

# Quarto and automation

JSM 2023 - Toronto

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# 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

The screenshot shows a GitHub repository page for 'sta523-fa22/hw1'. The repository is a private template. The main interface includes a code editor with a 'main' branch, a file browser, and a commit history. The commit history shows a recent update to 'check\_assignment.yml' and several initial files like '.gitignore', 'README.md', 'fizzbuzz.png', 'hw1.Rproj', and 'hw1.qmd'. A 'Check Assignment' button indicates the assignment is passing. The repository details show no description, website, or topics provided, and it has 0 stars, 0 forks, and 0 releases. The packages section also indicates no packages have been published.

Code Issues Pull requests Actions Projects Wiki Security Insights Settings

hw1 Private template

main Go to file Add file Use this template

rundel Delete bad\_file ce213a7 12 minutes ago 13 commits

.github/workflows Update check\_assignment.yml 2 hours ago

.gitignore init last year

README.md Update README.md 3 hours ago

fizzbuzz.png init last year

hw1.Rproj init last year

hw1.qmd init last year

README.md

Check Assignment passing

**Sta 523, Fall 2022 - Homework 1**

Due by 5:00 pm on Friday, September 16th.

About

No description, website, or topics provided.

Readme Activity 0 stars 0 watching 0 forks

Releases

No releases published Create a new release

Packages

No packages published Publish your first package

# .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: |
```

[bit.ly/teach-quarto](https://bit.ly/teach-quarto)

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

```
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 bit.ly/teach-quarto
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: |
```

[bit.ly/teach-quarto](https://bit.ly/teach-quarto)

Update check\_assignment.yml x +

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

Summary

Triggered via push 3 minutes ago

rundel pushed -o cfdfcc main

Status: Success Total duration: 1m 10s Billable time: 1m

Jobs:

- check-allowed-files
- check-renders

Artifacts: 1

Run details

Usage

Workflow file

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

# 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](https://bit.ly/teach-quarto))

# Sta 663 - HW 1 (Python)

The screenshot shows a GitHub repository page for "hw1".

**Code tab:** The main content area displays the repository's history. A single commit by "rundel" titled "Delete README.qmd" is shown, along with other initial commits for ".github/workflows", "data", ".gitignore", "README.md", "advent.py", "hw1.ipynb", and "wordle.py". All commits are dated 7 months ago.

**About section:** The repository has no description, website, or topics provided. It has 0 stars, 0 forks, and 0 watching.

**Releases section:** No releases have been published. There is a link to "Create a new release".

**Packages section:** No packages have been published. There is a link to "Publish your first package".

**Languages section:** A chart shows the distribution of languages used in the repository. Jupyter Notebook accounts for 55.9% and Python for 44.1%.

**README.md content:**

```
Homework 1

Due by 5:00 pm on Friday, February 3rd.

Task 1 - Wordle
```

# .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](https://rundel.github.io)



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

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

[bit.ly/teach-quarto](https://bit.ly/teach-quarto)