Introduction to R & RStudio

Week 1 - Lecture 4 & Lab 0

Hello R, This is Me!

Today...

In this lecture, we will…

- learn what is R, RStudio and Quarto Document
- create A STAT-218 Folder in Your Desktop
- create A New Quarto Document
  - save this document to your STAT-218 Folder
- fill out the document
  - have first coding experience by
    - saying Hello World!
    - creating an Object
    - running some functions
- learn How to Get Help
- render The First PDF

R and RStudio

Hadley Wickham and others at RStudio, CC BY-SA 4.0, via Wikimedia Commons

- **R** is a computer language.
- **R** is an environment for statistical computing and graphics.
  - **R** provides a wide variety of statistical and graphical techniques.
- **R** is a free open source software

RStudio, Inc., Public domain, via Wikimedia Commons

- **RStudio** is an *integrated development environment* (IDE) for **R**
- **RStudio** has four main panes each in a quadrant of your screen

What Can We Do with RStudio?

- Everything we need to do for this class and beyond!

What is Quarto Document?

Quarto is…

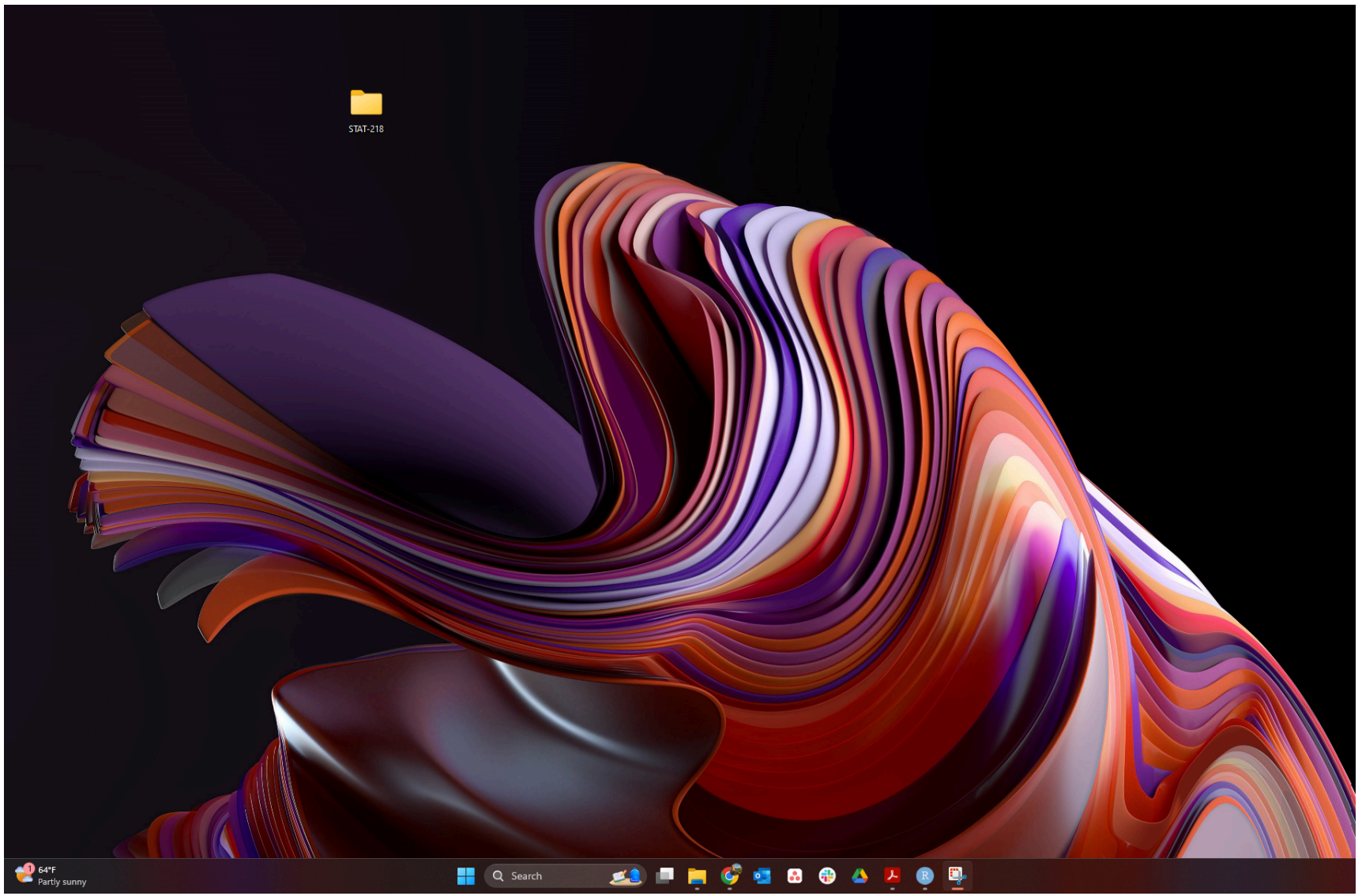
- an open-source scientific and technical publishing system
- a multi-language, next-generation version of R Markdown.
- enabling you to combine code and text to create rich outputs, like reports and presentations. *(like an advanced version of a word processing tool)*

Important

- R is the programming language for statistical computing
- RStudio is the IDE that facilitates R programming
- Quarto document is a document type that combines text and code
- In short, we will create Quarto documents in RStudio and we will combine text and R codes in that Quarto document to create our lab reports.

Today’s Tasks

Task 1: Create A Folder

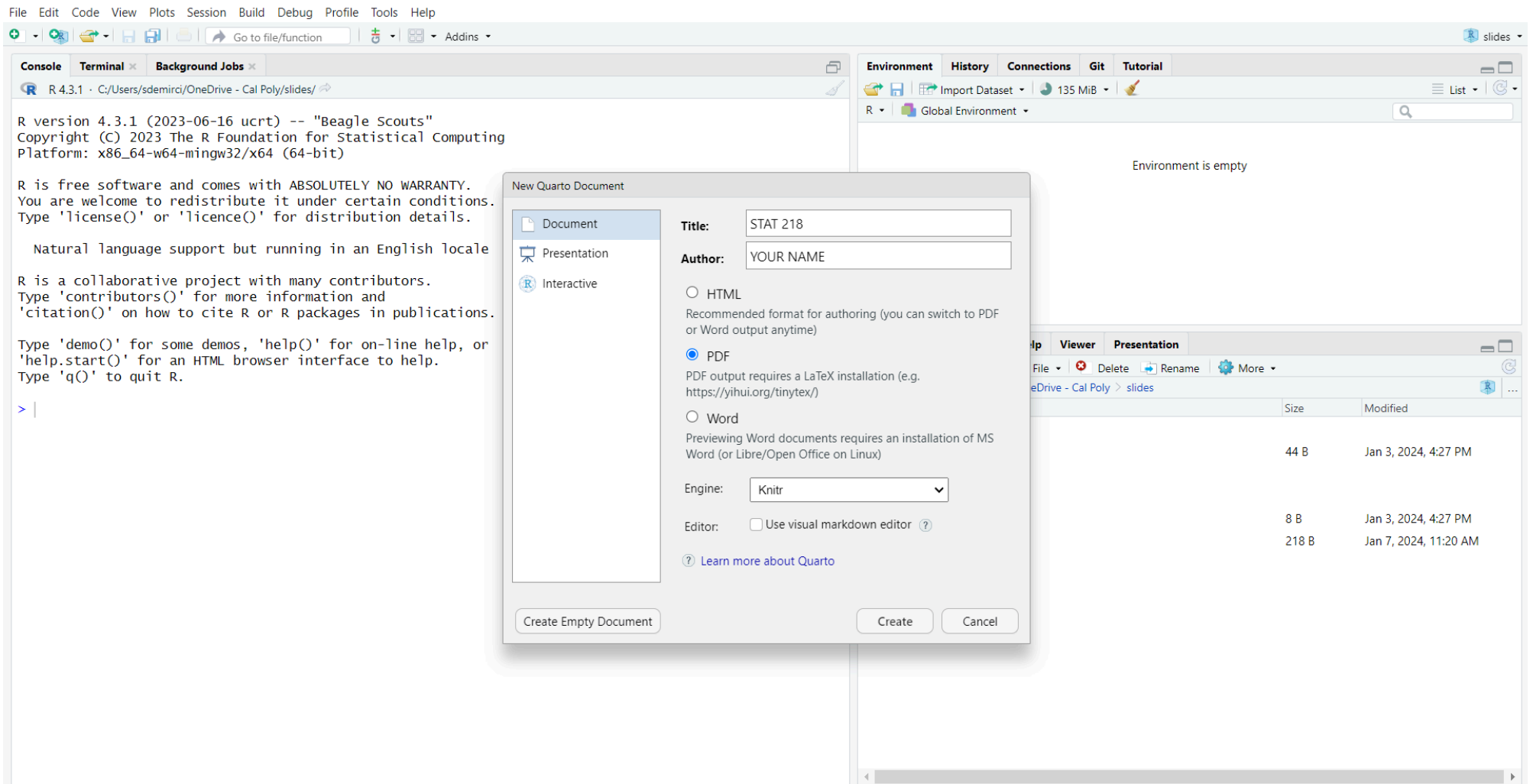


Task 2: Creating a Quarto Document

> **Tip**
>
> You can create your own Quarto document by clicking `File > New File > Quarto Document`
>
> Let's try to create our first Quarto document!

WARNING! I use Windows, you may use Mac or Linux or online version of R. Thus, your screen might look a bit different than mine.

Task 2: Creating and Saving a Quarto Document

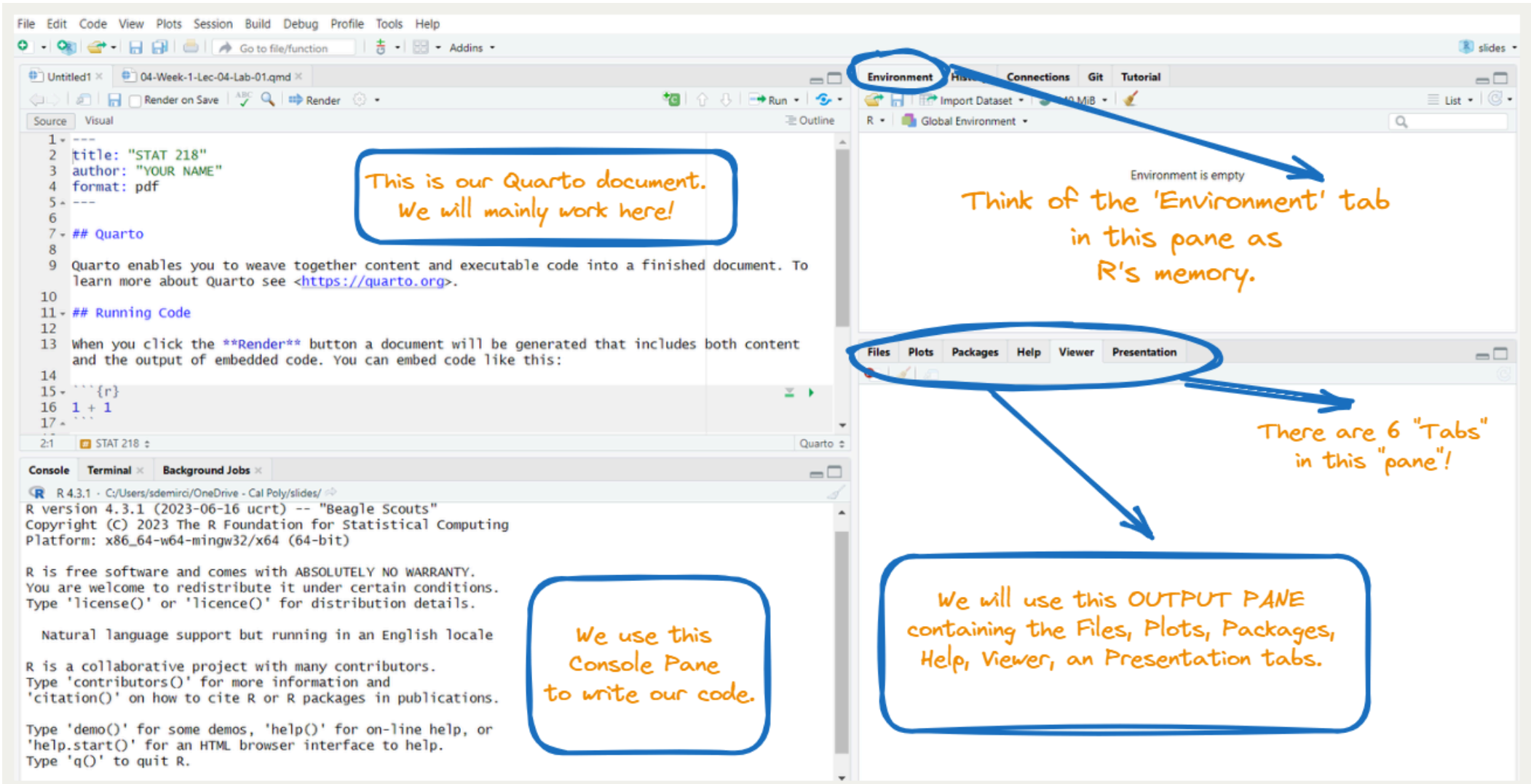


How to Create a New Quarto Document

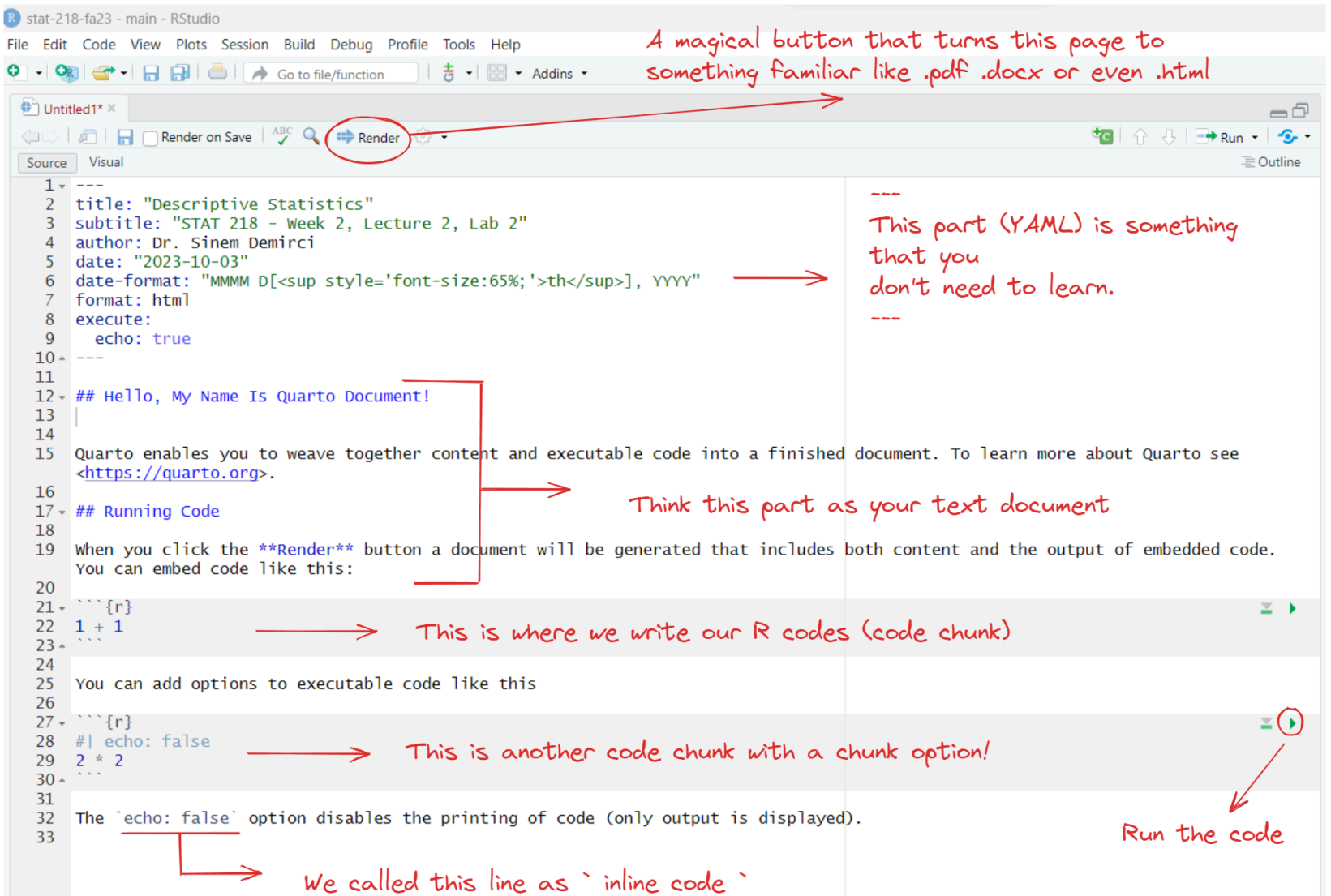
Task 2: Creating and Saving a Quarto Document

- You can save your own Quarto document by clicking
  - `File > Save`
- After that, YOU NEED TO FIND YOUR FOLDER TO SAVE YOUR FILE.

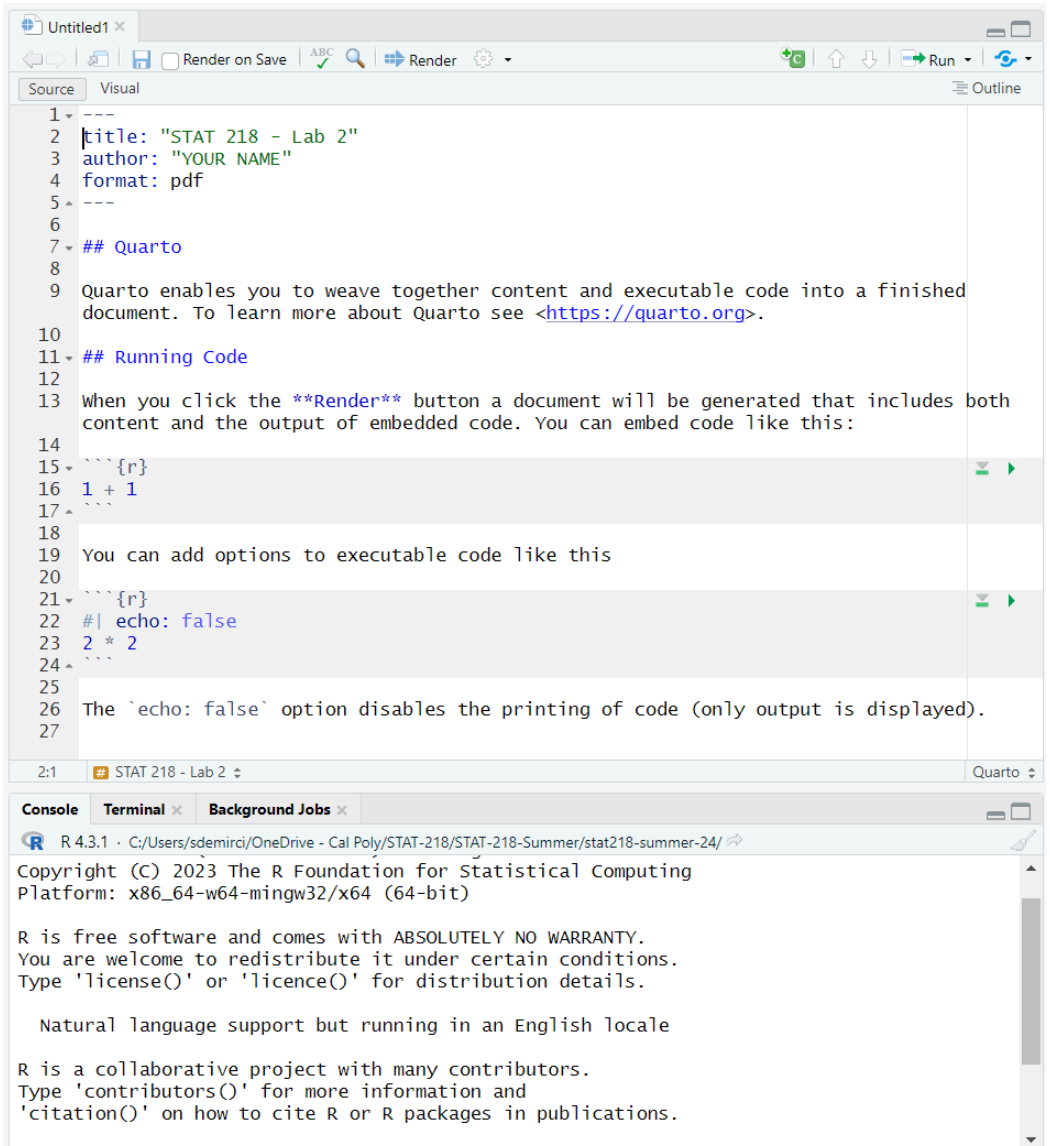
Panes in RStudio



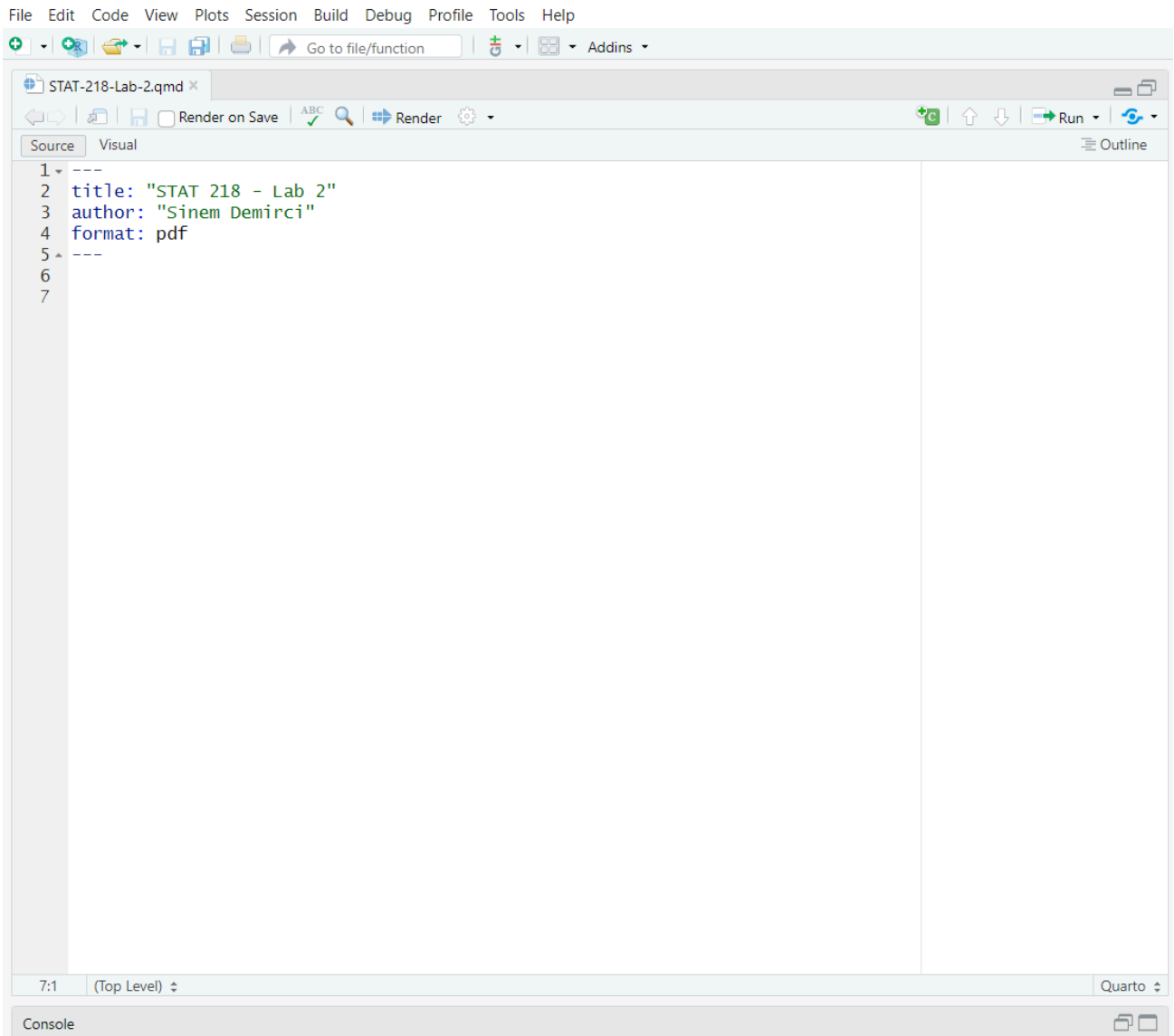
A Closer Look into the Quarto Document



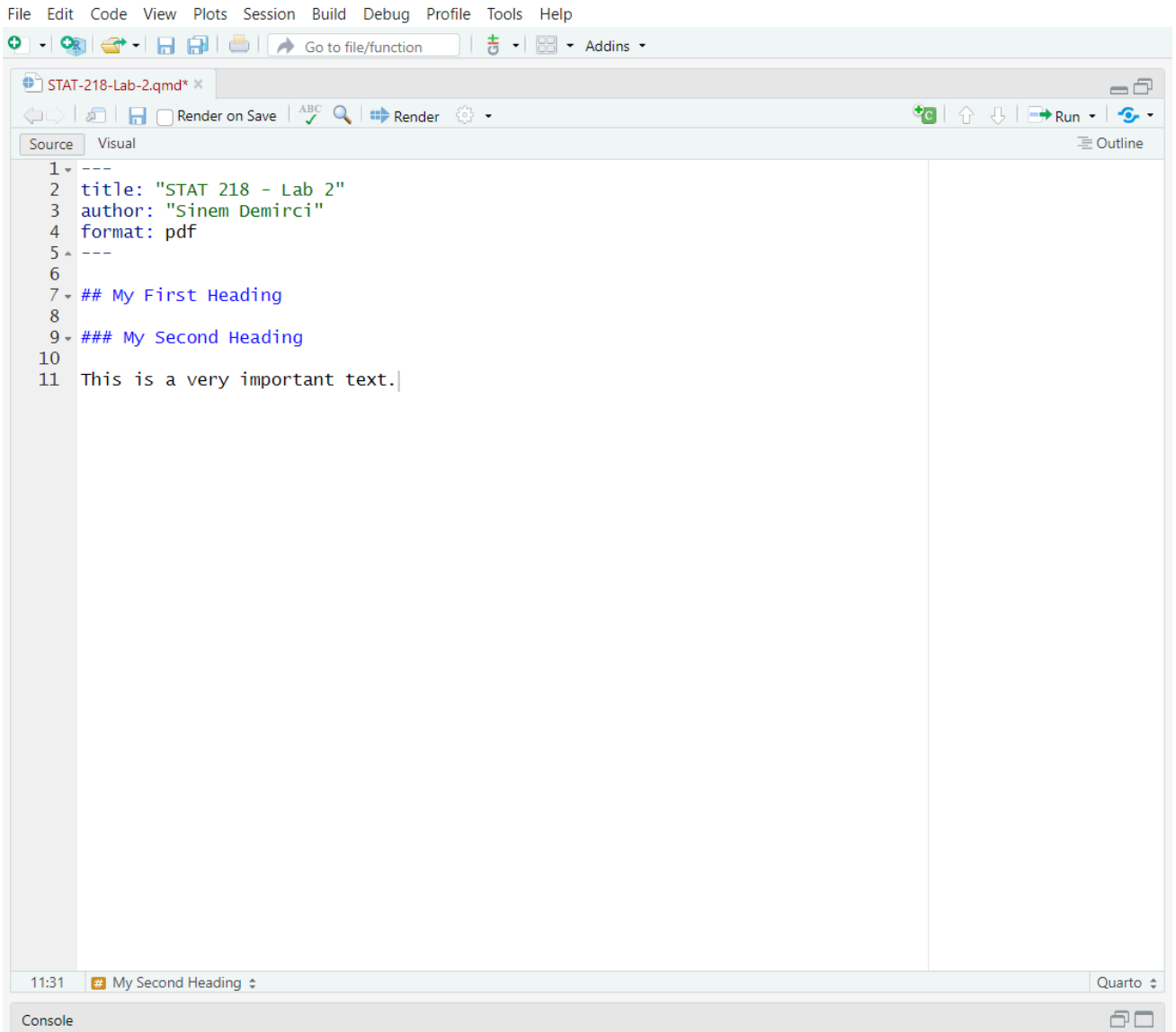
Task 3: Play with Your First Quarto Document



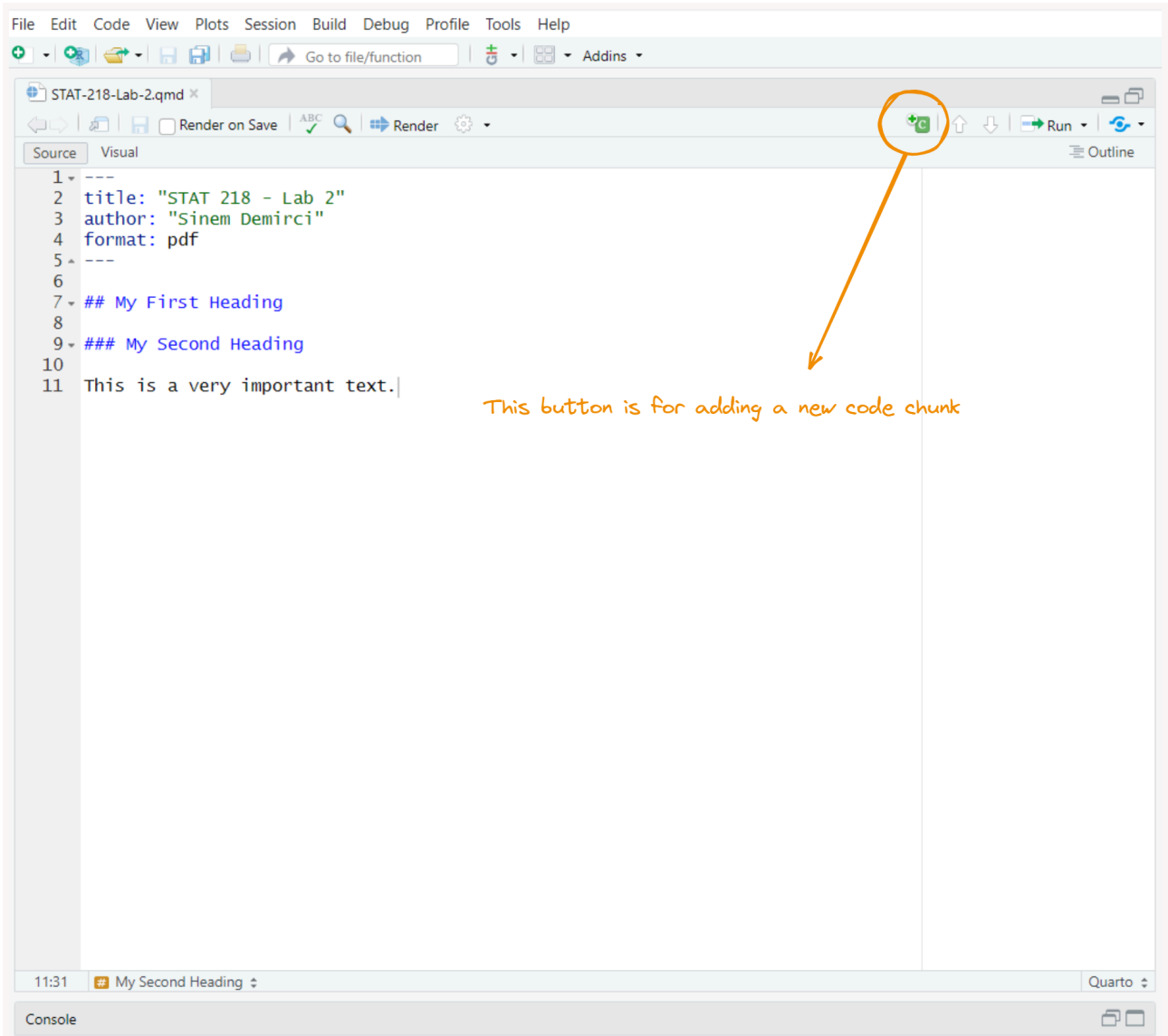
Delete The Default Content



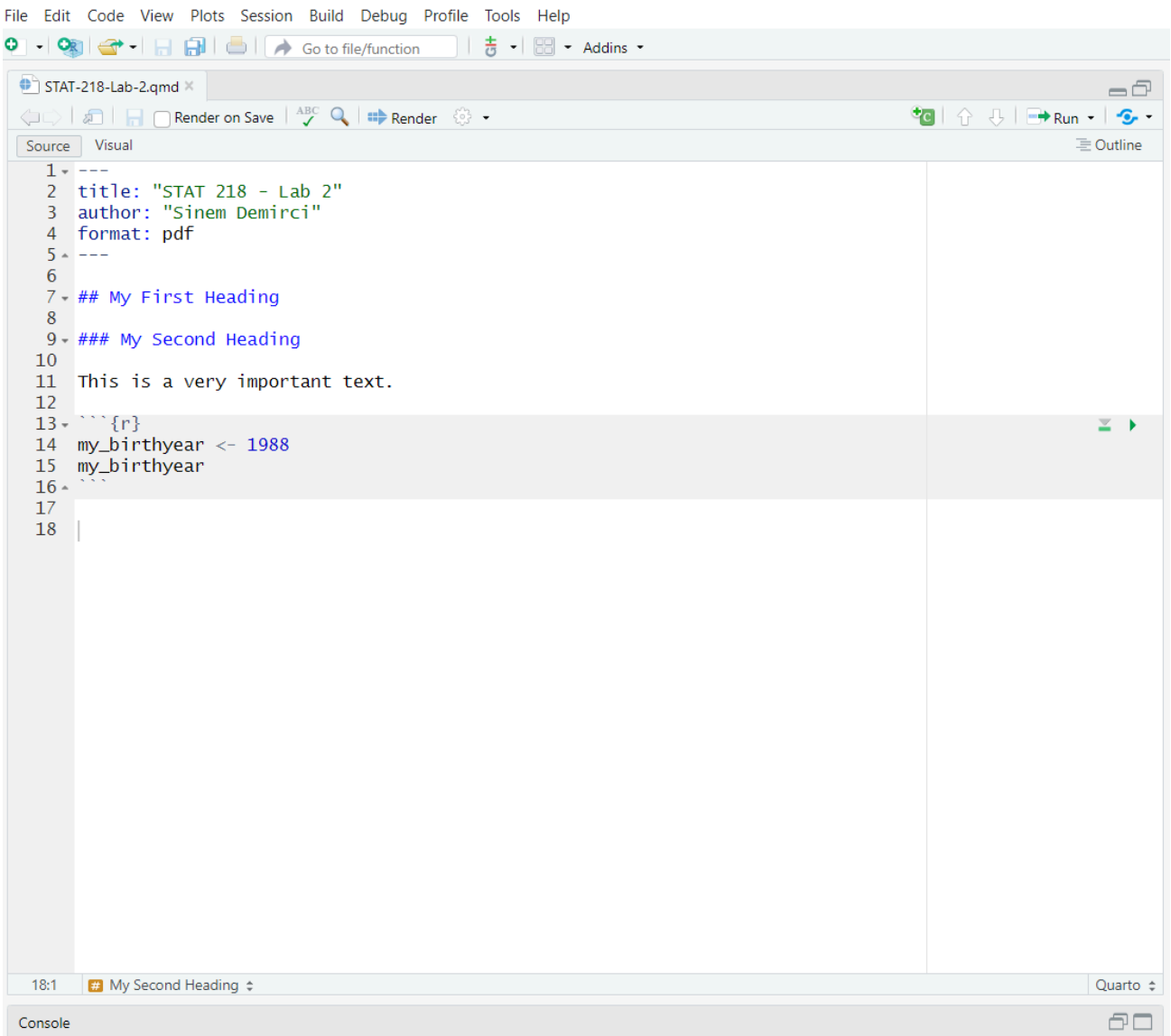
Add Headings and Text



Add A Code Chunk



Add This Simple Code



Creating An Object

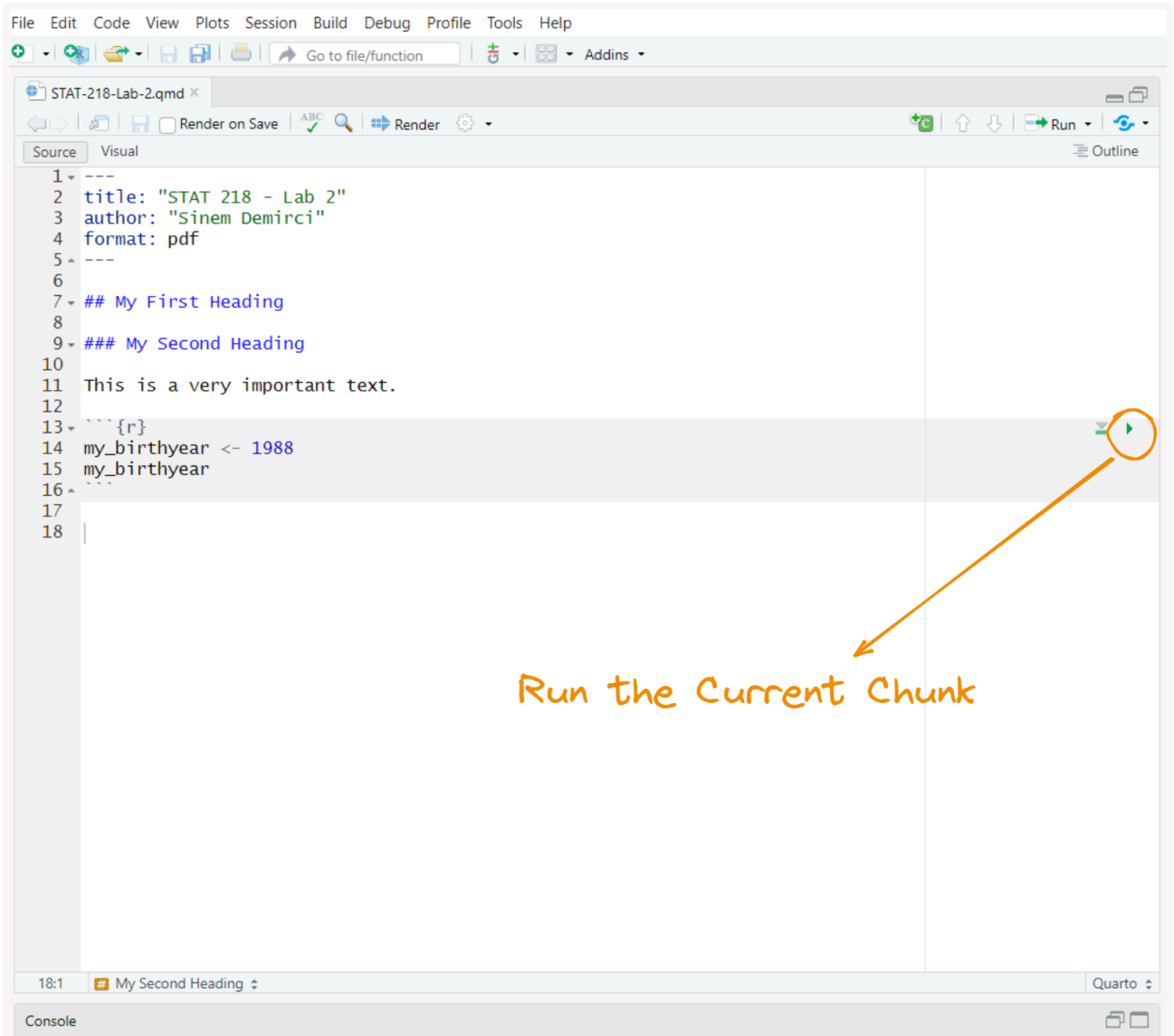
We create an object by using “<-” called as “Object Assignment Operator”

	Windows	Mac
Shortcut	Alt *and* -	Option *and* -

```
my_birthyear <- 1988
my_birthyear
```

```
[1] 1988
```

Run the Code Chunk



Say, Hello World!

- **hello world** is a phrase that most programmers use when they first begin programming in any language.
  - Let's write our first **"hello world!"** together.

Source Visual Outline

```
1  ---
2  title: "STAT 218 - Lab 2"
3  author: "Sinem Demirci"
4  format: pdf
5  ---
6
7  ## My First Heading
8
9
10
11 ### My Second Heading
12
13 This is a very important text
14
15 ```{r}
16 my_birth_year <- 1988
17 my_birth_year
18 ```
19
20 Say Hello World
21
22 ```{r}
23 print("hello world!")
24 ```
```

Vocabulary Section

```
1  do(something)
```

`do()` is a function;

`something` is the argument of the function.

```
1  do(something, colorful) # I can put here a comment by using hashtag
```

`do()` is a function;
`something` is the first argument of the function;
`colorful` is the second argument of the function.

R **ignores** comments if you put **#** like above

I love Dr. Dogucu's teaching strategy to teach students the basics of coding. This is how she explains the idea of coding. I am using some of her strategies during this session.

Check Your Document Before Rendering

Source Visual Outline

```
---
title: "STAT 218 - Lab 2"
author: "Sinem Demirci"
format: pdf
---

## My First Heading



### My Second Heading

This is a very important text

```{r}
my_birth_year <- 1988
my_birth_year
```

Say Hello World

```{r}
print("hello world!")
```
```

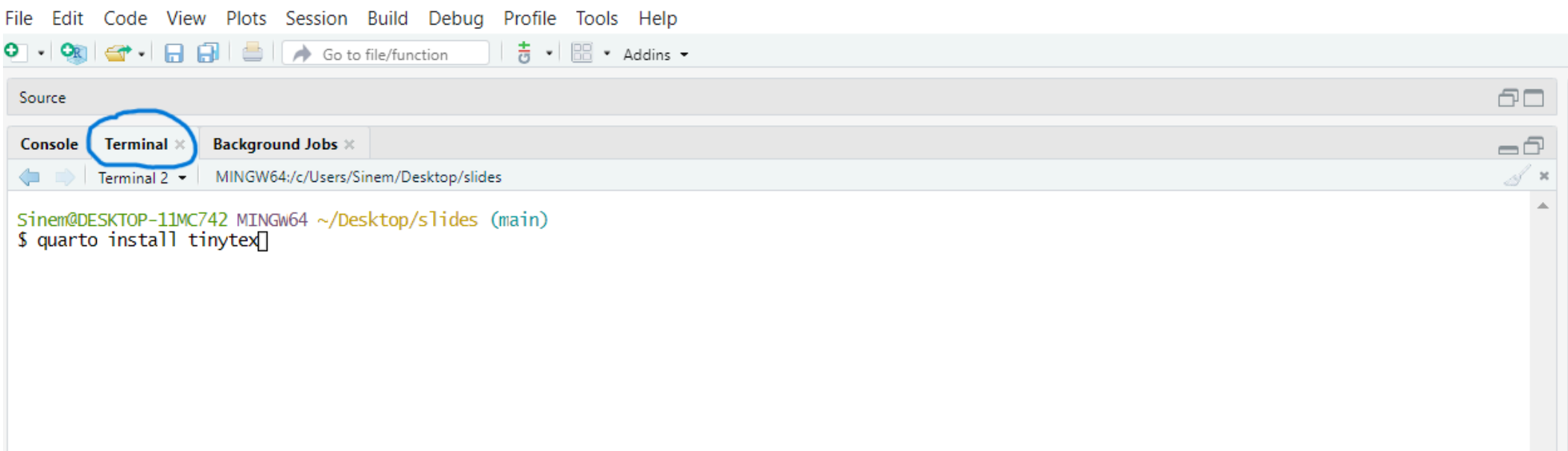
Rendering a PDF Document

- The Quarto document that we created is a *source file*.
- By rendering this, will have a different *output file* (e.g., PDF)

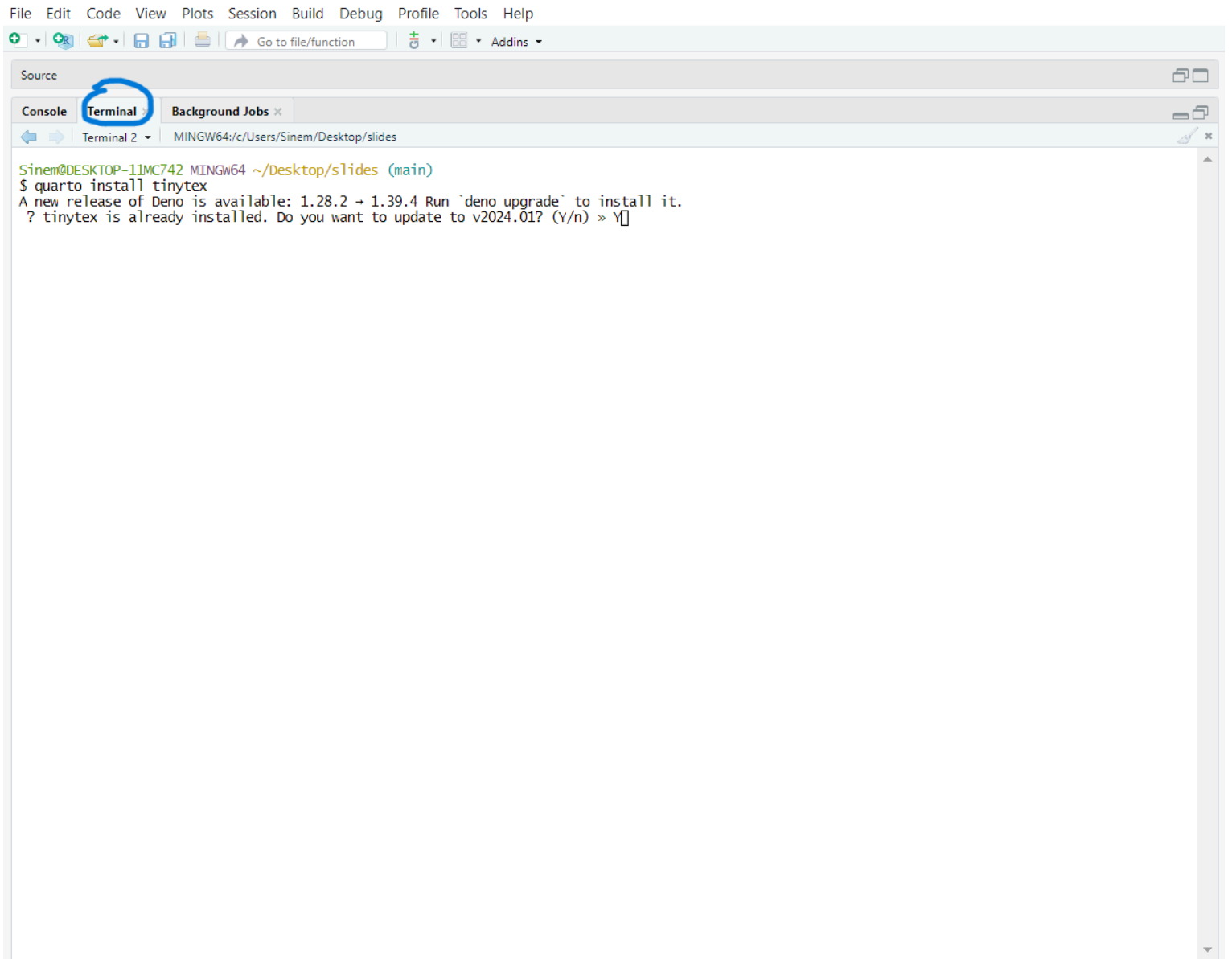
Rendering a PDF Document

Open your terminal pane and type the following:

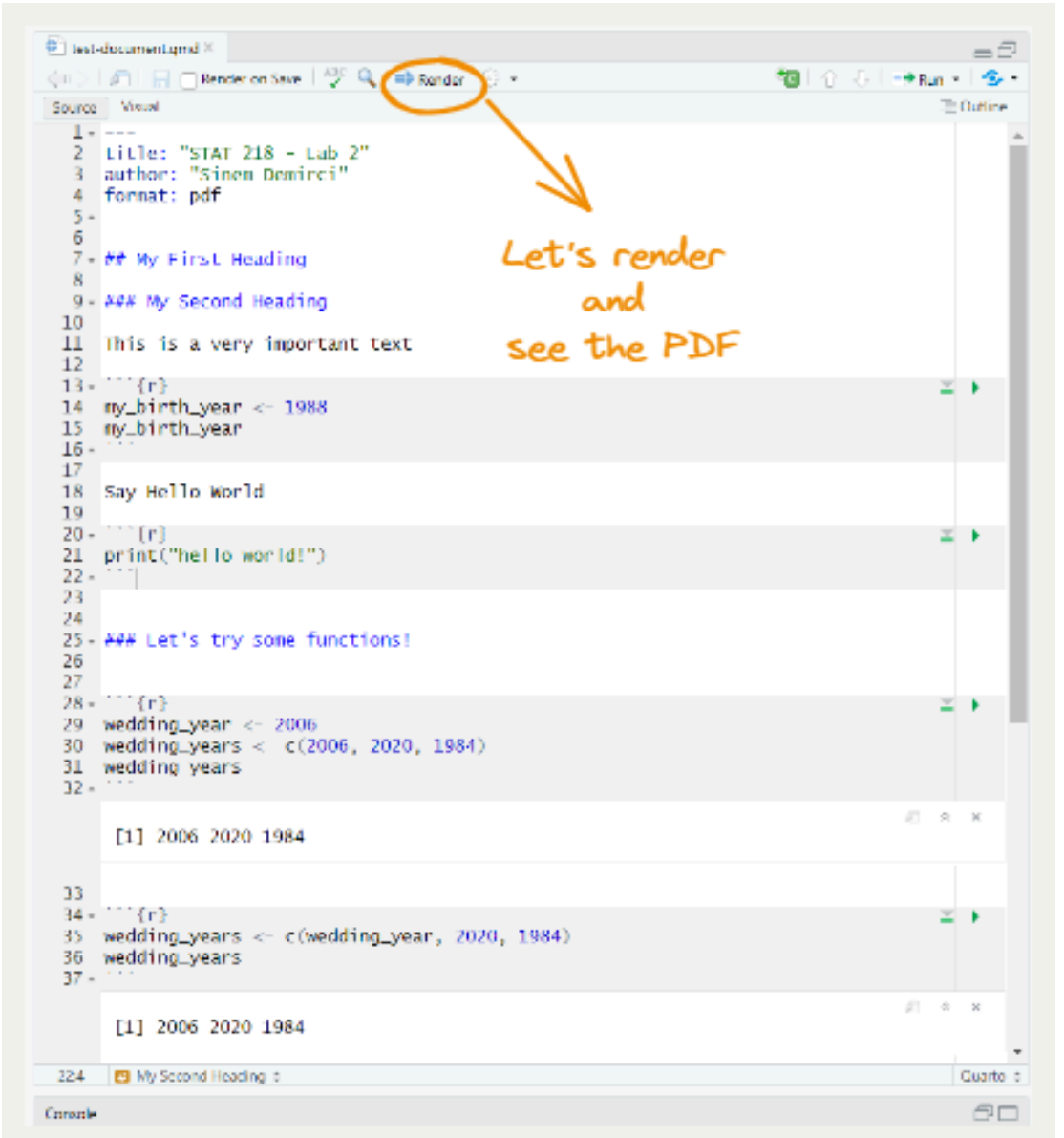
```
quarto install tinytex
```



Rendering a PDF Document



Rendering a PDF Document



Rendering a PDF Document

STAT 218 - Lab 2

Sinem Demirci

My First Heading

My Second Heading

This is a very important text

```
my_birth_year <- 1988
my_birth_year
```

```
[1] 1988
```

Say Hello World

```
print("hello world!")
```

```
[1] "hello world!"
```

Lab Assignment 0

- Please upload this PDF document to our Canvas page as **LAB Assignment 1 (Individual)**
- Begining from next week, we will start working in groups.

CONGRATULATIONS

Now, you can close your RStudio.

Everything you did is in your STAT 218 folder!