

Tutorial: How to make a pdf

How to Make a pdf

This document, which is a pdf, shows you how to make a pdf that you can submit for your tutorial homework.

We use a built-in R package called quarto. As the development team tells us “Quarto enables you to weave together content and executable code into a finished document. To learn more about Quarto see <https://quarto.org>.”

What Quarto Can Do

In short, quarto documents have three types of text. One is regular document text, like what you are reading right now.

The second is code, which can execute or not. To type code, you preface with three single back quotes, followed by `{r}`. On my computer, the back quote is to the left of the 1 key. You close the code block with three single back quotes.

The third type of text is code output. Quarto also shows code output. For example, if you told R to execute `1+1`, you could see both the code (shaded grey) and the output.

```
1 + 1
```

```
[1] 2
```

How to Get Started

Open RStudio. Go to File → New File → Quarto document. A pop-up will open up. Change the options so it looks like my example below:

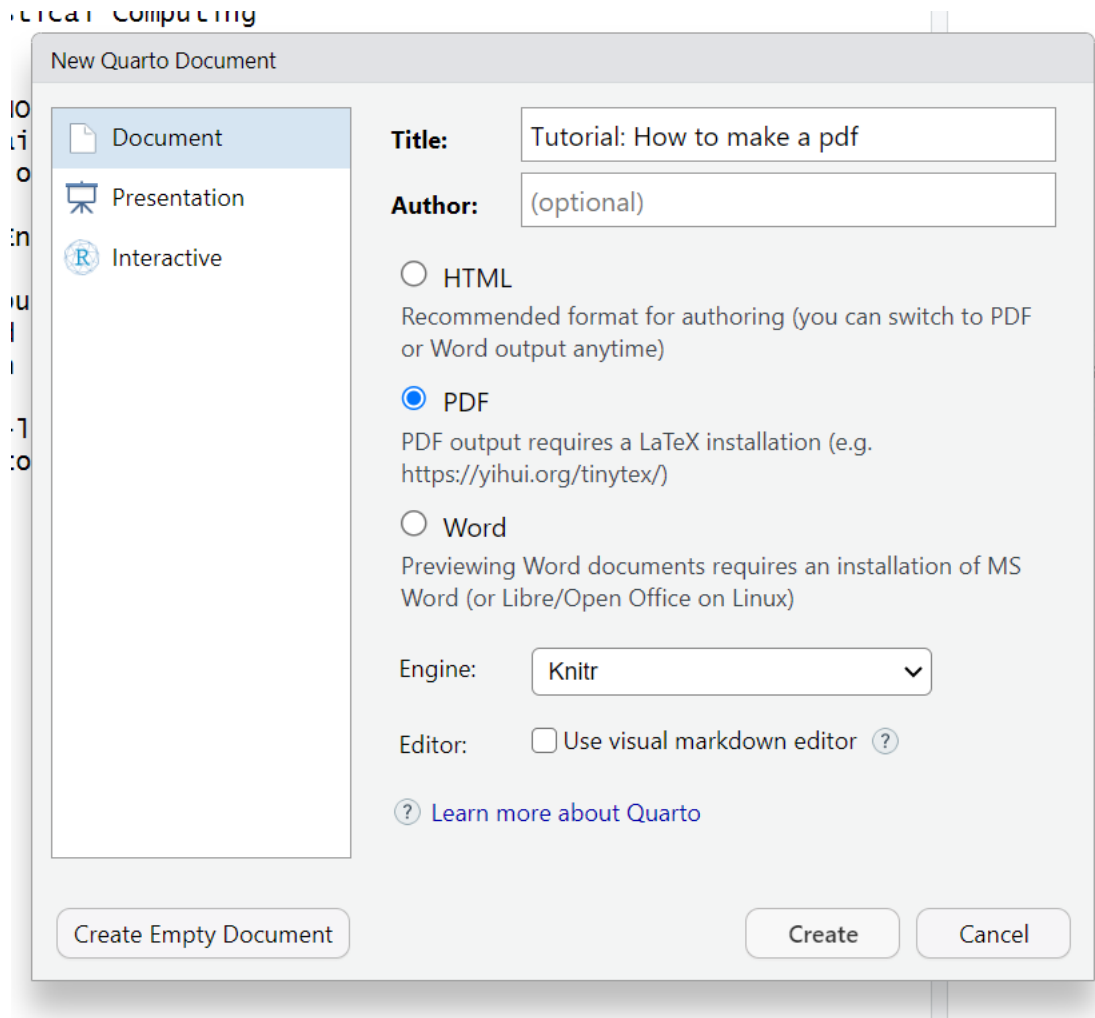


Figure 1: First choices for quarto doc

The key changes I made were

- changed the title, but this doesn't really matter
- chose pdf for the output
- un-checked the visual markdown editor

You can try the visual markdown editor if you like. I found it kind of buggy and annoying.

When you click “Create”, a document will open in RStudio that has a header at the top:

```
---  
title: "Tutorial: How to make a pdf"  
format: pdf  
---
```

Quarto auto-fills the `title` portion with the title you typed before. The format you chose (pdf) is also auto-filled. Quarto can also make Word or html (webpage) documents. I make tutorials for this class using quarto, and I make the slides for the R parts of this course using quarto.

For now, I encourage you to figure out how the basics work. After that, please feel free to explore.

After the header above, the auto-created document has text with examples of how to make inputs for a document. We’ll go through a few key parts in the next sections. When you make your actual document, you can delete these parts.

Before we continue, please note that what you’re typing is not the final document – it is instructions for quarto in how to process the final document. So after you finish typing, you will “render” a pdf. More on that in the final step.

Headers

It is frequently useful to divide a document with headers. In this quarto document, I am using second level headers that I code like this

```
## Headers
```

You can go larger with first level headers that start with just one #, or third, fourth or fifth level headers that have more #s.

Code and Results

For your immediate purposes, the most useful thing quarto can do is make a pdf of code and results.

To show code and results, you type code in a “wrapper” of three backticks and a `{r}` and closing with three backticks. Inside this wrapper, you write the code you want to show or execute.

For your purposes in turning in tutorials, you mostly want to show and execute code. Do that this way:

```
{r}
#| eval: true
#| echo: true
1 + 1
```

The two first lines (beginning with #|) are instructions for R on what to do with the code you've given. The #| `eval: true` means “write the code to the output.” In contrast, #| `echo: false` means “do not write the code to the output.”

The second option – #| `eval: true` – means evaluate the code. If I instead write #| `eval: false`, R will not evaluate the code. Imagine that `1 + 1` is the code you've written

For example, if you set

- `eval: true` and `echo: true`: you see the code and output

```
1 + 1
```

```
[1] 2
```

- `eval: true` and `echo: false`: you see the output but no code

```
[1] 2
```

- `eval: false` and `echo: true`: you see the code but no output

```
1 + 1
```

- `eval: false` and `echo: false`: you see nothing. Not sure why you'd ever want to do this.

How to generate a pdf

When you've written your quarto document to your satisfaction, press “render” on the top bar.



You'll get a lot of output in the “background jobs” window, and at some point a pdf should pop up in your default pdf viewer. If that didn't happen, take a look at the background jobs window to look for an error message.

When I started rendering for the first time on a new computer, R kept asking me about installing a whole bunch of packages, and each package came with its own pop-up window. You need to say yes to all of these for the document to render.

Using Quarto for Tutorials

I strongly, emphatically recommend that you **do not write your tutorial code in quarto**. Write your tutorial code in a R program. When the whole thing is working to your satisfaction, stick it in a quarto document.

This advice comes from my hard-won experience writing tutorials for this class. It is hard to de-bug a quarto doc, and it can be hard to separate R coding issues from quarto issues.

Resources for more in quarto

There is [extensive quarto documentation](#) online.