

Quarto and automation

JSM 2023 - Toronto

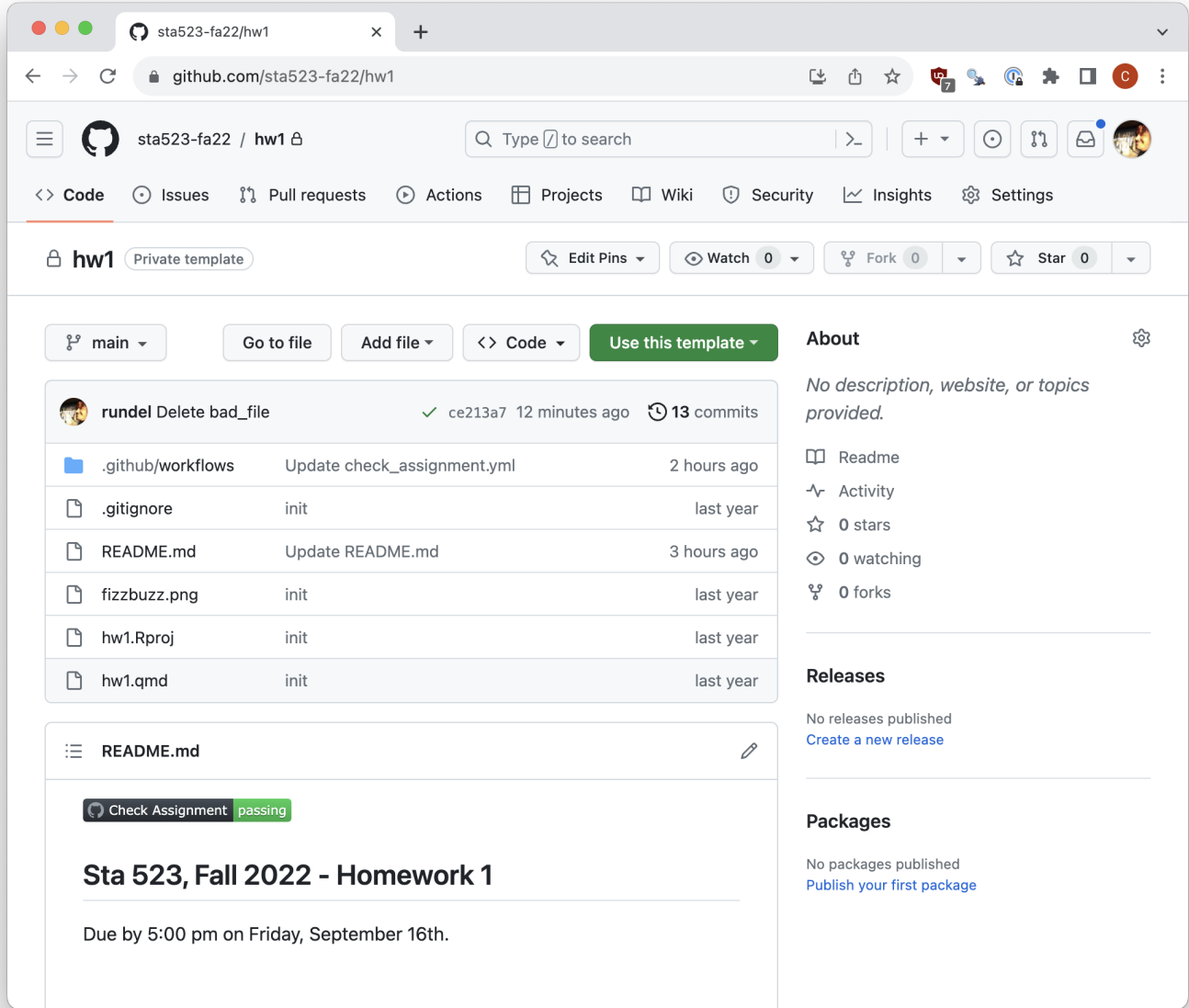
Colin Rundel

Duke University

Context

- Sta 323 / Sta 523 - R based statistical computing (UG / MS)
- Sta 663 - Python based statistical computing (MS)
- All courses run using GitHub
 - 1 organization / course
 - Students added as org members
 - 1 repo / assignment (team or individual)
 - Management via [ghclass](#)

Sta 523 - HW 1



.github/workflows/check_assignment.yml

```
1 on: push
2 name: Check Assignment
3 jobs:
4   check-allowed-files:
5     runs-on: ubuntu-latest
6     container:
7       image: ghcr.io/sta523-fa22/sta523-base:latest
8     steps:
9       - name: Checkout
10         uses: actions/checkout@master
11       - name: Check Files
12         run: |
13           checklist::quit_on_failure({
14             checklist::check_allowed_files(
15               c("hw1.qmd", "hw1.Rproj", "README.md", "fizzbuzz.png")
16             )
17           })
18         shell: Rscript {0}
19
20   check-renders:
21     runs-on: ubuntu-latest
22     container:
23       image: ghcr.io/sta523-fa22/sta523-base:latest
24     steps:
25       - name: Checkout
26         uses: actions/checkout@master
27       - name: Install Missing Packages
28         run: |
```


sta523-fa22/hw1

Update hw1.qmd · sta523-fa22

+

← → ↺

github.com/sta523-fa22/hw1/actions/runs/5778239577/job/15659246857

📄

🔖

☆

🛡️

🔍

🔗

⚙️

📺

🔴

⋮

🏠 Summary

Jobs

✅ check-allowed-files

❌ check-renders

Run details

🕒 Usage

📄 Workflow file

check-renders

failed 28 minutes ago in 46s

🔍 Search logs

🔄 ⚙️

⌵ ❌ Check Renders 3s

```
1 ▶ Run checklist::check_qmd_renders("hw1.qmd")
4
5
6 processing file: hw1.qmd
7 1/15
8 2/15 [fizzbuzz]
9 3/15
10 4/15 [good_inputs]
11
12 Quitting from lines 36-45 [good_inputs] (hw1.qmd)
13 Error:
14 ! fizzbuzz(3) == "Fizz" is not TRUE
15 Backtrace:
16 1. base::stopifnot(fizzbuzz(3) == "Fizz")
17 Execution halted
18 Error in `processx::run(quarto_bin, args, echo = TRUE)`:
19 ! System command 'quarto' failed
20 ---
21 Exit status: 1
22 stdout & stderr: <printed>
23 ---
24 Backtrace:
25 1. checklist::check_qmd_renders("hw1.qmd")
26 2. quarto::quarto_render(file, ...)
27 3. processx::run(quarto_bin, args, echo = TRUE)
28 4. processx:::throw(new_process_error(res, call = sys.call(), echo = echo, ...
29 Execution halted
30
31 Error: Process completed with exit code 1.
```

.github/workflows/check_assignment.yml

```
1 on: push
2 name: Check Assignment
3 jobs:
4   check-allowed-files:
5     runs-on: ubuntu-latest
6     container:
7       image: ghcr.io/sta523-fa22/sta523-base:latest
8     steps:
9       - name: Checkout
10         uses: actions/checkout@master
11       - name: Check Files
12         run: |
13           checklist::quit_on_failure({
14             checklist::check_allowed_files(
15               c("hw1.qmd", "hw1.Rproj", "README.md", "fizzbuzz.png")
16             )
17           })
18         shell: Rscript {0}
19
20   check-renders:
21     runs-on: ubuntu-latest
22     container:
23       image: ghcr.io/sta523-fa22/sta523-base:latest
24     steps:
25       - name: Checkout
26         uses: actions/checkout@master
27       - name: Install Missing Packages
28         run: |
```


Update check_assignment.yml x

+

← → ↺

github.com/sta523-fa22/hw1/actions/runs/5788143975

📄

📁

☆

🔒

🔗

🔒

⚙️

📺

🔴

⋮

🏠 Summary

Jobs

✓ check-allowed-files

✓ check-renders

Run details

🕒 Usage

📄 Workflow file

Triggered via push 3 minutes ago

Status

Total duration

Billable time

👤 rundel pushed

🔗 cfdafcc

main

Success

1m 10s

1m

Artifacts

1

check_assignment.yml

on: push

✓ check-allowed-files 44s

✓ check-renders 59s

📄

−

+

Artifacts

Produced during runtime

Name	Size
📦 hw1-html	877 KB

🗑️

bit.ly/teach-quarto

7

ghclass + artifacts

```
1 repos = ghclass::org_repos("sta523-fa22", "hw01_")
2 ghclass::action_artifact_download(repos, "html/")
```

```
✓ Downloaded artifact 846527824 from repo "sta523-fa22/hw01_lab01_team01" to "html/hw01_lab01_team01.html".
✓ Downloaded artifact 846527748 from repo "sta523-fa22/hw01_lab01_team02" to "html/hw01_lab01_team02.html".
✓ Downloaded artifact 846527719 from repo "sta523-fa22/hw01_lab01_team03" to "html/hw01_lab01_team03.html".
✓ Downloaded artifact 846527656 from repo "sta523-fa22/hw01_lab01_team04" to "html/hw01_lab01_team04.html".
✓ Downloaded artifact 846527730 from repo "sta523-fa22/hw01_lab01_team05" to "html/hw01_lab01_team05.html".
✓ Downloaded artifact 846527655 from repo "sta523-fa22/hw01_lab01_team06" to "html/hw01_lab01_team06.html".
✓ Downloaded artifact 846527725 from repo "sta523-fa22/hw01_lab01_team07" to "html/hw01_lab01_team07.html".
✓ Downloaded artifact 846527650 from repo "sta523-fa22/hw01_lab02_team01" to "html/hw01_lab02_team01.html".
✓ Downloaded artifact 846527717 from repo "sta523-fa22/hw01_lab02_team02" to "html/hw01_lab02_team02.html".
✓ Downloaded artifact 846527682 from repo "sta523-fa22/hw01_lab02_team03" to "html/hw01_lab02_team03.html".
✓ Downloaded artifact 846527759 from repo "sta523-fa22/hw01_lab02_team04" to "html/hw01_lab02_team04.html".
✓ Downloaded artifact 846527728 from repo "sta523-fa22/hw01_lab02_team05" to "html/hw01_lab02_team05.html".
✓ Downloaded artifact 846527712 from repo "sta523-fa22/hw01_lab02_team06" to "html/hw01_lab02_team06.html".
✓ Downloaded artifact 846527703 from repo "sta523-fa22/hw01_lab02_team07" to "html/hw01_lab02_team07.html".
```

This and related functions are part of [ghclass](#) v0.3 which will be on CRAN shortly (currently available via bit.ly/teach-quarto)

Sta 663 - HW 1 (Python)

The screenshot shows a GitHub repository page for 'sta663-sp23/hw1'. The repository is private and has 0 stars, 0 forks, and 0 watchers. The main branch is 'main'. The repository contains the following files and folders:

File/Folder	Commit Message	Commit Time
.github/workflows	try self contained	7 months ago
data	init	7 months ago
.gitignore	init	7 months ago
README.md	Update README.md	now
advent.py	init	7 months ago
hw1.ipynb	init	7 months ago
wordle.py	init	7 months ago

The README.md file is displayed below the file list. It features a 'Repo Checks' status that is 'failing'. The title of the repository is 'Homework 1', and it is due by 5:00 pm on Friday, February 3rd. The first task is 'Task 1 - Wordle'.

The right sidebar shows the 'About' section with no description, website, or topics provided. It also lists 'Releases' (no releases published), 'Packages' (no packages published), and 'Languages' (Jupyter Notebook 55.9%, Python 44.1%).

.github/workflows/repo_checks.yml

```
1 on: push
2 name: Repo Checks
3 jobs:
4   check_allowed_files:
5     runs-on: ubuntu-latest
6     container:
7       image: ghcr.io/sta663-sp23/sta663-base:latest
8     timeout-minutes: 3
9     steps:
10    - name: Checkout
11      uses: actions/checkout@master
12    - name: Check Files
13      run: |
14        checklist::quit_on_failure({
15          checklist::check_allowed_files(
16            c("hw1.ipynb", "advent.py", "wordle.py", "README.*", "data/*")
17          )
18        })
19      shell: Rscript {0}
20  check_renders:
21    needs: check_allowed_files
22    runs-on: ubuntu-latest
23    container:
24      image: ghcr.io/sta663-sp23/sta663-base:latest
25    timeout-minutes: 5
26    steps:
27    - name: Checkout
28      uses: actions/checkout@master
```

Advice

- Each organization gets 2000 minutes of action runner time per month for free (3000 with Team upgrade)
 - Easy to exhaust for even a medium sized course
 - Additional minutes can be paid for (~\$0.008 / min)
 - or you can use a self hosted runner(s) ([our setup guide + helper scripts](#))
- Artifacts similarly count towards organization storage limits (500 MB Free or 2 GB Team). Old artifacts can be removed using,

```
1  remove_old_artifacts:
2    runs-on: self-hosted
3    timeout-minutes: 3
4    steps:
5      - name: Remove old artifacts
6        uses: c-hive/gha-remove-artifacts@v1
7        with:
8          age: '0 seconds'
9          skip-tags: false
10         skip-recent: 0
```

Advice

- If you are not interested in creating your own Docker images the [rocker](#) is an excellent option.
 - Specifically, [rocker/verse](#) has [quarto](#) bundled along with most everything else you would need

```
1   container:  
2     image: rocker/verse:latest
```

- If you are more adventurous you can find example [Dockerfiles](#) and build workflows for both courses,
 - [sta523-fa22/docker-base](#) and
 - [sta663-sp23/docker-base](#)

Questions?



rundel.github.io



[rundel](https://github.com/rundel)



rundel@gmail.com
colin.rundel@duke.edu



[rundel/ghclass](#)
[rundel/checklist](#)

