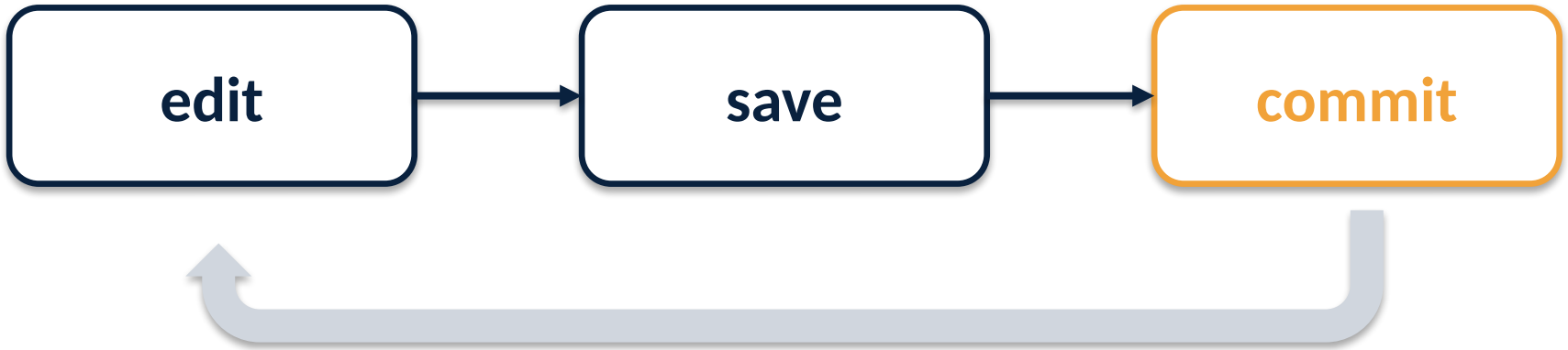


Select the file, then **More ▸ Revert**

Back to the last commit.

Unsaved changes since then are gone.

The daily routine



Commit whenever you reach a point you'd want to come back to.

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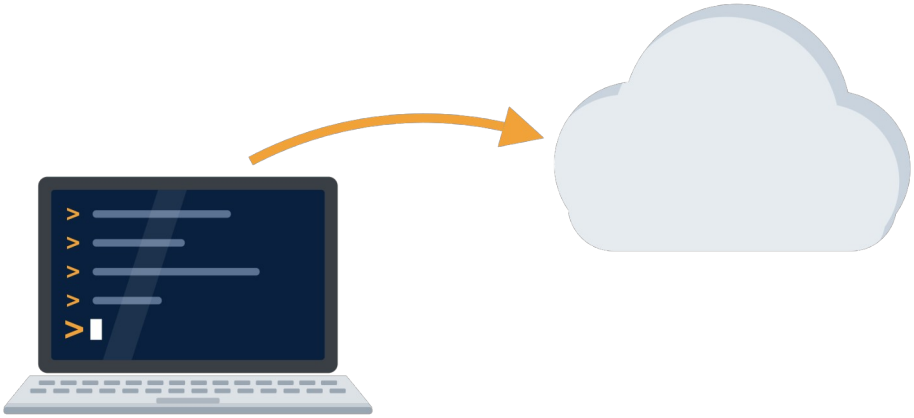
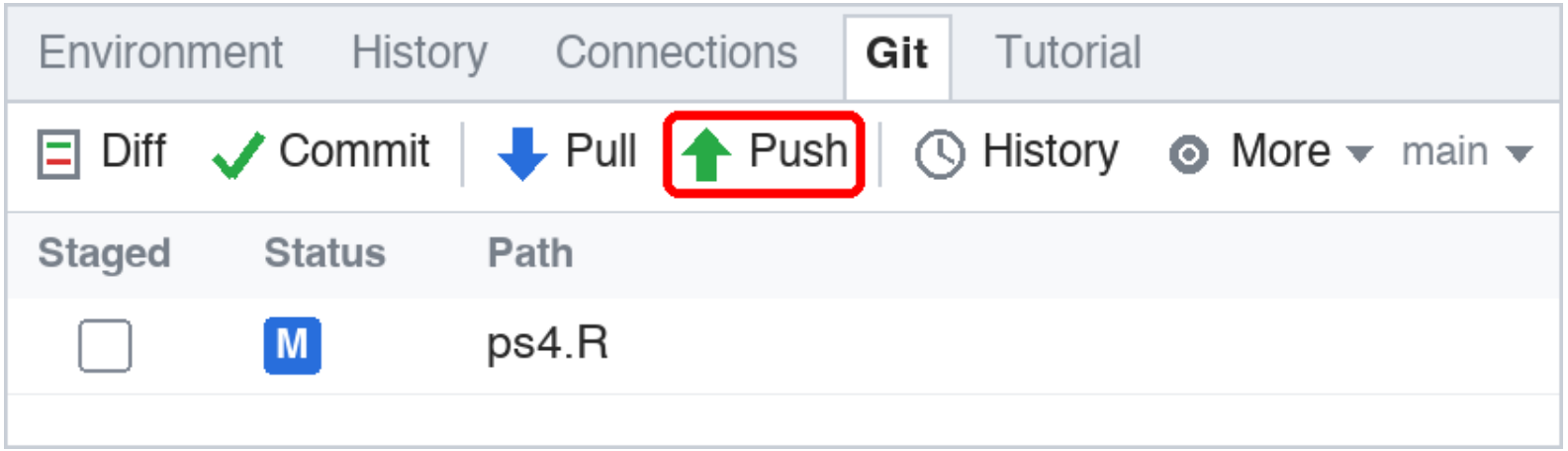
Send the project to GitHub

```
> usethis::use_github(private = TRUE)
```



Makes a **private** repository on your account and uploads your commits.

After that: commit, then push



The green **Push** arrow sends new commits to GitHub.

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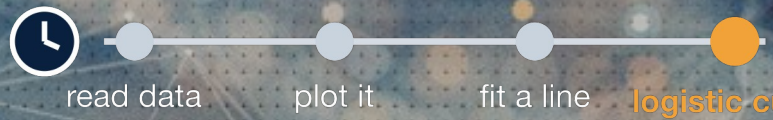

Write messages for future you

✗ `stuff`

✗ `fixed it`

✓ `Log-transform mass; residuals were fanning out`

Small commits, often, each saying **why**.

Leave big data and secrets out

```
# .gitignore
data/raw_images/
*.bam
.Renviron
```

Files listed in **.gitignore** are never committed.

Large data, passwords, API keys.

In 90 days: renew the token

GitHub emails you before it expires. Push stops working until you renew.

```
> usethis::create_github_token()   # new token, copy it
> gitcreds::gitcreds_set()         # paste, choose replace
> usethis::git_sitrep()            # check: <discovered>
```

Your code and history are safe: **only the token expires**.

When it goes wrong

```
> usethis::git_sitrep()
```

Bring this output to office hours.



happygitwithr.com

From now on

Edit, save, commit, push: on every problem set

