

Structure of Quarto notebooks

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1 Learning objectives

1. Understand the structure of the Quarto notebook
2. 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** where content is defined.
- 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.

3 Structure of a Quarto notebook

There are three basic components to a Quarto notebook: a header, markdown text and code.

The image shows two side-by-side screenshots of a Quarto notebook editor. The left screenshot is in 'Source' view, showing the raw code. The right screenshot is in 'Visual' view, showing the rendered output. Labels with arrows point to specific components in both views:

- YAML header** (orange label): Points to the header section in both views.
- Markdown text** (green label): Points to the text section in both views.
- R command within code chunks** (yellow label): Points to the R code chunk in both views.
- Output** (blue label): Points to the rendered output of the R code chunk in both views.

Source View (Left):

```

1 ---
2 title: "Quarto training for R - Notebook Structure"
3 author: Zhihan
4 date: 2023-12-31
5 editor: source
6 format: html
7 execute:
8   echo: true
9   warning: false
10 ---
11
12 ## Display data
13
14 To run the code in *notebook* mode, click the green arrow
15 on the right side of the code chunk.
16
17 {r}
18 df <- iris
19 df |>
20   head(5) |>
21   knitr::kable()

```

Visual View (Right):

title: "Quarto training for R - Notebook Structure"
author: Zhihan
date: 2023-12-31
editor: source
format: html
execute:
 echo: true
 warning: false

Display data

To run the code in *notebook* mode, click the green arrow on the right side of the code chunk.

```

{r}
df <- iris
df |>
  head(5) |>
  knitr::kable()

```

Sepal.Length	Sepal.Width	Petal.Length	Petal.Width	Species
5.1	3.5	1.4	0.2	setosa
4.9	3.0	1.4	0.2	setosa
4.7	3.2	1.3	0.2	setosa
4.6	3.1	1.5	0.2	setosa
5.0	3.6	1.4	0.2	setosa

3.1 Header

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

```

1 ---
2 title: "Quarto training for R - Notebook Structure"
3 author: Zhihan
4 date: 2023-12-31
5 editor: source
6 format: html
7 execute:
8   echo: true
9   warning: false
10 ---

```

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 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 Markdown text

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

In white background areas, any text will appear as regular text in the final report. This is actually a markup language, which can have formatting such as headings, italics, bold, numbers, and bullets.

3.3 Code

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

Code chunks, typically shown within gray backgrounds, execute commands in Quarto. In the example provided, R code is being run within these chunks. 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.

Header

Quarto training for R - Notebook Structure

AUTHOR

Zhihan

PUBLISHED

December 31, 2023

Text

Display data

To run the code in *notebook* mode, click the green arrow on the right side of the code chunk.

```
df <- iris
df |>
  head(5) |>
  knitr::kable()
```

R command within code chunks

Output

Sepal.Length	Sepal.Width	Petal.Length	Petal.Width	Species
5.1	3.5	1.4	0.2	setosa
4.9	3.0	1.4	0.2	setosa
4.7	3.2	1.3	0.2	setosa
4.6	3.1	1.5	0.2	setosa
5.0	3.6	1.4	0.2	setosa

5 References

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

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