rbtl - Data communication

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Global Health Engineering - ETH Zurich

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Today

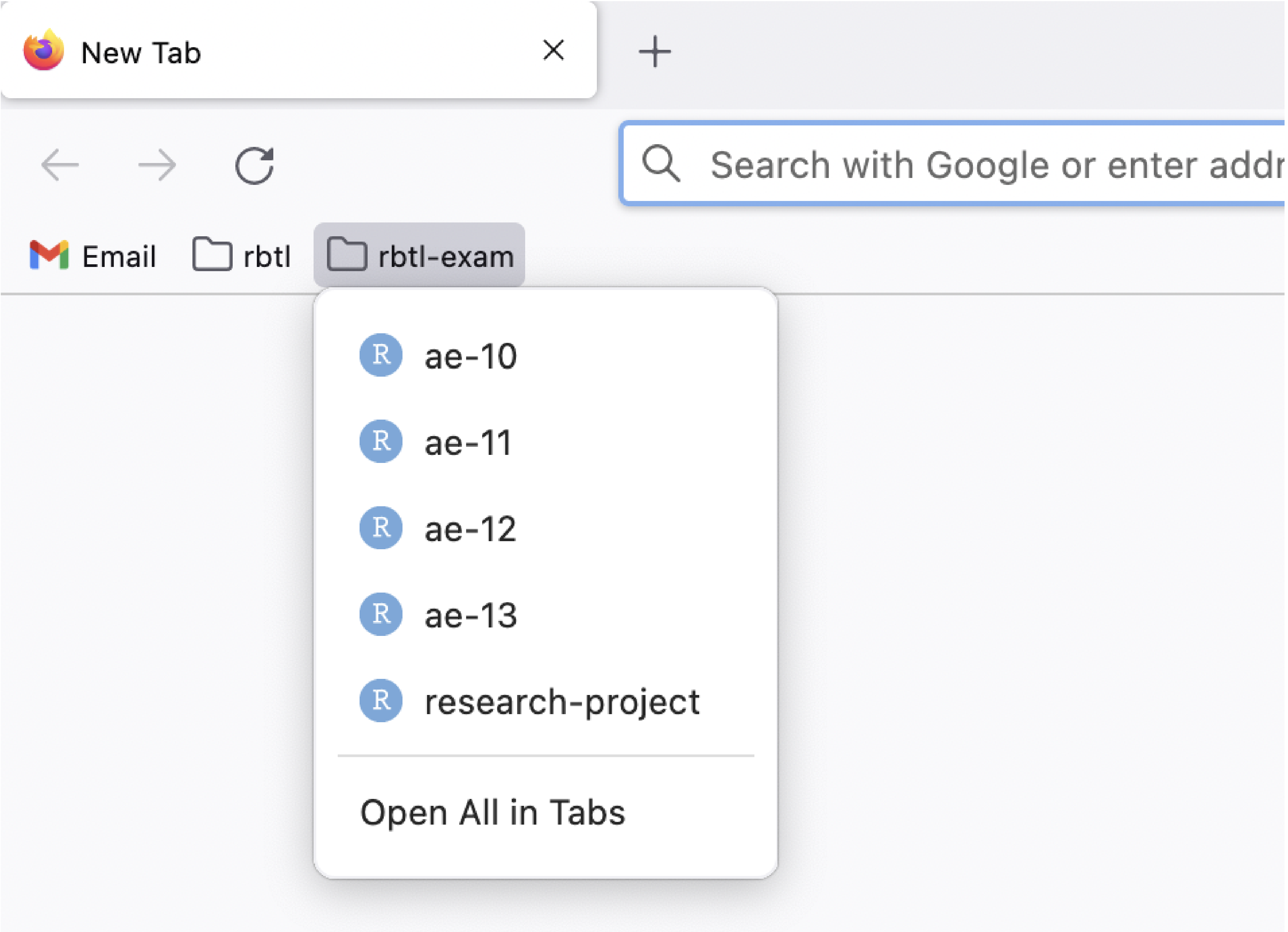
1. Part 1: Exam advice and practice
    - Programming exercise
2. Part 2: Data communication
    - Live Coding Exercise
3. Part 3: What comes next?
4. Part 4: Evaluation
5. Part 5: Individual work and questions

Learning Objectives

1. Learners can use ~~R Markdown~~ Quarto and GitHub to publish ~~their group project~~ a report.
2. Learners can use exported references from Zotero in Better BibTex Format to generate an automated reference list. Assignment 3 - YouTube Video - 13:58
3. Learners can cross-reference figures and tables within an R Markdown file.

Part 1: Exam advice and practice

Bookmarks



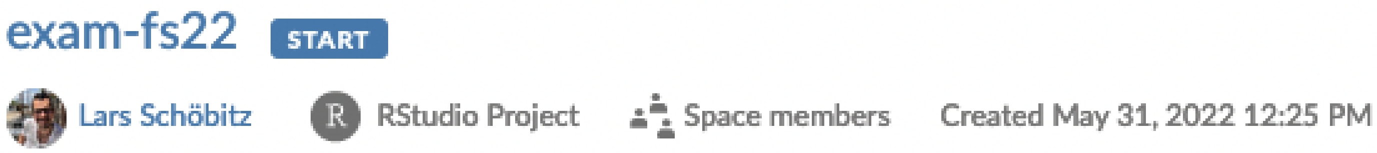
New Tab
Search with Google or enter addr
Email
rbtl
rbtl-exam
ae-10
ae-11
ae-12
ae-13
research-project
Open All in Tabs

Timing

- Room: IFW C42 (**not our lecture room**)
- Doors open: 14:30 (also on Zoom)
- Exam start: 15:15
- Exam end: 17:15

Workflow

- Open Projects page on RStudio Cloud rbtl-fs22 Workspace
- Look for ‘exam-fs22’ assignment
- Click ‘Start’



exam-fs22 START

Lars Schöbitz   RStudio Project   Space members   Created May 31, 2022 12:25 PM

Workflow

- Briefly read through each section at the beginning to see what’s coming
- 20 tasks coding tasks in four sections
- Points for each task are shown
- Work through the sections

```
.
├── README.md
├── data
│   └── what_a_waste
├── exam-fs22.Rproj
├── section-01.qmd
├── section-02.qmd
```

Workflow

- No cloning repositories in this exam
- No commits during the exam time (one commit after the exam time ends)
- No pushing to GitHub in this exam

Rules

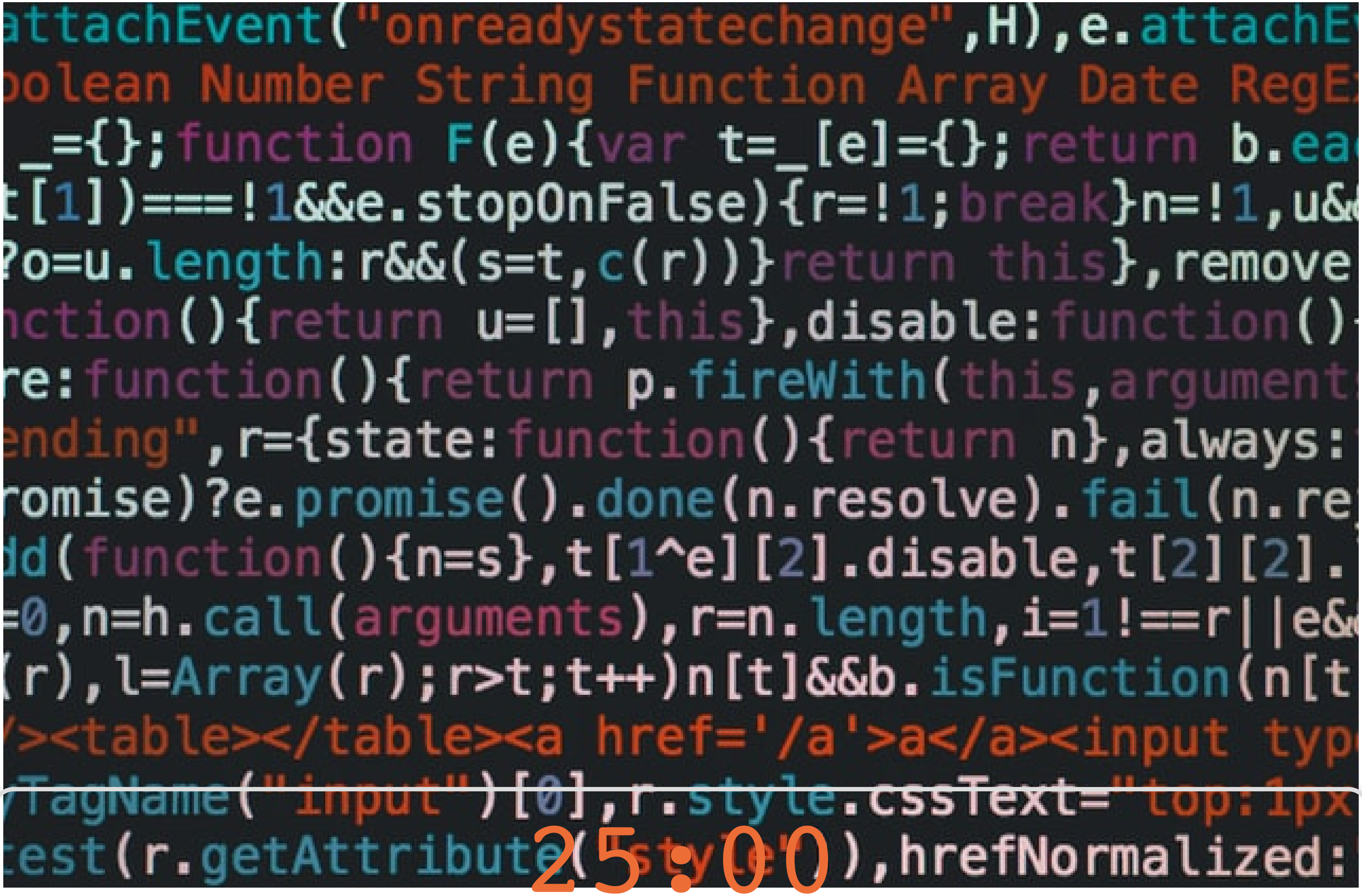
- Headphones (music) allowed
- Stick Notes or raised hand for support (no loud calling)
- No talking with each other
- Individual work (0 points of code is shared)

Practice Exam

ae-15-data-communication

1. Head over to the GitHub Organisation for the course.
2. Find the repo for week 15 that has your GitHub username.
3. Clone the repo with your username to the RStudio Cloud.
4. Open the file: `ae-15a-communicate.qmd`
5. Use your Sticky Notes to let me know when you are ready.

Work through the tasks



```
attachEvent("onreadystatechange",H),e.attachE
oolean Number String Function Array Date RegE
_={};function F(e){var t=_[e]={};return b.ea
t[1])===!1&&e.stopOnFalse){r=!1;break}n=!1,u&&
?o=u.length:r&&(s=t,c(r))}return this},remove
nction(){return u=[],this},disable:function()
re:function(){return p.fireWith(this,argument
ending",r={state:function(){return n},always:
romise)?e.promise().done(n.resolve).fail(n.re
dd(function(){n=s},t[1^e][2].disable,t[2][2].
=0,n=h.call(arguments),r=n.length,i=1!==r||e&&
(r),l=Array(r);r>t;t++)n[t]&&b.isFunction(n[t
/><table></table><a href='/a'>a</a><input typ
TagName("input")[0],r.style.cssText="top:1px
test(r.getAttribute("style")),hrefNormalized:
```

25:00

Image by: Markus Spiske

Step-wise points

```r
ggplot(data = waste_data_long_mean,
       mapping = aes(x = mean_percent,
                     y = waste_category,
                     fill = income_cat)) + # 1
  geom_col(position = position_dodge()) + # 1
  labs(title = "Waste Composition", # 0.5
       subtitle = "Mean percentages ...", # 0.5
       x = "mean (percent)", # 0.5
       y = "waste category", # 0.5
       fill = "Income category", # 0.5
       caption = "Data from: ...") + # 0.5
  scale_x_continuous(breaks = seq(0, 50, 5)) + # 1
  scale_fill_brewer(type = "qual", palette = 3) + # 1
  theme_minimal() + # 0.5
  theme(panel.grid.minor = element_blank(), # 0.5
        panel.grid.major.y = element_blank()) # 0.5
```

What to study?

- Practice writing code
- All tasks are coding tasks
- A small set of YAML header tasks
- Nothing Git or GitHub related

Exam data

What a Waste

- City level data
- Repos for each of you in our GitHub Organisation
- The repo starts with `rbtl-fs22-exam-data`
- Clone it to RStudio Cloud and have fun! :)

Part 2: Data communication

What is Quarto?

- Next generation version of R Markdown from RStudio
- Multi-language (Python, R, Julia, Observable)
- Authoring in plain text markdown or Jupyter notebooks

Editing documents

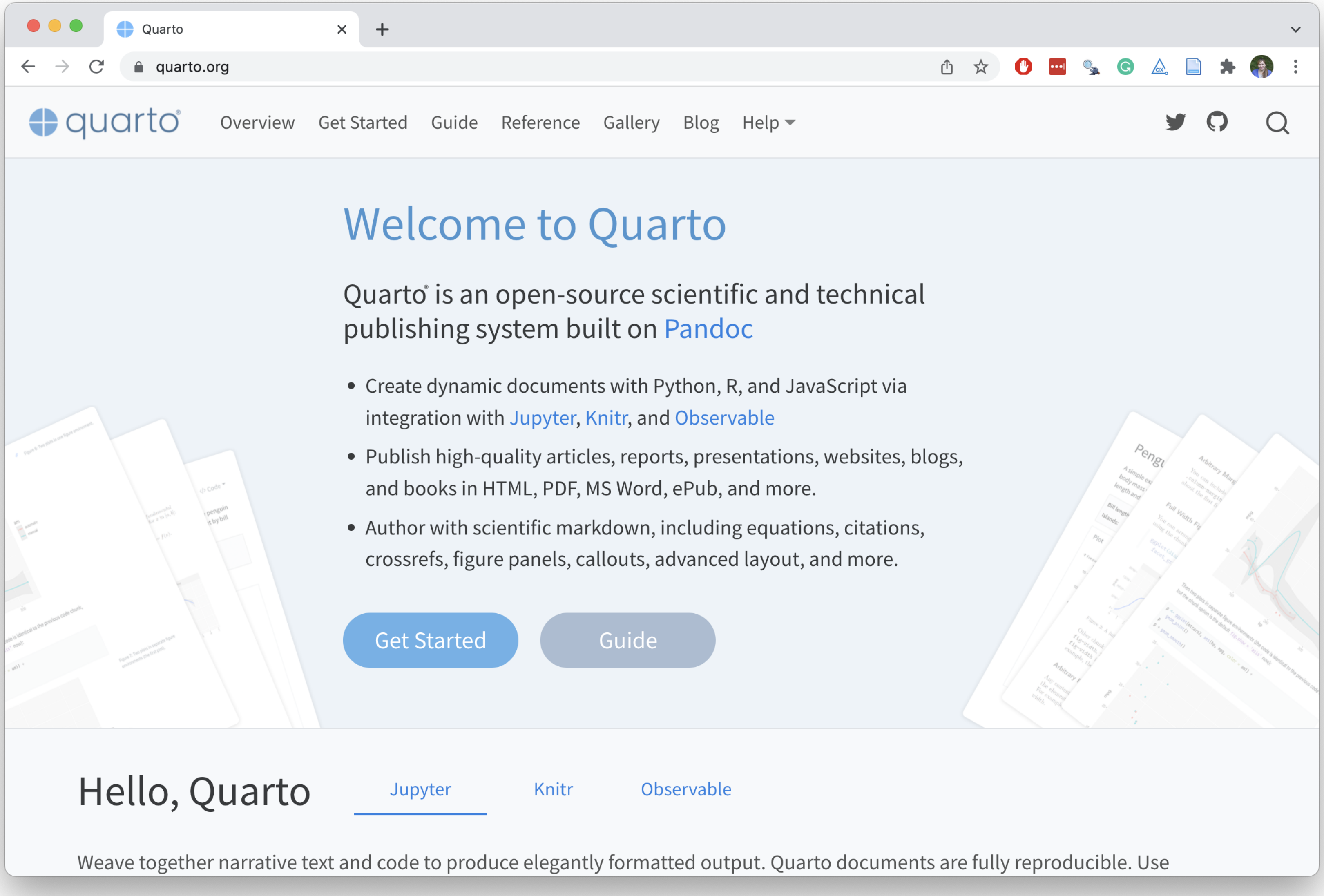
You’re not limited to RStudio for editing Quarto documents…

- JupyterLab
- VS Code
- Text Editors

Authoring

- Technical articles, reports, presentations, websites, blogs, and books in HTML, PDF, MS Word, ePub, and more.
- Author with scientific markdown, including equations, citations, crossrefs, figure panels, callouts, advanced layout, and more.

Documentation



Welcome to Quarto

Quarto® is an open-source scientific and technical publishing system built on Pandoc

- Create dynamic documents with Python, R, and JavaScript via integration with Jupyter, Knitr, and Observable
- Publish high-quality articles, reports, presentations, websites, blogs, and books in HTML, PDF, MS Word, ePub, and more.
- Author with scientific markdown, including equations, citations, crossrefs, figure panels, callouts, advanced layout, and more.

Hello, Quarto

Weave together narrative text and code to produce elegantly formatted output. Quarto documents are fully reproducible. Use

Break One

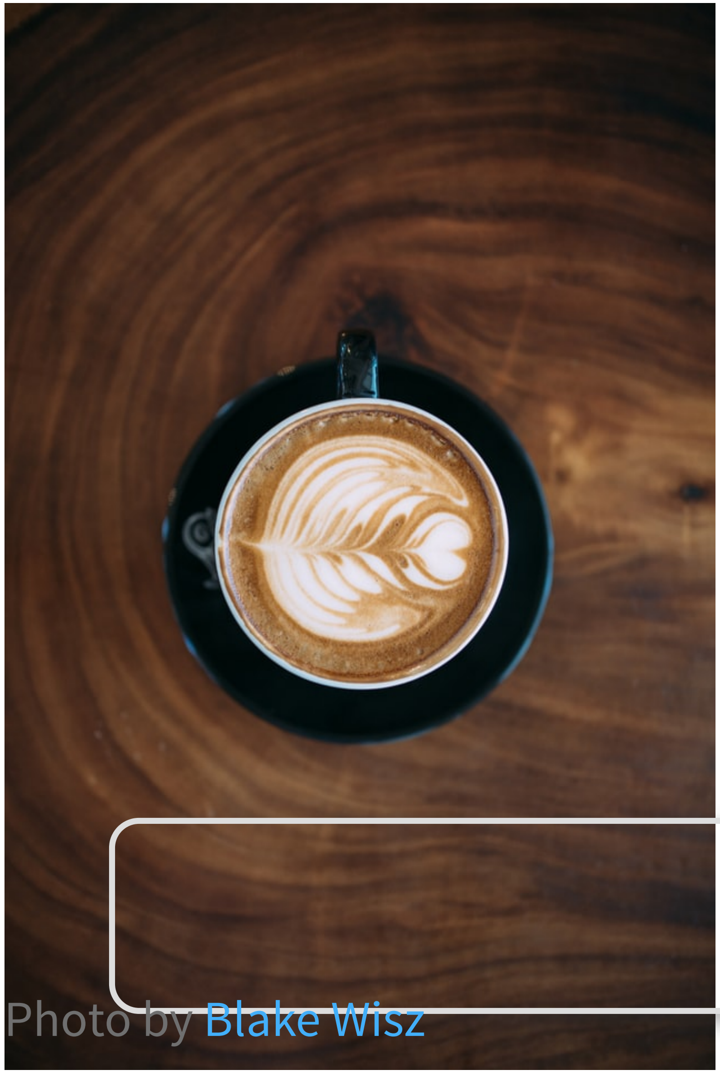


Photo by Blake Wisz

15:00

Live Coding Exercise

ae-15-data-communication

1. Back to `ae-15a-communicate.qmd`

Captions and cross-references

- no space between `{r}` and `#| tbl-cap: "A table"`
- spelling tbl not tab
- no spaces (use dashes in `label`)

See Table 1…

~~~r
```{r}
#| tbl-cap: "A table"
#| label: tbl-simple-table

tibble(
  id = c(1, 2, 3),
  name = c("X", "Y", "Z")
) %>%
  knitr::kable()
~~~
```

Table 1: A table

id	name
```

| id | name |
|---:|:-----|
| 1 | X |
| 2 | Y |
| 3 | Z |

# Part 3: What comes next?

# Research Project Report

- Due date: **9th of June 23:59**
- No commits after that point will be accepted

# rbtl community meetup events

- every two months
- ~1 hour code-along, followed by Apéro
- in-person and remote on Zoom
- first topic suggestions:
  - Get out of the Cloud!
  - Dashboards

# Break Two

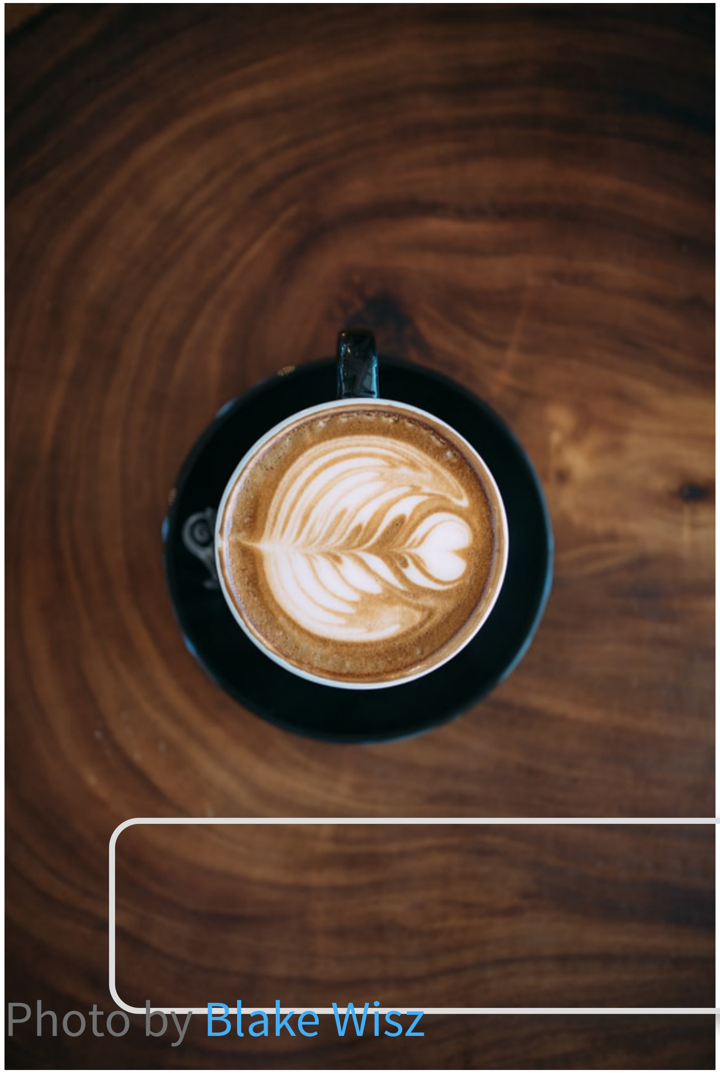


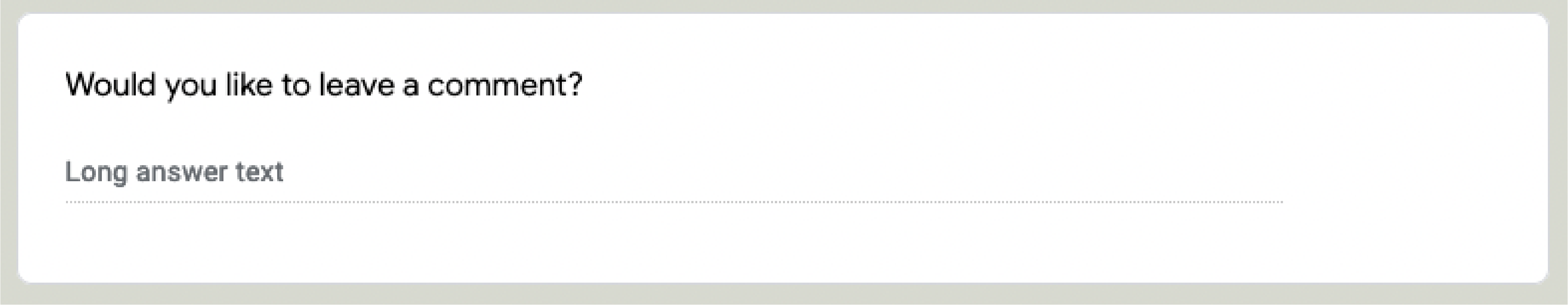
Photo by Blake Wisz

10:00

# Part 4: Evaluation & Reflection

# Write up some notes

- What are the three most useful things you learned?
- Which topic was especially hard to follow?
- What did you miss?



Would you like to leave a comment?

Long answer text

# rbtl evaluation

- 5 mins
- anonymous
- after each lecture

kutt.it/rbtl-eval

# ETH evaluation

- You received an Email from ETH LET
- Please take 30 minutes now to complete the survey
- If you have completed the survey already, then you can use your time freely now

# Part 5: Individual work and questions

# Thanks! 🌻

Slides created via revealjs and Quarto: https://quarto.org/docs/presentations/revealjs/ Access slides as PDF on GitHub