A Rishi Bookdown Book

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Contents

Preface

This is the very first part of the book.

I am using RStudio with the `bookdown` package for creating this book. Sean Kross's blog article was extremely helpful in getting me to understand how this works with GitHub Pages for automatic hosting.

This is a *sample* book written in **Markdown**. You can use anything that Pandoc's Markdown supports, e.g., a math equation $a^2 + b^2 = c^2$.

The **bookdown** package can be installed from CRAN or Github:

```
install.packages("bookdown")
```

Remember each Rmd file contains one and only one chapter, and a chapter is defined by the first-level heading `#`.

To compile this example to PDF, you need XeLaTeX. You are recommended to install TinyTeX (which includes XeLaTeX): https://yihui.name/tinytex/. However, I am using MacTeX, a more complete TeX package.

Chapter 1

Introduction

You can label chapter and section titles using `{#label}` after them, e.g., we can reference Chapter 1. If you do not manually label them, there will be automatic labels anyway, e.g., Chapter **??**.

Figures and tables with captions will be placed in `figure` and `table` environments, respectively.

```
par(mar = c(4, 4, .1, .1))
plot(pressure, type = 'b', pch = 19)
```

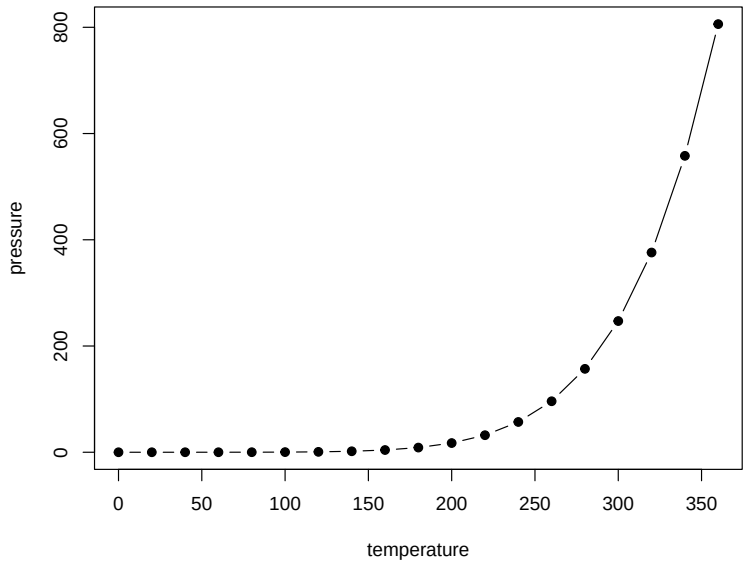

Figure 1.1: Here is a nice figure!

Table 1.1: Here is a nice table!

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
5.4	3.9	1.7	0.4	setosa
4.6	3.4	1.4	0.3	setosa
5.0	3.4	1.5	0.2	setosa
4.4	2.9	1.4	0.2	setosa
4.9	3.1	1.5	0.1	setosa
5.4	3.7	1.5	0.2	setosa
4.8	3.4	1.6	0.2	setosa
4.8	3.0	1.4	0.1	setosa
4.3	3.0	1.1	0.1	setosa
5.8	4.0	1.2	0.2	setosa
5.7	4.4	1.5	0.4	setosa
5.4	3.9	1.3	0.4	setosa
5.1	3.5	1.4	0.3	setosa
5.7	3.8	1.7	0.3	setosa
5.1	3.8	1.5	0.3	setosa

Reference a figure by its code chunk label with the `fig:` prefix, e.g., see Figure 1.1. Similarly, you can reference tables generated from `knitr::kable()`, e.g., see Table 1.1.

```
knitr::kable(
  head(iris, 20), caption = 'Here is a nice table!',
  booktabs = TRUE
)
```

You can write citations, too. For example, we are using the **bookdown** package (**?**) in this sample book, which was built on top of R Markdown and **knitr** (Xie, 2015).

Chapter 2

Syntax

2.1 Basic

You can make text italic by surrounding it with underscores or asterisks, e.g., *text* or *text*. For bold text, use two underscores (**text**) or asterisks (**text**). Text surrounded by ~ will be converted to a subscript (e.g., H_2SO_4 renders H2SO4), and similarly, two carets (^) produce a superscript (e.g., Fe^{2+} renders Fe2+). To mark text as inline code, use a pair of backticks, e.g., `code`.3 Small caps can be produced by the HTML tag span, e.g., Small Caps renders Small Caps. Links are created using text, e.g., RStudio. Footnotes are put inside the square brackets after a caret [1], e.g., [2].

Blockquotes are possible

> "Rishi likes blockquotes a lot. If anyone thinks blockquotes are useless, they are incorrect and should rethink their priorities and go do something else
>
> — "Rishi Goutam"

```
This is a code block with no language
specified at all
```

```
This is also a code block
```

[1]

[2]This is a footnote.

2.2 Headers

2.2.1 H3

2.2.1.1 H4

2.2.1.1.1 You should really not use H5s...

This header is not numbered

2.3 Math

$$e^{\pi i} + 1 = 0$$

$$X = \begin{bmatrix} 1 & x_1 \\ 1 & x_2 \\ 1 & x_3 \end{bmatrix}$$

$$\begin{vmatrix} a & b \\ c & d \end{vmatrix} = ad - bc$$

We can number an equation

$$e^{\pi i} + 1 = 0 \tag{2.1}$$

and refer to it (2.1)

2.4 Special custom blocks

Bookdown provides some special handling for custom blocks, such as `theorem` and `example`. See here for the full list

Theorem 2.1 (Pythagorean theorem)**.** *For a right triangle, if c denotes the length of the hypotenuse and a and b denote the lengths of the other two sides, we have*

$$a^2 + b^2 = c^2$$

We can refer to a named `theorem`. Remember trig theorem 2.1

2.5 Tables

We can have tables

2.6 Figures

Table 2.1: A table of the first 10 rows of the mtcars data.

	mpg	cyl	disp	hp	drat	wt	qsec	vs
Mazda RX4	21.0	6	160.0	110	3.90	2.620	16.46	0
Mazda RX4 Wag	21.0	6	160.0	110	3.90	2.875	17.02	0
Datsun 710	22.8	4	108.0	93	3.85	2.320	18.61	1
Hornet 4 Drive	21.4	6	258.0	110	3.08	3.215	19.44	1
Hornet Sportabout	18.7	8	360.0	175	3.15	3.440	17.02	0
Valiant	18.1	6	225.0	105	2.76	3.460	20.22	1
Duster 360	14.3	8	360.0	245	3.21	3.570	15.84	0
Merc 240D	24.4	4	146.7	62	3.69	3.190	20.00	1
Merc 230	22.8	4	140.8	95	3.92	3.150	22.90	1
Merc 280	19.2	6	167.6	123	3.92	3.440	18.30	1

Table 2.2: A Tale of Two Tables.

Sepal.Length	Sepal.Width
5.1	3.5
4.9	3.0
4.7	3.2

	mpg	cyl	disp
Mazda RX4	21.0	6	160
Mazda RX4 Wag	21.0	6	160
Datsun 710	22.8	4	108
Hornet 4 Drive	21.4	6	258
Hornet Sportabout	18.7	8	360

```
par(mar = c(4, 4, .1, .1))
plot(cars, pch = 19)
```

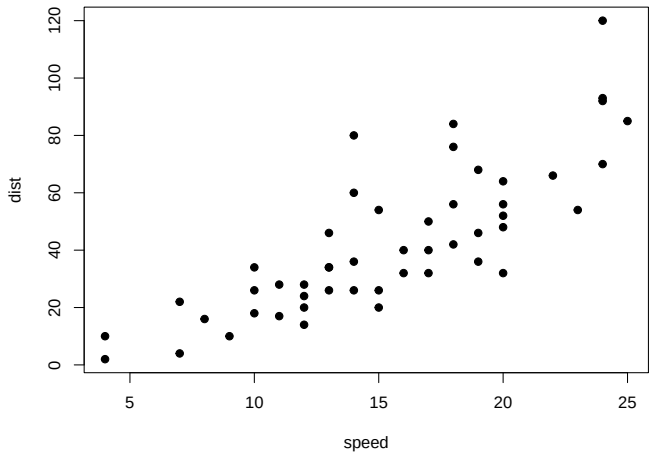

Figure 2.1: A figure example with a relative width 70%.

```
knitr::include_graphics(rep('memoji.png'))
```

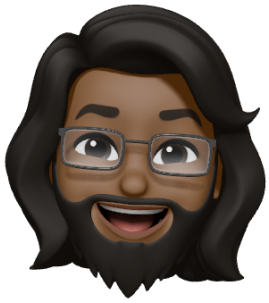

Figure 2.2: Memoji of Rishi Goutam

2.7 HTML Widgets

See htmlwidgets

We can also use JavaScript libraries for rich data visualizations. Install the below for outputting to non-HTML files.

```
install.packages("webshot")
webshot::install_phantomjs()
```

We use the DT package to show the iris dataset:

```
DT::datatable(iris)
```

Show 10 entries Search:

	Sepal.Length	Sepal.Width	Petal.Length	Petal.Width	Species
1	5.1	3.5	1.4	0.2	setosa
2	4.9	3	1.4	0.2	setosa
3	4.7	3.2	1.3	0.2	setosa
4	4.6	3.1	1.5	0.2	setosa
5	5	3.6	1.4	0.2	setosa
6	5.4	3.9	1.7	0.4	setosa
7	4.6	3.4	1.4	0.3	setosa
8	5	3.4	1.5	0.2	setosa
9	4.4	2.9	1.4	0.2	setosa
10	4.9	3.1	1.5	0.1	setosa

Showing 1 to 10 of 150 entries Previous 1 2 3 4 5 … 15 Next

Figure 2.3: A table widget rendered via the DT package.

Chapter 3

Build and Deploy

0. Setup GitHub pages. See this blog
1. Run `bookdown::render_book("index.Rmd")` in RStudio
2. git add, commit, push

Now open the GitHub pages link and the book should be there. Open https://rishigoutam.github.io/bookdown-start/index.html

(Optional)

Publish to bookdown.org via rsconnect

3. `bookdown::render_book("index.Rmd")`

Open https://bookdown.org/google1/rishi-bookdown-start/

Bibliography

Xie, Y. (2015). *Dynamic Documents with R and knitr*. Chapman and Hall/CRC, Boca Raton, Florida, 2nd edition. ISBN 978-1498716963.