

1. What is Quarto?

A publishing system for reproducible documents

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Quarto is a powerful open-source publishing system that allows you to combine text, code, and results into a single document. If you have used R Markdown before, you can think of Quarto as its successor — but Quarto is not limited to R. It works with Python, Julia, and Observable as well.

The core idea

The fundamental concept is simple: you write a single source file (a `.qmd` file) that contains both your prose and your code. When you “render” this file, Quarto executes the code, captures the output, and combines everything into a polished document.

This approach has several advantages:

- **Reproducibility:** Anyone with your `.qmd` file can reproduce your exact results
- **Efficiency:** Update your data, re-render, and all tables and figures update automatically
- **Consistency:** No more copying and pasting results into Word documents

Output formats

Quarto can produce many different output formats from the same source file:

Format	Use case	Quarto support
HTML	Websites, interactive reports	Excellent
PDF	Print-ready documents	Very good (via Typst or LaTeX)
Word (.docx)	Reports for collaborators	Good (some features need extra care)
Reveal.js	Presentations	Excellent
PowerPoint	Presentations	Basic

This section focuses on **Word output** because it is the most common format for sharing reports in the life sciences. However, most of what you learn here applies to other formats as well.

Note

Word export works well for most use cases, but it requires a bit more attention to formatting details compared to HTML. We will cover the necessary techniques in the following chapters.

This website is built with Quarto

The website you are reading right now was created entirely with Quarto. Each chapter is a `.qmd` file, and the entire site is rendered and deployed automatically. This demonstrates how versatile Quarto can be — from single reports to complete websites.

Quarto vs. R Markdown

If you have used R Markdown before, here is how Quarto compares:

Aspect	R Markdown	Quarto
File extension	<code>.Rmd</code>	<code>.qmd</code>
Languages	Primarily R	R, Python, Julia, Observable
Chunk options	In chunk header <code>{r, echo=FALSE}</code>	YAML-style <code># echo: false</code>
Maintained by	RStudio/Posit	Quarto project (open source)
Future development	Maintenance mode	Active development

The good news: if you know R Markdown, you already know most of Quarto. The syntax is very similar, and Quarto can even render existing `.Rmd` files.

Resources

Here are the official resources you should bookmark:

- quarto.org — Official documentation
- Quarto Gallery — Examples of what is possible
- Awesome Quarto — Community-curated list of resources

In the next chapter, we will create our first Quarto document and render it to Word.

Bibliography