
L6: RMarkdown Lab

Complete the following exercises in RMarkdown. Work in your small group to solve them, but each person should create and submit their own knitted document. Your end result should be a knitted RMarkdown file, with Word preferred as the output format.

Goal: In this lab, you will practice combining code, output, and written explanations in one organized document. You do not need to write the YAML header from scratch. You may use the default YAML header that RStudio creates when you make a new RMarkdown file.

1. Create a New RMarkdown File

Open RStudio and create a new RMarkdown file.

- Go to **File > New File > R Markdown**.
- Give the document an appropriate title, such as **Lecture 6 Lab**.
- Put your name as the author.
- Choose Word or HTML as the output format.
- Delete the example text/code that RStudio automatically creates below the YAML header.

Your document should still have the YAML header at the top, but you do not need to write it manually.

2. Add a Main Header and Introduction

At the top of your document, below the YAML header, create a main header called:

```
# RMarkdown Practice
```

Then write 2–3 complete sentences explaining what RMarkdown is and why it is useful for data science.

3. Create a Code Chunk with a Vector

Create a section header called:

```
## Student Scores
```

Then create an R code chunk and enter the following vector and then display the vector in the same chunk:

```
scores <- c(82, 91, 75, 88, 94, 67, 100, 79, 85, 90)
```

4. Explain the Code

Under the code chunk from Question 3, write 2–3 complete sentences explaining what the vector represents and what the output shows.

Your explanation should be written outside of the code chunk.

5. Calculate Summary Statistics

Create a new R code chunk that calculates the following:

- (a) The mean score
- (b) The median score
- (c) The minimum and maximum score
- (d) The standard deviation of the scores

After the code chunk, write a short paragraph explaining what these numbers tell us about the student scores.

6. Create a Simple Visualization

Create a new section header called:

```
## Visualizing the Scores
```

Then create a code chunk that makes a histogram of the scores.

```
hist(scores, main = "Distribution of Student Scores", xlab = "Scores")
```

After the histogram, write 2–3 sentences explaining what the graph helps us see.

7. Practice Formatting Text

Create a new section header called:

```
## Written Summary
```

In this section, write a short summary of the data. Your summary should include:

- One sentence with a word in **bold**
- One sentence with a word in *italics*
- A bullet-point list with at least 3 bullet points

8. Create a Second Small Data Example

Create a new section header called:

```
## Commute Times
```

Then create a new code chunk using the following vector:

```
commute_times <- c(12, 8, 20, 15, 10, 35, 7, 18, 22, 14)
```

In the same chunk, calculate the mean, median, and standard deviation of the commute times.

After the code chunk, write a short paragraph explaining what the commute time data tells us.

9. Check That Your Document Is Reproducible

Before knitting, read through your RMarkdown document and check the following:

- Your written explanations are outside of the R code chunks.
- Your R code is inside R code chunks.
- Your code runs without errors.
- Your document has headers that organize the work.
- Your output is explained in complete sentences.

10. Knit and Submit

Knit your RMarkdown document to Word or HTML. Submit the knitted document to Canvas.

If your document does not knit, write down the error message and try to identify where the error occurred. Common things to check include:

- Missing parentheses or commas in your code
- Referencing variables you did not create earlier in your RMarkdown document
- The Word document already being open on your computer