Structure of Quarto notebooks

Hélène Langet   Zhihan Zhu

2025-02-04

Table of contents

1 Learning objectives

- Understand the structure of the Quarto notebook.
- Understand the difference and relationships between notebooks and rendered documents.

2 Quarto notebooks vs. rendered documents

A Quarto notebook and its corresponding rendered document(s) serve different purposes but are closely connected.

- The **Quarto notebook** is the **source document** (`.Qmd`) where content is edited.
- The **rendered document** is the **output** generated from the Quarto notebook.

Common rendered document formats include: - HTML for interactive web-based reports. - PDF for professional and printable documents. - Word for editable text-based outputs.

A single Quarto notebook can be rendered into multiple formats. While there may be some limitations when targeting different formats, this flexibility is one of Quarto's core strengths, making it a powerful tool for creating versatile and reusable documents.
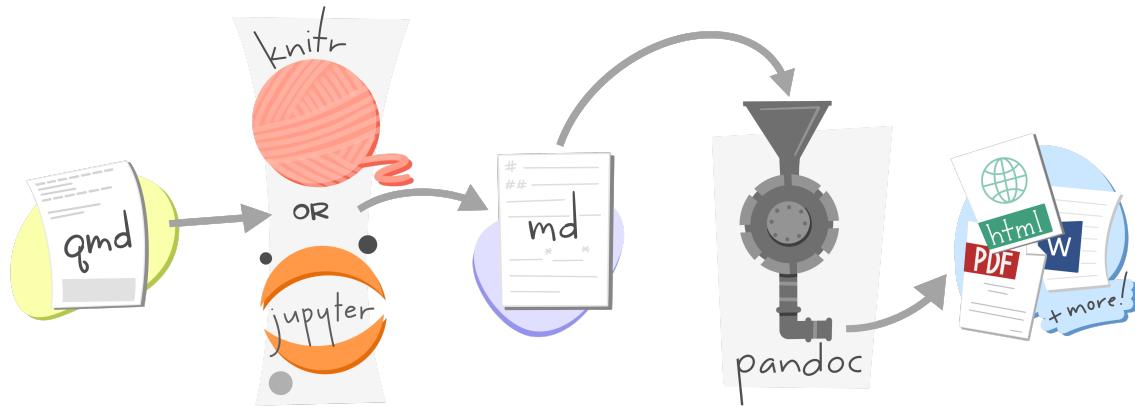
Figure 1: Process of transforming a Quarto document from its source format to the final rendered output. Artwork by Allison Horst.

3 Structure of a Quarto notebook (Qmd file)

There are three basic components to a Quarto notebook:

- a unique (YAML) header,
- (markdown) text areas, and
- code areas (and corresponding output).

3.1 Header

At the top of the Quarto notebook, you will see something that looks as follows:
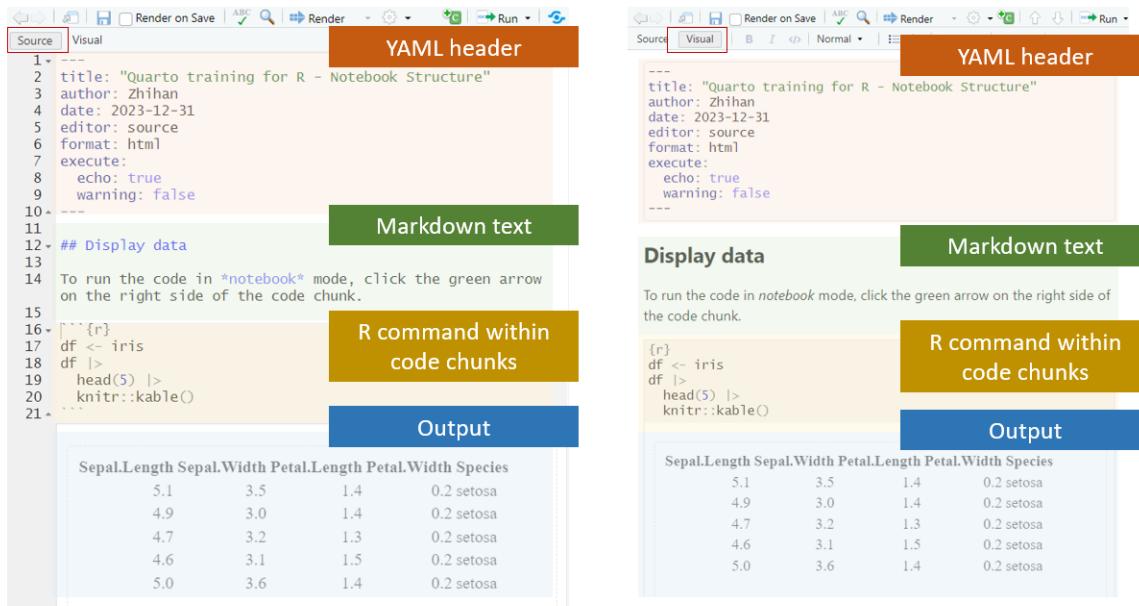
Figure 2

This section is called the **YAML header** and it contains commands and metadata about the Quarto notebook. There is only one unique header in a Quarto notebook and it is always surrounded by `---` lines on the top and bottom of the section.

YAML is a data format that has the form of a **key: value pairing** to store data. The keys in this case are *title* and *format*; they are are some of many settings that Quarto has available to use. The values are those that follow the key (e.g., "Untitled" for *title*). These key data are used to store the settings that Quarto will use to render the output document.

More HTML options: HTML Options

3.2 Text areas

In white background areas, you find **Markdown text** which will appear as regular text in the rendered document.

```
12 ▾ ## Display data
13
14   To run the code in *notebook* mode, click the green arrow
     on the right side of the code chunk.
15
```

Markdown is actually a markup language, which can have formatting such as headings, italics, bold, numbers, and bullets.

3.3 Code areas

Code chunks, typically shown within gray backgrounds, execute commands in Quarto.

```
16 ▾ ```{r}
17   df <- iris
18   df |>
19     head(5) |>
20     knitr::kable()
21 ▴ ```
```

In the example provided, R code is being run and identified with the **{r}** tag. These commands may handle data processing, cleaning, or the generation of visual outputs that are integrated into the final document.

4 Structure of a rendered document

The rendered document translates the notebook's structure, content, and code outputs into a polished, static format for presentation or sharing.

5 References

- [The Epidemiologist R Handbook](#)
- [Analytically reproducible documents](#)