

ghclass

an R package for managing classes with GitHub

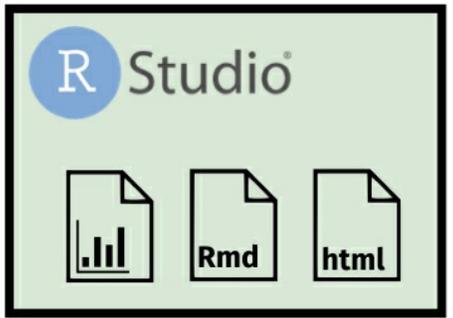
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bit.ly/User2019_ghclass

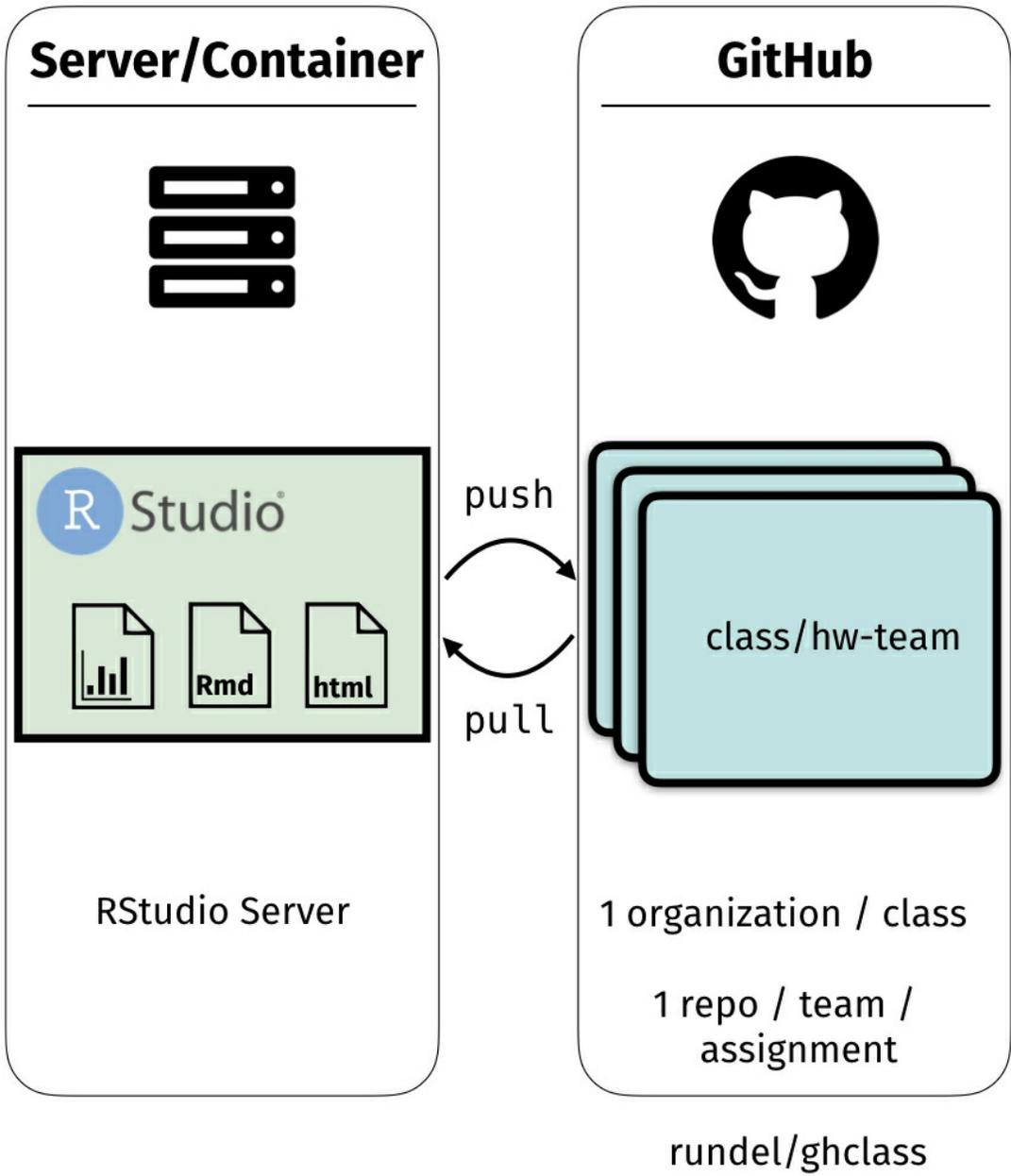
Colin Rundel

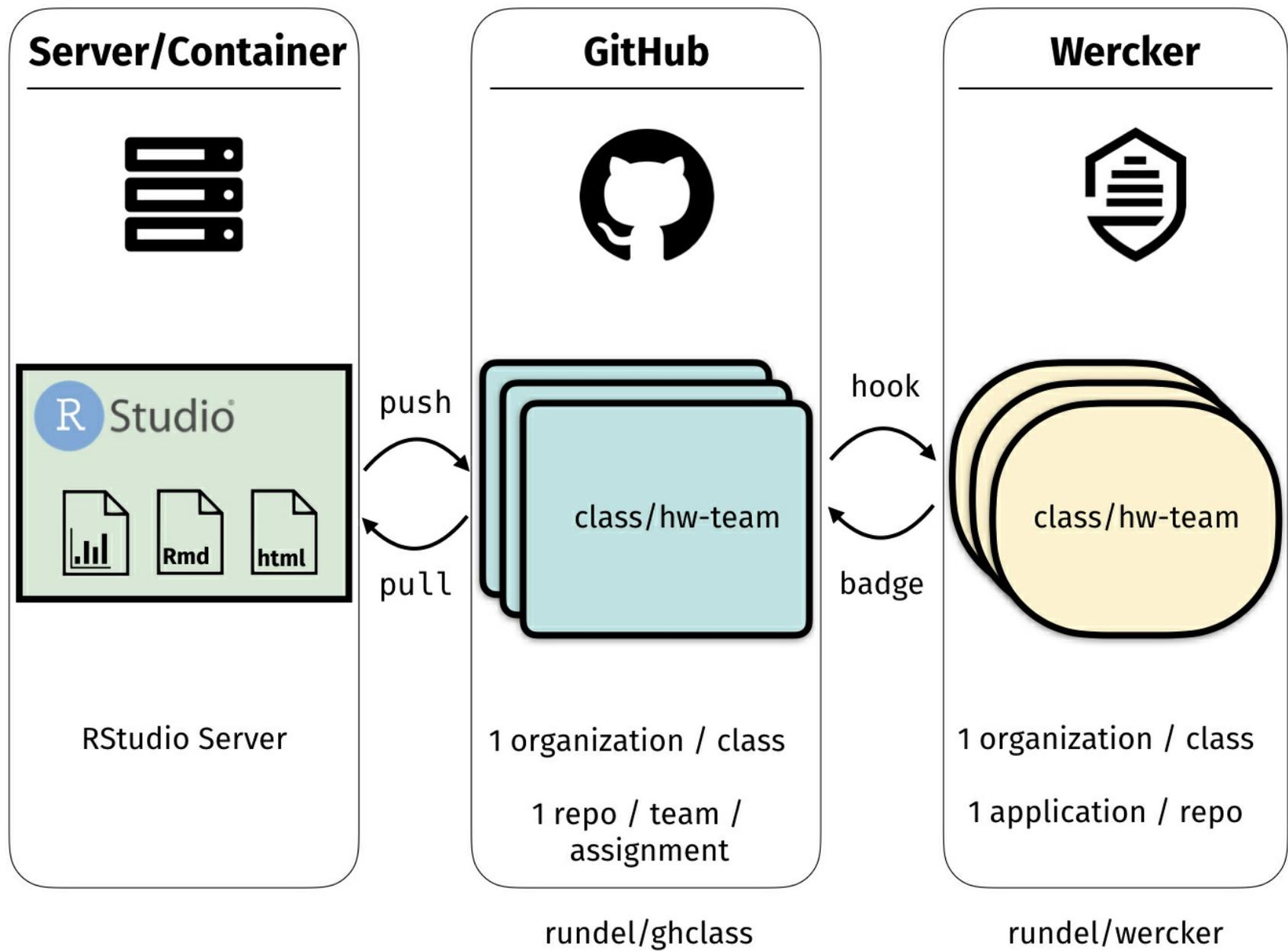
Univ of Edinburgh · Duke Univ

Server/Container

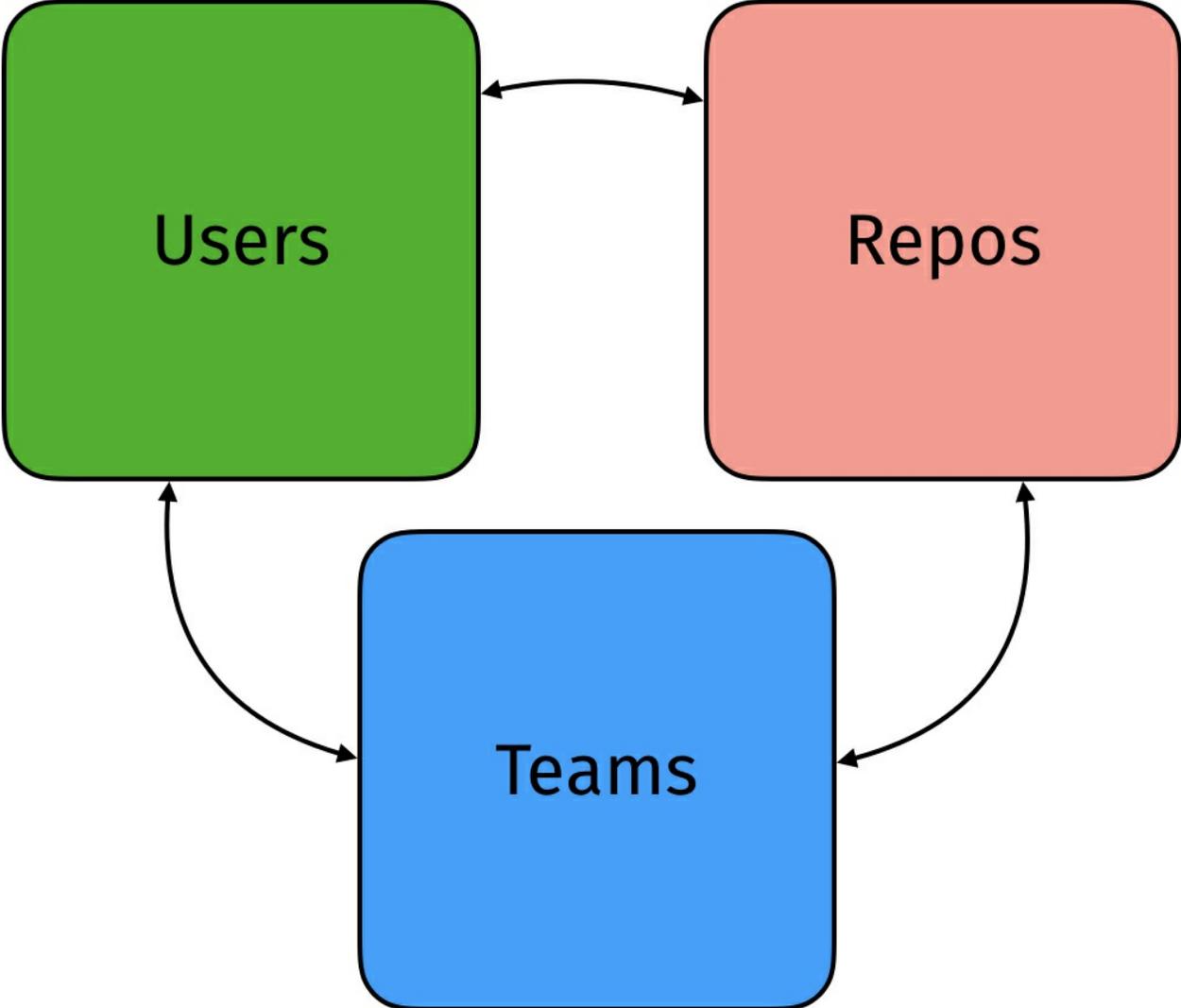


RStudio Server





GitHub Organization



Setup

1. Signup for a GitHub Account - github.com
2. Setup git and get a GitHub personal access token (PAT) - github.com/settings/tokens
 - Need help? Read [usethis setup vignette](#) or [happy git with R](#)
3. Signup for the GitHub Education Discount - education.github.com/benefits
4. Create a GitHub Organization for your class - github.com/organizations/new

Only step 4 needs to be repeated for a new class!

Introduction to ghclass

```
remotes::install_github("rundel/ghclass")  
library(ghclass)
```

Some design principals behind this package:

1. All of the package's functions are prefixed with either `org`, `repo`, `team`, `github` or `local_repo` to indicate what they operate on.
2. Most functions are vectorized over their parameters, to allow related operations to be grouped.
3. All messaging is built on `usethis::ui_*` functions, as such you can make it shutup with `options(usethis.quiet = TRUE)`.
4. Most actions are non-destructive and/or backed by git, the handful of dangerous operations will warn you.

Org & Roster

Today we will be using **ghclass-demo** as our example, hopefully your Org has a slightly more informative name .

(I find `course#-semester` works well, e.g. `Sta323-Sp19`).

```
(roster = readr::read_csv("files/roster.csv"))
```

```
## # A tibble: 6 x 5
##   uid   email                github                hw01                hw02
##   <chr> <chr>                  <chr>                <chr>                <chr>
## 1 za17  anya@school.edu        ghclass-anya         hw01-team01         hw02-team01
## 2 kb34  bruno@school.edu      ghclass-bruno        hw01-team02         hw02-team02
## 3 ac13  celine@school.edu     ghclass-celine       hw01-team03         hw02-team03
## 4 bd88  diego@school.edu      ghclass-diego        hw01-team01         hw02-team03
## 5 se01  elijah@school.edu     ghclass-elijah       hw01-team02         hw02-team01
## 6 df00  francis@school.edu    ghclass-francis      hw01-team03         hw02-team02
```



ghclass-demo

 **Repositories**

 Packages

 People **3**

 Teams

 Projects

 Settings

This organization has no repositories.

[Create a new repository](#)

Top languages

 R

People

3 >



[Invite someone](#)



Checking your git config

```
uethis::git_sitrep()
```

```
## Git user  
## * Name: 'Colin Rundel'  
## * Email: 'rundel@gmail.com'  
## * Vaccinated: TRUE  
## uethis + git2r  
## * Default uethis protocol: <unset>  
## * git2r supports SSH: TRUE  
## * Credentials: '<uethis + git2r default behaviour>'  
## GitHub  
## * Personal access token: '<found in env var>'  
## * User: 'rundel'  
## * Name: 'Colin Rundel'  
## Repo  
## * Path: '/Users/rundel/Desktop/Presentations/.git'  
## * Local branch -> remote tracking branch: 'master' -> 'origin/master'  
## GitHub pull request readiness  
## * origin: rundel/Presentations, can push  
## * upstream: '<no such remote>'
```

Checking your git config - ghclass

```
github_test_token()
```

```
## Your github token is functioning correctly.
```

```
github_test_token("bad token")
```

```
## ✘ Your github token failed to authenticate.
```

```
## [Error: GitHub API error (401): 401 Unauthorized]
```

Inviting Students

```
org_invite(org = "ghclass-demo", user = roster$github)
```

```
## Invited user 'ghclass-anya' to org 'ghclass-demo'.  
## Invited user 'ghclass-bruno' to org 'ghclass-demo'.  
## Invited user 'ghclass-celine' to org 'ghclass-demo'.  
## Invited user 'ghclass-diego' to org 'ghclass-demo'.  
## User 'ghclass-elijah' is already a pending member of org 'ghclass-demo'.  
## User 'ghclass-francis' is already a pending member of org 'ghclass-demo'.
```

```
org_members("ghclass-demo", include_admins = FALSE)
```

```
## character(0)
```

```
org_pending_members("ghclass-demo")
```

```
## [1] "ghclass-anya"      "ghclass-bruno"      "ghclass-elijah"    "ghclass-francis"  
## [5] "ghclass-celine"
```

Find a member...

Members

Outside collaborators

Invite member

Select all

6 pending invitations

2FA

Role

<input type="checkbox"/>		Mine Cetinkaya-Rundel mine-cetinkaya-rundel	2FA ✓	Private	Owner	0 teams	
<input type="checkbox"/>		Colin Rundel rundel	2FA ✗	Private	Owner	0 teams	
<input type="checkbox"/>		Therese Anders thereseanders	2FA ✗	Private	Owner	0 teams	



Find a member...

Select all

Mine Cetinkaya-Rundel
mine-cetinkaya-rundel

Colin Rundel
rundel

Therese Anders
thereseanders

Pending invitations



ghclass-any
ghclass-any

Edit invitation



ghclass-bruno
ghclass-bruno

Edit invitation



ghclass-celine
ghclass-celine

Edit invitation



ghclass-diego
ghclass-diego

Edit invitation



ghclass-elijah
ghclass-elijah

Edit invitation



ghclass-francis
ghclass-francis

Edit invitation

Invitations are sent via email and can be accepted at
<https://github.com/ghclass-demo>

Invite member

pending invitations 2FA Role

Owner 0 teams

Owner 0 teams

Owner 0 teams

A few days later ...

```
org_members("ghclass-demo", include_admins = FALSE)
```

```
## [1] "ghclass-anya" "ghclass-bruno" "ghclass-celine" "ghclass-diego"
```

```
org_pending_members("ghclass-demo")
```

```
## [1] "ghclass-elijah" "ghclass-francis"
```

several emails and a week later ...

```
org_members("ghclass-demo", include_admins = FALSE)
```

```
## [1] "ghclass-anya" "ghclass-bruno" "ghclass-celine" "ghclass-diego"  
## [5] "ghclass-elijah" "ghclass-francis"
```

```
org_pending_members("ghclass-demo")
```

```
## character(0)
```

 ghclass-demo

 Repositories

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 Teams

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 Settings

Members

Outside collaborators

Invite member

<input type="checkbox"/> Select all					2FA ▾	Role ▾	
<input type="checkbox"/>		ghclass-anya	2FA ✕	 Private	Member	0 teams	
<input type="checkbox"/>		ghclass-bruno	2FA ✕	 Private	Member	0 teams	
<input type="checkbox"/>		ghclass-celine	2FA ✕	 Private	Member	0 teams	
<input type="checkbox"/>		ghclass-diego	2FA ✕	 Private	Member	0 teams	
<input type="checkbox"/>		ghclass-elijah	2FA ✕	 Private	Member	0 teams	

Setup Teams

```
roster
```

```
## # A tibble: 6 x 5
##   uid   email                github                hw01                hw02
##   <chr> <chr>                <chr>                <chr>                <chr>
## 1 za17  anya@school.edu      ghclass-anya        hw01-team01        hw02-team01
## 2 kb34  bruno@school.edu    ghclass-bruno       hw01-team02        hw02-team02
## 3 ac13  celine@school.edu   ghclass-celine      hw01-team03        hw02-team03
## 4 bd88  diego@school.edu    ghclass-diego       hw01-team01        hw02-team03
## 5 se01  elijah@school.edu   ghclass-elijah     hw01-team02        hw02-team01
## 6 df00  francis@school.edu  ghclass-francis    hw01-team03        hw02-team02
```

```
team_create("ghclass-demo", team = roster$hw01)
```

```
## Created team 'hw01-team01' in org 'ghclass-demo'.
## Created team 'hw01-team02' in org 'ghclass-demo'.
## Created team 'hw01-team03' in org 'ghclass-demo'.
```

```
team_invite("ghclass-demo", user = roster$github, team = roster$hw01)
```

```
## Added 'ghclass-anya' to team 'hw01-team01'.
## Added 'ghclass-diego' to team 'hw01-team01'.
## Added 'ghclass-bruno' to team 'hw01-team02'.
## Added 'ghclass-elijah' to team 'hw01-team02'.
## Added 'ghclass-celine' to team 'hw01-team03'.
```



ghclass-demo

 **Repositories**

 Packages

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 Projects

 Settings

This organization has no repositories.

[Create a new repository](#)

Top languages

 R

People

9 >



0 seats left — [Buy more](#)



[New team](#)

<input type="checkbox"/> Select all			Visibility ▾	Members ▾
<input type="checkbox"/> hw01-team01	Secret		2 members	0 teams
<input type="checkbox"/> hw01-team02	Secret		2 members	0 teams
<input type="checkbox"/> hw01-team03	Secret		2 members	0 teams

[Previous](#)

[Next](#)



Setup Repos

```
roster$hw01
```

```
## [1] "hw01-team01" "hw01-team02" "hw01-team03" "hw01-team01" "hw01-team02"  
## [6] "hw01-team03"
```

```
repo_create("ghclass-demo", name = roster$hw01)
```

```
## Created repo 'ghclass-demo/hw01-team01'.  
## Created repo 'ghclass-demo/hw01-team02'.  
## Created repo 'ghclass-demo/hw01-team03'.
```

```
repo_add_team(repo = org_repos("ghclass-demo", filter = "hw01-"),  
              team = org_teams("ghclass-demo", filter = "hw01-"))
```

```
## Added team 'hw01-team01' to repo 'ghclass-demo/hw01-team01'.  
## Added team 'hw01-team02' to repo 'ghclass-demo/hw01-team02'.  
## Added team 'hw01-team03' to repo 'ghclass-demo/hw01-team03'.
```



ghclass-demo

 **Repositories** 3

 Packages

 **People** 9

 **Teams** 3

 Projects

 Settings

Find a repository...

Type: All ▾

Customize pins

 **New**

hw01-team03 Private

 0  0  0  0 Updated 33 seconds ago

hw01-team02 Private

 0  0  0  0 Updated 35 seconds ago

hw01-team01 Private

 0  0  0  0 Updated 37 seconds ago

Top languages

 R

People

9 >



0 seats left — [Buy more](#)

ghclass-demo / hw01-team01 Private

Watch 0 Star 0 Fork 0

- Code
- Issues 0
- Pull requests 0
- Projects 0
- Wiki
- Security
- Insights
- Settings

No description, website, or topics provided.

Edit

Manage topics

1 commit 1 branch 0 releases 1 contributor

Branch: master New pull request Create new file Upload files Find File Clone or download

 **rundel** Initial commit Latest commit 3009227 10 seconds ago

 [.gitignore](#) Initial commit 10 seconds ago

Help people interested in this repository understand your project by adding a README. [Add a README](#)



Provide Template Code

```
(repos = org_repos("ghclass-demo", filter = "hw01-"))
```

```
## [1] "ghclass-demo/hw01-team01" "ghclass-demo/hw01-team02"  
## [3] "ghclass-demo/hw01-team03"
```

```
repo_mirror(source_repo = "Sta323-Sp19/hw1",  
            target_repo = repos)
```

```
## Cloned 'Sta323-Sp19/hw1'.  
## Pushed (mirror) 'hw1' to repo 'ghclass-demo/hw01-team01'.  
## Pushed (mirror) 'hw1' to repo 'ghclass-demo/hw01-team02'.  
## Pushed (mirror) 'hw1' to repo 'ghclass-demo/hw01-team03'.  
## Removed local copy of 'Sta323-Sp19/hw1'
```

No description, website, or topics provided.

Edit

Manage topics

2 commits 1 branch 0 releases 1 contributor

Branch: master New pull request Create new file Upload files Find File Clone or download

Table with 4 columns: File Name, Commit Message, Commit Type, and Time Ago. Rows include .gitignore, README.md, fizzbuzz.png, hw1.Rmd, hw1.Rproj, hw1_whitelist.R, and wercker.yml.

README.md [Edit icon]

Sta 323 - Homework 1

Due by 11:59 pm on Thursday 1/24/2019.

**FIZZ
BUZZ
FIZZBUZZ**

Background

The FizzBuzz test is a common programming interview question used to establish if a candidate can actually program in a language that they claim experience in.

The problem statement is as follows:

Save some steps

```
org_create_assignment(org = "ghclass-demo", repo = roster$hw02, user = roster$github,  
                    team = roster$hw02, source_repo = "Sta323-Sp19/hw2")
```

```
## Created repo 'ghclass-demo/hw02-team01'.  
## Created repo 'ghclass-demo/hw02-team02'.  
## Created repo 'ghclass-demo/hw02-team03'.  
## Created team 'hw02-team01' in org 'ghclass-demo'.  
## Created team 'hw02-team02' in org 'ghclass-demo'.  
## Created team 'hw02-team03' in org 'ghclass-demo'.  
## Added 'ghclass-anya' to team 'hw02-team01'.  
## Added 'ghclass-elijah' to team 'hw02-team01'.  
## Added 'ghclass-bruno' to team 'hw02-team02'.  
## Added 'ghclass-francis' to team 'hw02-team02'.  
## Added 'ghclass-celine' to team 'hw02-team03'.  
## Added 'ghclass-diego' to team 'hw02-team03'.  
## Added team 'hw02-team01' to repo 'ghclass-demo/hw02-team01'.  
## Added team 'hw02-team02' to repo 'ghclass-demo/hw02-team02'.  
## Added team 'hw02-team03' to repo 'ghclass-demo/hw02-team03'.  
## Cloned 'Sta323-Sp19/hw2'.  
## Pushed (mirror) 'hw2' to repo 'ghclass-demo/hw02-team01'.  
## Pushed (mirror) 'hw2' to repo 'ghclass-demo/hw02-team02'.  
## Pushed (mirror) 'hw2' to repo 'ghclass-demo/hw02-team03'.  
## Pushed (mirror) 'hw2' to repo 'ghclass-demo/hw02-team03'.  
## Pushed (mirror) 'hw2' to repo 'ghclass-demo/hw02-team01'.  
## Pushed (mirror) 'hw2' to repo 'ghclass-demo/hw02-team02'.  
## Removed local copy of 'Sta323-Sp19/hw2'
```

Individual assignments (e.g. exams)

```
org_create_assignment(org = "ghclass-demo", repo = paste0("exam1-", roster$github),  
                    user = roster$github, source_repo = "Sta323-Sp19/midterm1")
```

```
## Created repo 'ghclass-demo/exam1-ghclass-anya'.  
## Created repo 'ghclass-demo/exam1-ghclass-bruno'.  
## Created repo 'ghclass-demo/exam1-ghclass-celine'.  
## Created repo 'ghclass-demo/exam1-ghclass-diego'.  
## Created repo 'ghclass-demo/exam1-ghclass-elijah'.  
## Created repo 'ghclass-demo/exam1-ghclass-francis'.  
## Added user 'ghclass-anya' to repo 'ghclass-demo/exam1-ghclass-anya'.  
## Added user 'ghclass-bruno' to repo 'ghclass-demo/exam1-ghclass-bruno'.  
## Added user 'ghclass-celine' to repo 'ghclass-demo/exam1-ghclass-celine'.  
## Added user 'ghclass-diego' to repo 'ghclass-demo/exam1-ghclass-diego'.  
## Added user 'ghclass-elijah' to repo 'ghclass-demo/exam1-ghclass-elijah'.  
## Added user 'ghclass-francis' to repo 'ghclass-demo/exam1-ghclass-francis'.  
## Cloned 'Sta323-Sp19/midterm1'.  
## Pushed (mirror) 'midterm1' to repo 'ghclass-demo/exam1-ghclass-anya'.  
## Pushed (mirror) 'midterm1' to repo 'ghclass-demo/exam1-ghclass-bruno'.  
## Pushed (mirror) 'midterm1' to repo 'ghclass-demo/exam1-ghclass-celine'.  
## Pushed (mirror) 'midterm1' to repo 'ghclass-demo/exam1-ghclass-diego'.  
## Pushed (mirror) 'midterm1' to repo 'ghclass-demo/exam1-ghclass-elijah'.  
## Pushed (mirror) 'midterm1' to repo 'ghclass-demo/exam1-ghclass-francis'.  
## Removed local copy of 'Sta323-Sp19/midterm1'
```

Making Changes

```
repo_add_file(repo = org_repos("ghclass-demo", "hw01-"),  
              file = "files/fizzbuzz.png")
```

```
## Added file 'fizzbuzz.png' to repo 'ghclass-demo/hw01-team01'.  
## Added file 'fizzbuzz.png' to repo 'ghclass-demo/hw01-team02'.  
## Added file 'fizzbuzz.png' to repo 'ghclass-demo/hw01-team03'.
```

```
repo_add_file(repo = org_repos("ghclass-demo", "hw01-"),  
              file = "files/fizzbuzz.png", overwrite = TRUE)
```

```
## Added file 'fizzbuzz.png' to repo 'ghclass-demo/hw01-team01'.  
## Added file 'fizzbuzz.png' to repo 'ghclass-demo/hw01-team02'.  
## Added file 'fizzbuzz.png' to repo 'ghclass-demo/hw01-team03'.
```

Modify a file

```
repo_modify_file(repo = org_repos("ghclass-demo", "hw01-"), file = "README.md",  
                 pattern = "on Thursday 1/24/2019.", content = "on Wednesday 10/07/2019.")
```

```
## Modified file 'ghclass-demo/hw01-team01/README.md'.  
## Modified file 'ghclass-demo/hw01-team02/README.md'.  
## Modified file 'ghclass-demo/hw01-team03/README.md'.
```

Sta 323 - Homework 1

Due by 11:59 pm on Thursday 1/24/2019.

**FIZZ
BUZZ
FIZZBUZZ**

Background

The FizzBuzz test is a common programming interview question used to establish if a candidate can actually program in a language that they claim experience in.

The problem statement is as follows:

Sta 323 - Homework 1

Due by 11:59 pm on Thursday 1/24/2019.

FIZZ

DI77

Sta 323 - Homework 1

Due by 11:59 pm on Wednesday 10/07/2019.

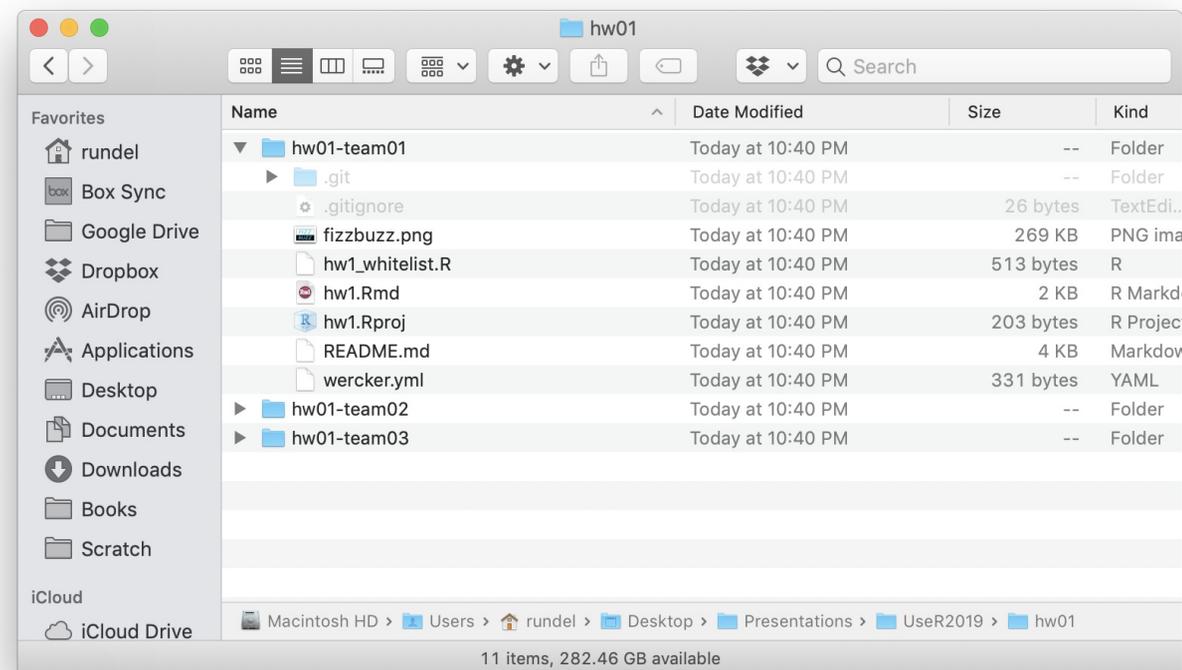
FIZZ

DI77

Collect student work

```
local_repo_clone(repo = org_repos("ghclass-demo", "hw01-"), local_path = "hw01")
```

```
## Cloned 'ghclass-demo/hw01-team01'.  
## Cloned 'ghclass-demo/hw01-team02'.  
## Cloned 'ghclass-demo/hw01-team03'.
```



Feedback?

```
repo_style("ghclass-demo/hw01-team01", files = "*.Rmd", draft = TRUE)
```

```
## Created branch 'styler' from 'ghclass-demo/hw01-team01'.  
## Cloned 'ghclass-demo/hw01-team01@styler'.  
## Created pull request for 'ghclass-demo/hw01-team01 (master <= styler)'.
```

styler revisions #4

Edit

 Draft rundel wants to merge 1 commit into master from styler 

 Conversation 0  Commits 1  Checks 0  Files changed 1

+14 -14 



rundel commented 15 seconds ago

+  ...

This pull request contains the results of running the automated R code formatting tool styler on your repo. Styling is based on the [tidyverse R style guide](#).

Click on the commit below to see details of recommended changes. It is not necessary that your code cleanly pass these checks, but if there is a large number of significant changes suggested you should review the style guide with an eye towards potentially improving your code formatting.

@ghclass-anya, @ghclass-bruno, @ghclass-diego, @ghclass-elijah, @ghclass-francis, @ghclass-celine

  Results of running styler: ...

2f8eadd

Add more commits by pushing to the **styler** branch on **ghclass-demo/hw01-team01**.



 **This pull request is still a work in progress**
Draft pull requests cannot be merged.

Ready for review

Merge pull request

You can also [open this in GitHub Desktop](#) or view [command line instructions](#).

Reviewers



No reviews

Assignees



No one—assign yourself

Labels



None yet

Projects



None yet

Milestone



No milestone

Notifications

Customize

 Unsubscribe

You're receiving notifications because you authored the thread.

@@ -16,32 +16,32 @@ seek help from StackOverflow in finding a way to test for integers, linked here:

```

16
17
18 ```{r}
19 -fizzbuzz = function(v) {
20 -   for (i in v){ #iterates through the values defined in v
21 -
22 -     #Error cases
23 -     if ((is.integer(i) == FALSE) & (is.double(i) == FALSE)){
24       stop("Value is non-numeric")
25     }
26 -   else if ((i <= 0) || (i == Inf)){
27     stop("Value is not in the acceptable range")
28   }
29 -   else if (i%%1 != 0){
30     stop("Value is not an integer")
31   }
32 -
33 -
34 -   #Constructing working cases options
35 -   else if ((i%%3 == 0) & (i%%5 == 0)){
36     print("FizzBuzz")
37   }
38 -   else if (i%%3 == 0){
39     print("Fizz")
40   }
41 -   else if (i%%5 == 0){
42     print("Buzz")
43   }

```

```

16
17
18 ```{r}
19 +fizzbuzz <- function(v) {
20 +   for (i in v){ #iterates through the values defined in v
21 +
22 +     #Error cases
23 +     if ((is.integer(i) == FALSE) & (is.double(i) == FALSE)){
24       stop("Value is non-numeric")
25     }
26 +   else if ((i <= 0) || (i == Inf)){
27     stop("Value is not in the acceptable range")
28   }
29 +   else if (i%%1 != 0){
30     stop("Value is not an integer")
31   }
32 +
33 +
34 +   #Constructing working cases options
35 +   else if ((i%%3 == 0) & (i%%5 == 0)){
36     print("FizzBuzz")
37   }
38 +   else if (i%%3 == 0){
39     print("Fizz")
40   }
41 +   else if (i%%5 == 0){
42     print("Buzz")
43   }

```

Putting it all together

This is an example from my Organization folder for my Statistical Computing course last Spring:

```
library(ghclass)
library(dplyr)

df = readr::read_csv("hw2_teams.csv")

team_create("Sta323-Sp19", team = df$team)
team_invite("Sta323-Sp19", df$github, df$team)

repo_create("Sta323-Sp19", df$team)
repo_add_team(org_repos("Sta323-Sp19", "hw2-"), org_teams("Sta323-Sp19", "hw2-"))

mirror_repo("Sta323-Sp19/hw2", org_repos("Sta323-Sp19", "hw2-"))

wercker_add(repo = org_repos("Sta323-Sp19", "hw2-"), wercker_org = "Sta323-Sp19")

branch_create(
  repo = paste0("Sta323-Sp19/", df$team),
  cur_branch = "master",
  new_branch = df$github
)
```

Future Work

- We will be submitting to CRAN in the next month
- Active summer project adding functionality for peer review by Mine Cetinkaya-Rundel and Therese Anders
- Support for GitHub actions for automated feedback (**rundel/wercker** replacement)
- Support more workflows, if you GitHub based workflow for teaching that was not reflected here please get in touch.

Thank you!



rundel@gmail.com



github.com/rundel



[@rundel](https://twitter.com/rundel)



bit.ly/User2019_ghclass