

Lecture on Quarto

Introduction

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Preliminary Instruction

Please complete the following steps prior to setup your PC.

- Download and install the latest versions of R, RStudio, and Quarto:
 - R 4.2 or above: <https://cran.r-project.org>
 - RStudio 2023.03.1+446 or above: <https://posit.co/download/rstudio-desktop>
 - Quarto 1.3.354 or above: <https://quarto.org/docs/get-started>
- Install the following packages:

```
pkg_list <- c(  
  "tidyverse", "gt", "ggthemes", "palmerpenguins", "quarto", "here"  
)  
install.packages(pkg_list)
```

Installing packages into '/cloud/lib/x86_64-pc-linux-gnu-library/4.4'
(as 'lib' is unspecified)

- Download `exercises.zip` at <https://mine.quarto.pub/quarto-monash/exercises.zip> and unzip it on your Desktop or somewhere you can easily locate on your computer. Then, double click on `exercises.Rproj` to open the RStudio Project.

Credits

This lecture is based on the following materials:

- <https://mine.quarto.pub/cincinnati-asa/2-documents-slides/2-documents-slides.html#/title-slide>
- <https://mine.quarto.pub/quarto-monash/1-hello-quarto/>

What is Quarto?

Quarto ...

- is a new, open-source, scientific, and technical publishing system
- aims to make the process of creating and collaborating dramatically better
- enables you to weave together content and executable code into a finished document.
- To learn more about Quarto see <https://quarto.org>.

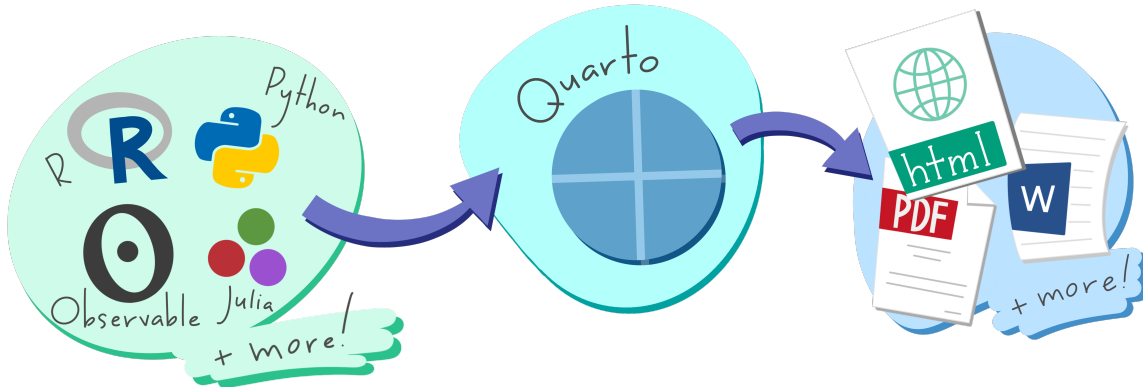


Figure 1: Artwork from “Hello, Quarto” keynote by Julia Lowndes and Mine Çetinkaya-Rundel, presented at RStudio Conference 2022. Illustrated by Allison Horst.

With Quarto you can weave together narrative text and code to produce elegantly formatted output as documents, web pages, blog posts, books and more.

Quarto is just like R Markdown, but there’s more to it... Quarto **unifies** + **extends** the R Markdown ecosystem

- Consistent implementation of attractive and handy features across outputs: tabsets, code-folding, syntax highlighting, etc.
- More accessible defaults as well as better support for accessibility
- Guardrails, particularly helpful for new learners: YAML completion, informative syntax errors, etc.
- Support for other languages like Python, Julia, Observable, and more via Jupyter engine for executable code chunks.

Your Turn

Open `hello-penguins.qmd` in RStudio and with the visual editor.

Render the document. Update your name and re-render. Inspect components of the document and make one more update and re-render.

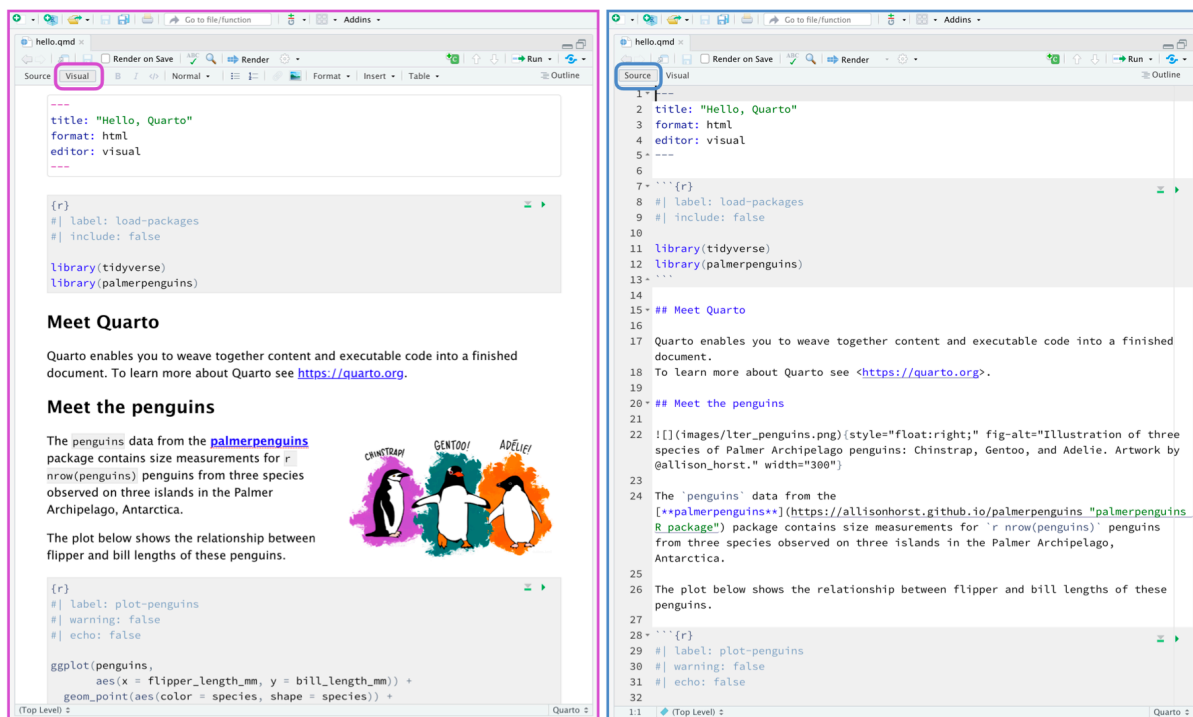
Compare notes with neighbors about updates you've made and note any aspects of the document that are not clear after the tour and your first interaction with it.

Navigating within RStudio

Revisit: What is Quarto?

Quarto is a command line interface (CLI) that renders plain text formats (.qmd, .rmd, .md) OR mixed formats (.ipynb/Jupyter notebook) into static PDF/Word/HTML reports, books, websites, presentations and more.

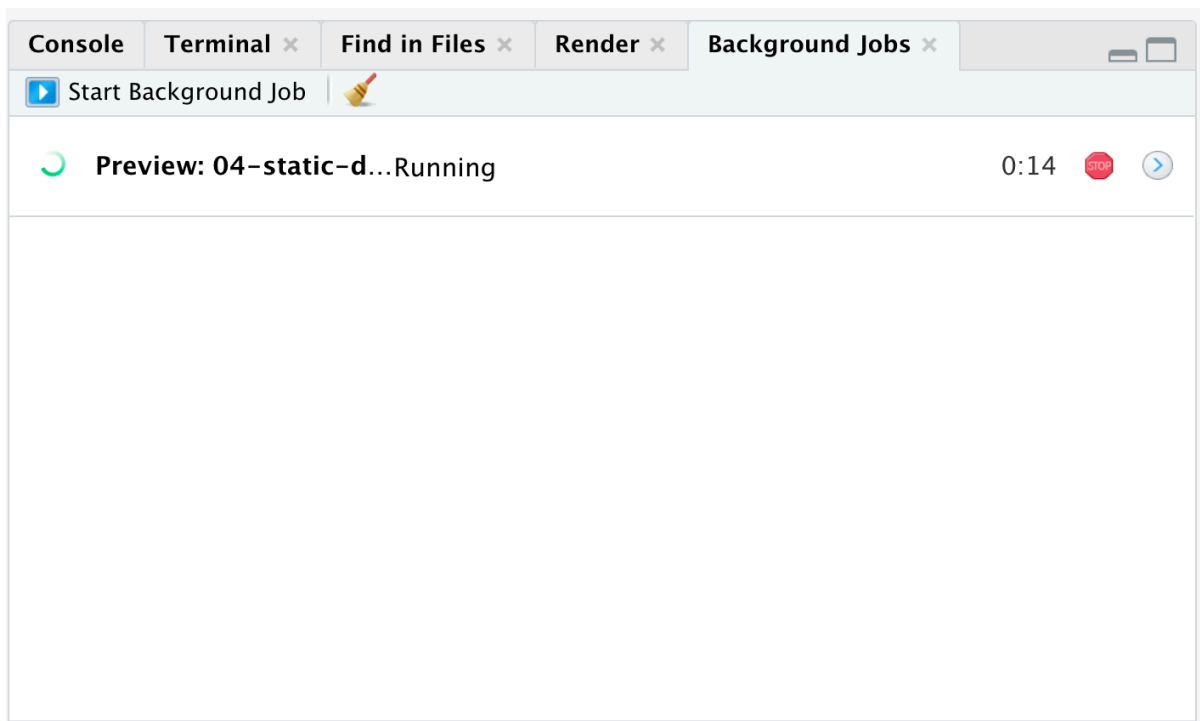
You can **write** in two modes: visual (on the left) and source (on the right).



Quarto workflow

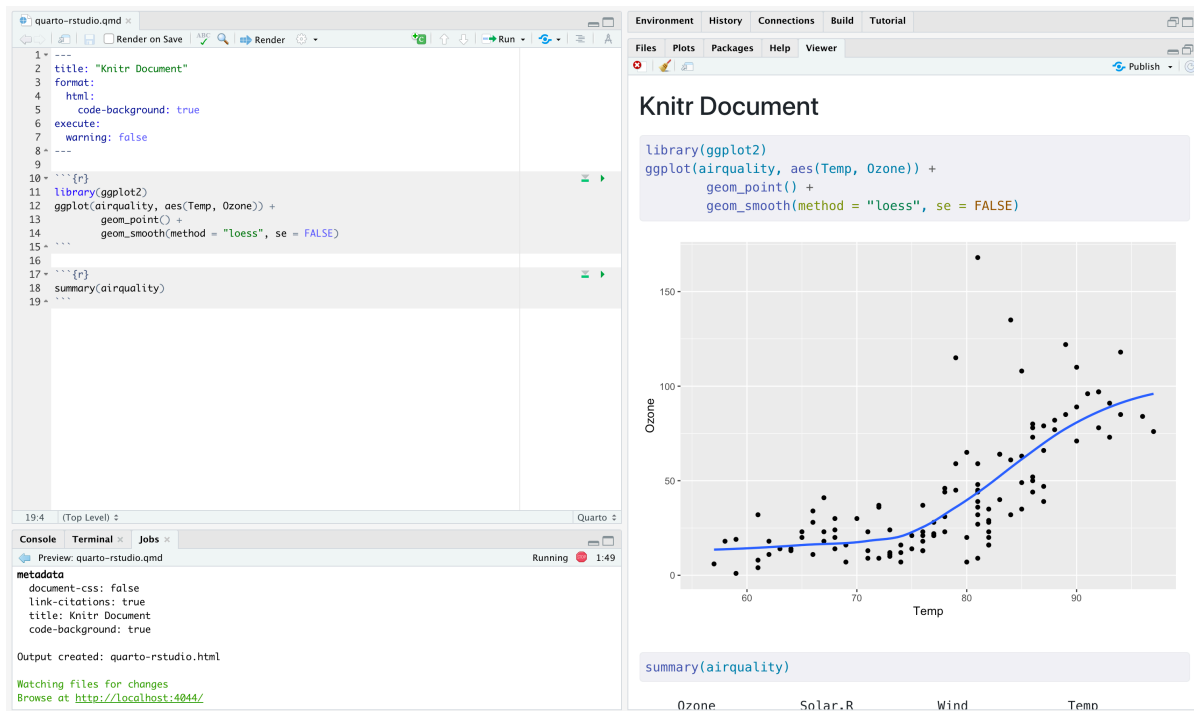
Writing is part of the workflow, but the main step is **rendering**.

Rendering a Quarto file in RStudio via the Render button calls `quarto render` in a **background job**, preventing Quarto rendering from cluttering up the R console, and gives you an easy way to stop:



Rendering in various ways and formats

1. Option 1: In RStudio as a background job, and preview the output in the viewer panel or in browser.



2. Option 2: In the Terminal via `quarto render`:

```
quarto render document.qmd # defaults to html
quarto render document.qmd --to pdf
quarto render document.qmd --to docx
```

3. Option 3: In the R console, via the `quarto` R package:

```
library(quarto)

quarto_render("document.qmd") # defaults to html
quarto_render("document.qmd", output_format = "pdf")
```

Quarto comes “**batteries included**” straight out of the box

- HTML reports and websites

- PDF reports
- MS Office (Word, Powerpoint)
- Presentations (Powerpoint, Beamer, **revealjs**)

Many Quarto formats

Feature	R Markdown	Quarto
Basic	html_document	html
Formats	pdf_document	pdf
	word_document	docx
Beamer	beamer_presentation	beamer
PowerPoint	powerpoint_presentation	pptx
HTML	xaringan	revealjs
Slides	ioslides	
	revealjs	
Advanced	tuftes	Quarto Article Layout
Layout	distill	
Cross	html_document2	Quarto Crossrefs
Refer-	pdf_document2	
ences	word_document2	
Websites	blogdown	Quarto Websites
& Blogs	distill	Quarto Blogs
Books	bookdown	Quarto Books
Interactivity	Shiny Documents	Quarto Interactive Documents
Journal	articles	Journal Articles
Articles		
Dashboards	flexdashboard	Coming soon!

Your turn

In RStudio, go to File > New File > Quarto document to create a Quarto document with HTML output. Render the document, which will ask you to give it a name – you can use `my-first-document.qmd`.

Use the visual editor for the next steps.

- Add a title and your name as the author.
- Create two sections, one with fact you want to learn and your favorite thing about R.
- **Stretch goal:**
 - Add a Table of Contents (hint: `toc`).