CLASS 1

COURSE INTRO & GITHUB FOR DATA SCIENCE

Shiny from RStudio™

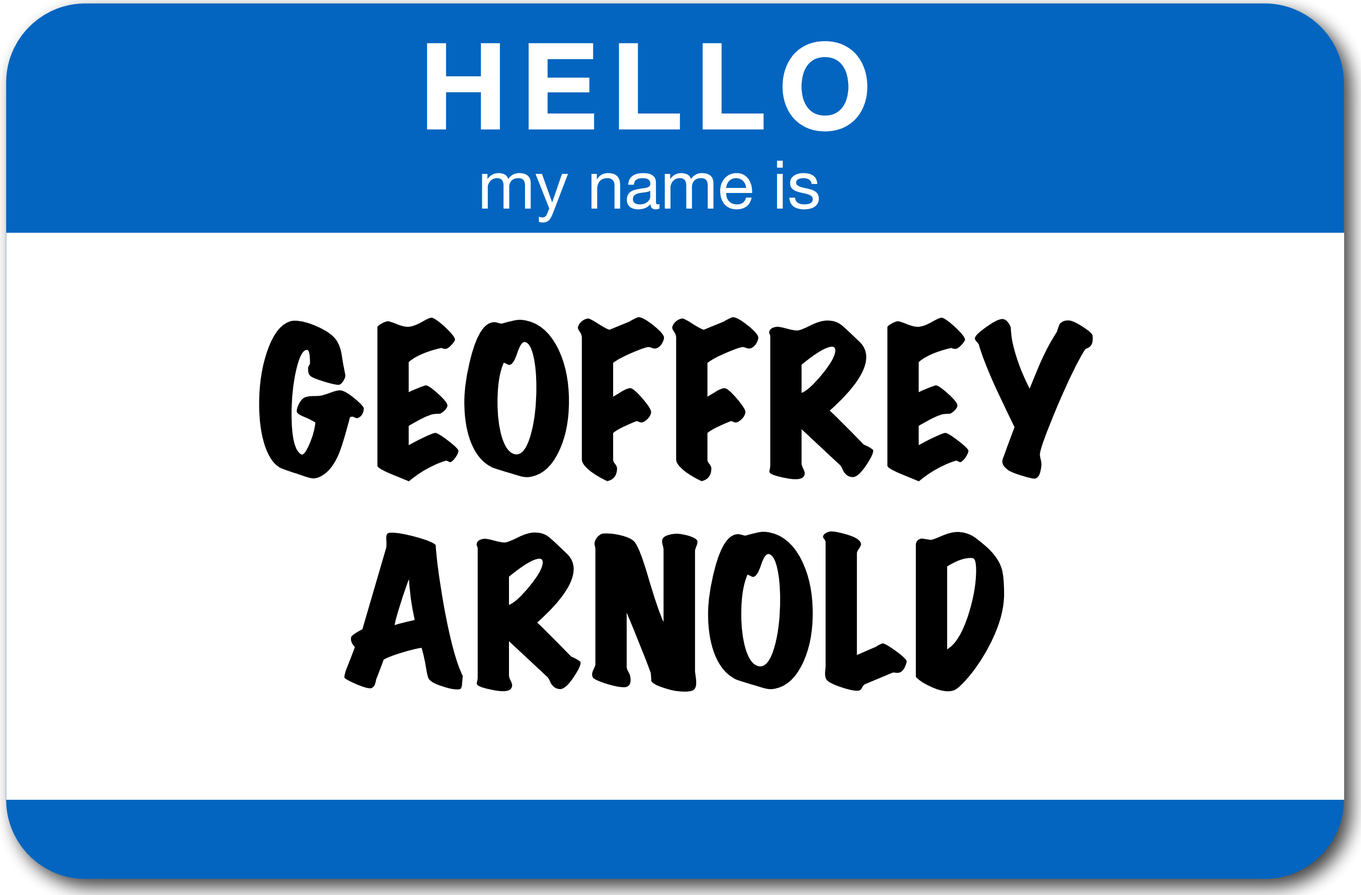
OUTLINE

- Course intro
  - Instructor
  - Teacher's Assistant
  - Course overview

- GitHub for Data Science
  - Read: Introduction to Github for Data Scientists by Rebecca Vickery
    - https://towardsdatascience.com/introduction-to-github-for-data-scientists-2cf8b9b25fba
- R Projects

Course

Intro



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ABOUT ME

- Senior Digital Services Analyst
  - City of Pittsburgh
- MSPPM 2015
  - Heinz College

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CLASSES & OFFICE HRS

- Classes
  - Tue/Thu 4:30-5:50
  - Location: HBH 1006
- Office Hours
  - Geoffrey Arnold
    - Thursdays: 6:15-7:00
    - Location: HBH Lounge
  - Malvika Singh
    - TBD

COURSE OUTLINE

Weeks 1, 2, & 3 - Shiny

Week 4 - Maps with Leaflet

Week 5 - Advanced Shiny

Week 6 - SQL and API’s

Week 7 - Human Centered Design

Intro to Github

“Experience with version control is fast becoming a requirement for all data scientists”

–Rebecca Vickery

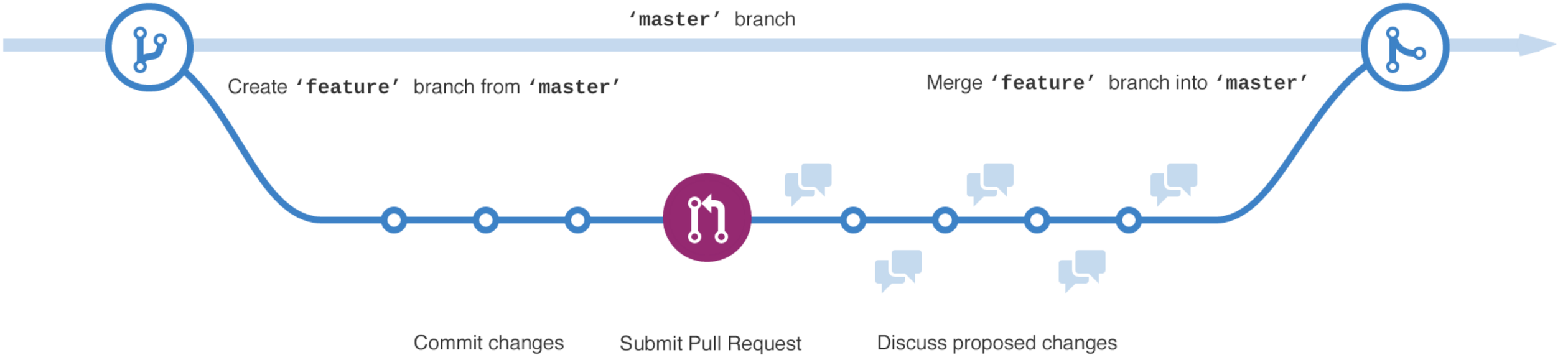
WHAT IS GITHUB?

- Git is a Version Control Software
- Github stores the files for your project in a remote location and checks the differences as you change your code
- This allows you to roll back to previous versions of your project if you need to go back
- Makes sharing and collaboration much easier using the Github website

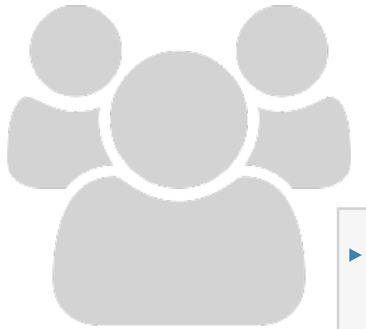
OTHER VERSION CONTROL

There are other kinds of version control software, GitLab also uses git.

We will be using Github in this course, but if in a future life, you might use these others.


'master' branch
Create 'feature' branch from 'master'
Merge 'feature' branch into 'master'
Commit changes
Submit Pull Request
Discuss proposed changes

Github Desktop and the Web



EXERCISE

- Download Github Desktop: https://desktop.github.com/
- Sign up for Github: https://github.com/join
- Got to course page: https://github.com/orgs/rforoperations2019/
  - Clone Class 2 repo: https://github.com/rforoperations2019/Class-02-Shiny-Intro
  - Create your own branch as your CMU username

5m 00s

Github and Projects in RStudio

“R Projects are great.”

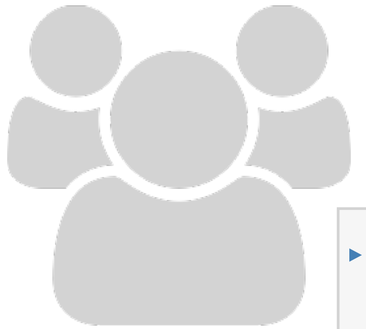
–Geoffrey Arnold

R PROJECTS

- So what is all this?
  - Avoid messy environment
  - Keep custom functions in check
  - Don’t lose your work just because you want to do something else
- Info: https://support.rstudio.com/hc/en-us/articles/200526207-Using-Projects

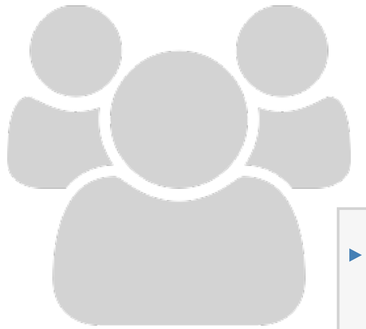
HOW DO PROJECTS WORK?

- R typically saves your environment information in a default location (typically your Documents folder)
- When you create a project it gets its own .RData file for the project in the Directory/folder you created
- This is also the default working directory for your project, so no need to put all of the folders its in
  - Simply load objects by name if they're in the project folder



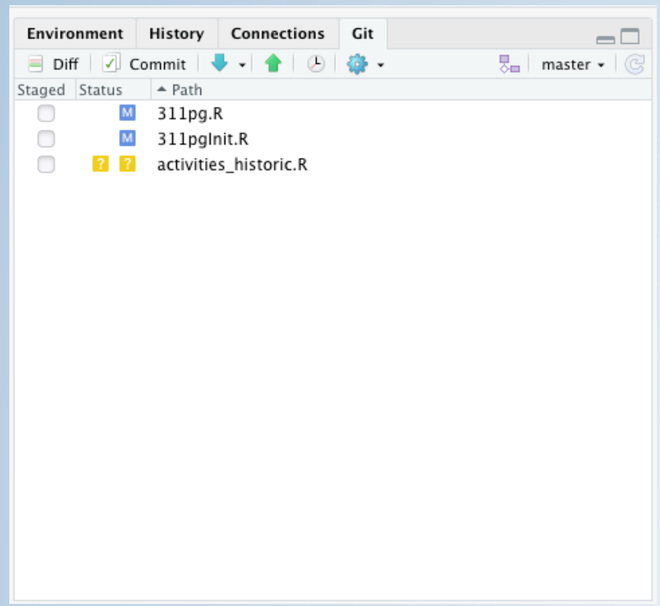
EXERCISE

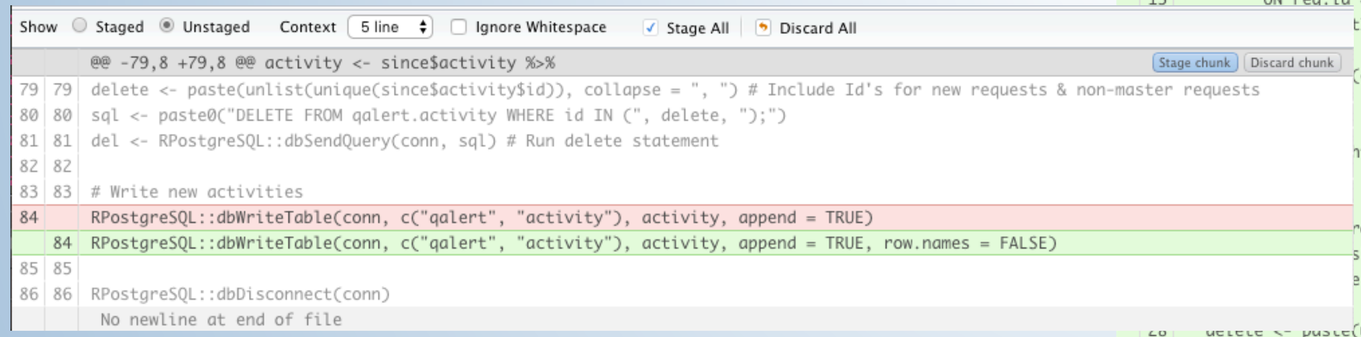
- Create a “New Project”
  - Select “New Directory”
    - Select "New Project”
      - Make sure the “Create a git repository” is selected
      - Give the project any name you want
        - Click “Create Project”
          - Look at the “Git” tab

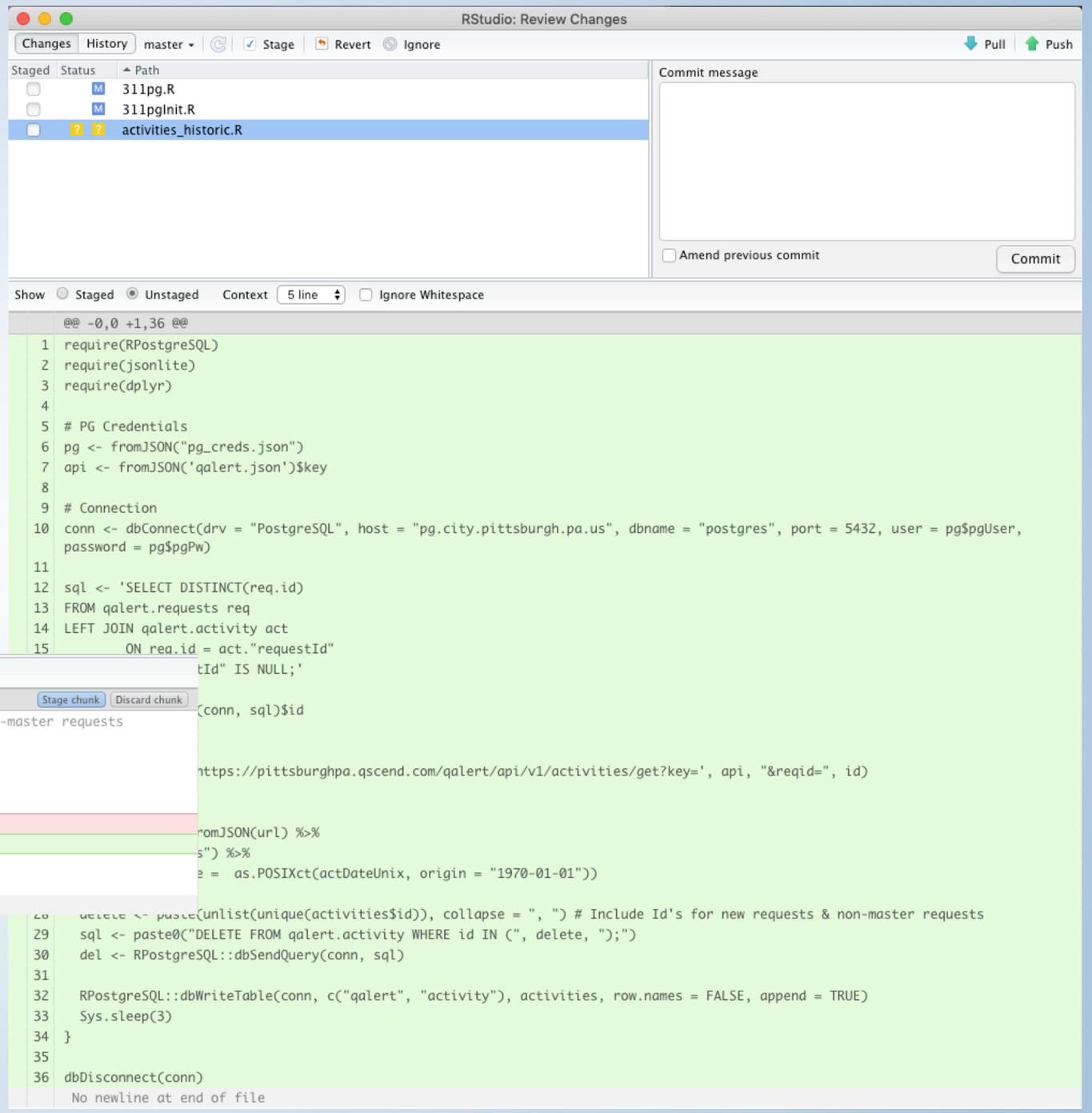


EXERCISE

- Click “File”
  - Click “New File”
    - Select “Shiny Web App”
      - Give the application a name and click “Create”
    - Click the “Git” tab
      - What’s change?

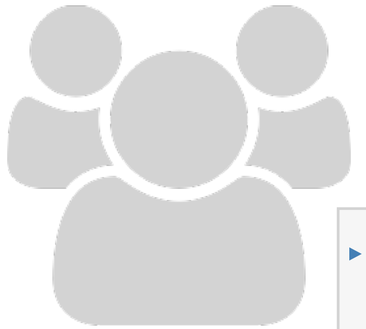

Environment
History
Connections
Git
Diff
Commit
master
Staged
Status
Path
311pg.R
311pgInit.R
activities_historic.R


Show
Staged
Unstaged
Context
5 line
Ignore Whitespace
Stage All
Discard All
@@ -79,8 +79,8 @@ activity <- since$activity %>%
Stage chunk
Discard chunk
delete <- paste(unlist(unique(since$activity$id)), collapse = ", ") # Include Id's for new requests & non-master requests
sql <- paste0("DELETE FROM qalert.activity WHERE id IN (", delete, ");")
del <- RPostgreSQL::dbSendQuery(conn, sql) # Run delete statement
# Write new activities
RPostgreSQL::dbWriteTable(conn, c("qalert", "activity"), activity, append = TRUE)
RPostgreSQL::dbWriteTable(conn, c("qalert", "activity"), activity, append = TRUE, row.names = FALSE)
RPostgreSQL::dbDisconnect(conn)
No newline at end of file


RStudio: Review Changes
Changes
History
master
Stage
Revert
Ignore
Pull
Push
Staged
Status
Path
311pg.R
311pgInit.R
activities_historic.R
Commit message
Amend previous commit
Commit
Show
Staged
Unstaged
Context
5 line
Ignore Whitespace
@@ -0,0 +1,36 @@
require(RPostgreSQL)
require(jsonlite)
require(dplyr)
# PG Credentials
pg <- fromJSON("pg_creds.json")
api <- fromJSON('qalert.json')$key
# Connection
conn <- dbConnect(drv = "PostgreSQL", host = "pg.city.pittsburgh.pa.us", dbname = "postgres", port = 5432, user = pg$pgUser, password = pg$pgPw)
sql <- 'SELECT DISTINCT(req.id)
FROM qalert.requests req
LEFT JOIN qalert.activity act
ON req.id = act."requestId"
tId" IS NULL;'
(conn, sql)$id
https://pittsburghpa.qscend.com/qalert/api/v1/activities/get?key=', api, "&reqid=", id)
romJSON(url) %>%
s") %>%
e = as.POSIXct(actDateUnix, origin = "1970-01-01"))
delete <- paste(unlist(unique(activities$id)), collapse = ", ") # Include Id's for new requests & non-master requests
sql <- paste0("DELETE FROM qalert.activity WHERE id IN (", delete, ");")
del <- RPostgreSQL::dbSendQuery(conn, sql)
RPostgreSQL::dbWriteTable(conn, c("qalert", "activity"), activities, row.names = FALSE, append = TRUE)
Sys.sleep(3)
}
dbDisconnect(conn)
No newline at end of file

EXERCISE

- Go to “Global Options”
  - Click “Git/SVN”
    - Ensure “Enable version control interface for Studio projects” is selected
      - Click “Create RSA Key…”
        - Click “Create”
          - Click “View public key” and copy key
- Go to https://github.com/settings/keys
  - Click “New SSH key”
    - Paste key in text box and give your key a name
      - Click “Add SSH Key”
  - If you have two factor authorization turned on for GitHub (people with previous GitHub accounts) you will need your Personal Access Token to login later
  - Everyone else, your GitHub login and password will be important when logging in later.



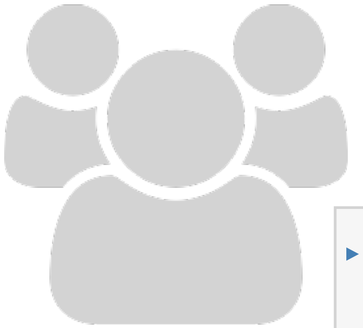
EXERCISE

- Click the “Git” tab
  - Click “Commit”
    - Type a message into the “Commit message” box
      - Stage the files by making sure they are selected on the left
        - Click “Commit”
          - Click “Push”
            - Login to GitHub with either your password or personal access token

Github in the command line / terminal

WHATS THE COMMAND LINE

- Command or terminal git commands are how git was first used.
- You don’t need to know how to do these things as either the “Git” tab in RStudio or the Github desktop program provides a GUI (gooey user interface) for you.
- However, knowing the hard way to do something never hurt anybody.



EXERCISE

- https://learngitbranching.js.org/
- Complete Introduction Sequences
  - Git Commits
  - Branching Git
  - Merging in Git

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