

Creating an R Bookdown

Dr. Villanes

What is bookdown?

The bookdown package is a free and open-source R package built on top of R Markdown to make it really easy to write books and long-form articles/reports. Features include:

- Generate printer-ready books and ebooks from R Markdown documents.
- A markup language easier to learn than LaTeX, and to write elements such as section headers, lists, quotes, figures, tables, and citations.
- Multiple choices of output formats: PDF, LaTeX, HTML, EPUB, and Word.
- Possibility of including dynamic graphics and interactive applications (HTML widgets and Shiny apps).
- Support a wide range of languages: R, C/C++, Python, Fortran, Julia, Shell scripts, and SQL, etc.
- LaTeX equations, theorems, and proofs work for all output formats.
- Can be published to GitHub, bookdown.org, and any web servers.
- Integrated with the RStudio IDE.

Examples

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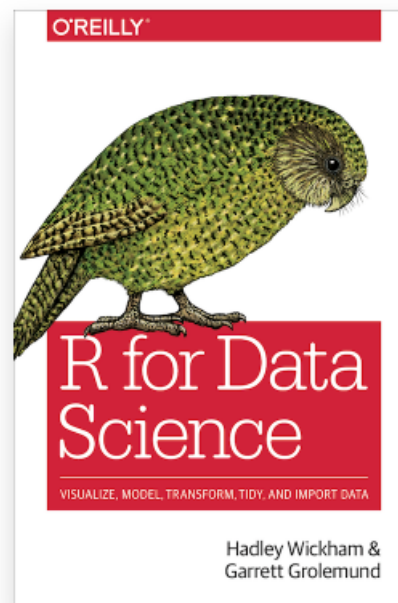
19 Functions

Welcome

This is the website for “**R for Data Science**”. This book will teach you how to do data science with R: You’ll learn how to get your data into R, get it into the most useful structure, transform it, visualise it and model it. In this book, you will find a practicum of skills for data science. Just as a chemist learns how to clean test tubes and stock a lab, you’ll learn how to clean data and draw plots—and many other things besides. These are the skills that allow data science to happen, and here you will find the best practices for doing each of these things with R. You’ll learn how to use the grammar of graphics, literate programming, and reproducible research to save time. You’ll also learn how to manage cognitive resources to facilitate discoveries when wrangling, visualising, and exploring data.

This website is (and will always be) **free to use**, and is licensed under the [Creative Commons Attribution-NonCommercial-NoDerivs 3.0 License](#). If you’d like a **physical copy** of the book, you can order it from [amazon](#); it was published by O’Reilly in January 2017. If you’d like to **give back** please make a donation to [Kākāpō Recovery](#): the [kākāpō](#) (which appears on the cover of R4DS) is a critically endangered native NZ parrot; there are only 213 left.

Please note that R4DS uses a [Contributor Code of Conduct](#). By contributing to this book, you agree to abide by its terms.



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About the Authors

[Yihui Xie](#)[Christophe Dervieux](#)[Emily Riederer](#)

1 Installation

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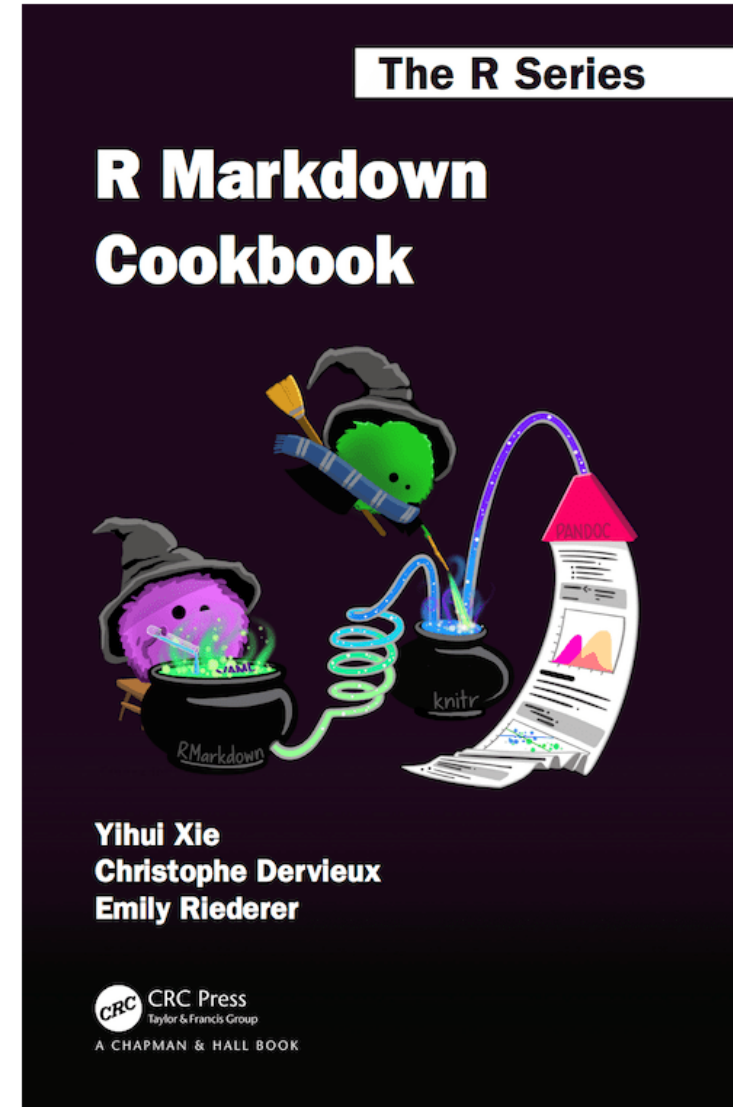
2 Conceptual Overview

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4 Document Elements



R Markdown is a powerful tool for combining analysis and reporting into the same document. Since the birth of the **rmarkdown** package (Allaire, Xie, McPherson, et al. 2021) in early 2014, R Markdown has grown substantially from a package that supports a few output formats, to an extensive and diverse



Preface

Structure of the book

Acknowledgements

1 Introduction to R

1.1 Getting Started

1.2 Variable Assignment

1.3 Finding Variables

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2.1 Vectors

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3 Programming Fundamentals

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3.2 Conditionals

3.3 Loops

3.4 Functions

4 Data Wrangling

Chapter 1 Introduction to R

1.1 Getting Started

The simplest way to use R is to use it as if it were a calculator. For example, if we want to know what one plus one is, you may type:

```
1 + 1
```

We can use any arithmetic operator, like addition, subtraction, multiplication, division, exponentiation, and modulus operations:

```
# addition
1 + 1

# subtraction
6 - 4

# multiplication
2 * 2

# division
10 / 5
10.2 / 5

# integer division
```

How would you use it?



Side project

To document/show all your work.



Interviews!

But most important, case studies/technical assessments.

How to create an R bookdown?

First, we need a Github account

Open a Github account: <https://education.github.com/students>

This account gives you access to the [Student Developer Pack](#)



About Canva

With Canva, anyone can create professional looking graphics and designs. Featuring thousands of templates and an easy to use editor.

Benefit

Free 12 month subscription of Canva's Pro tier.



About Microsoft Azure

Access to Microsoft Azure cloud services and learning resources – no credit card required

Benefit

Free access to 25+ Microsoft Azure cloud services plus \$100 in Azure credit.



About PomoDone

With PomoDone, hack and track your time and boost your productivity by applying Pomodoro technique to your workflow -- eliminate distraction, sharpen focus and prevent burnout.

Benefit

PomoDone Lite plan free for 2-years.



About InterviewCake

Interview Cake makes coding interviews a piece of cake with practice questions, data structures and algorithms reference pages, cheat sheets, and more.

Benefit

Access to the full coding interview prep course for 3 weeks.

Next, we are going to copy the template repo

Copy this template: <https://github.com/jtr13/bookdown-template>

The screenshot shows the GitHub repository page for `jtr13/bookdown-template`. The repository is a public template generated from `jtr13/EDAVproject`. It has 2 watchers, 21 stars, and 9 forks. The repository is currently on the `master` branch with 1 branch and 0 tags. The `Use this template` button is highlighted with a red box. The repository contains the following files and folders:

File/Folder	Description	Commit Date
docs	edit README, rename chapters	14 months ago
.gitattributes	Create .gitattributes	14 months ago
.gitignore	Initial commit	14 months ago
02-tears.Rmd	edit README, rename chapters	14 months ago
03-race.Rmd	edit README, rename chapters	14 months ago
README.md	Update README.md	14 months ago
_bookdown.yml	Update _bookdown.yml	14 months ago
_output.yml	Initial commit	14 months ago
index.Rmd	edit README, rename chapters	14 months ago
style.css	Initial commit	14 months ago

The repository is described as a "Template for R bookdown books". It has no releases published and no packages published.

Enter the details of your repository

Create a new repository from bookdown-template

The new repository will start with the same files and folders as [jtr13/bookdown-template](#).

Owner *



andreavillanes ▾

Repository name *



MyFirstBookdown



Great repository names are short and memorable. Need inspiration? How about [silver-umbrella](#)?

Description (optional)

My first bookdown project



Public

Anyone on the internet can see this repository. You choose who can commit.



Private

You choose who can see and commit to this repository.



Include all branches

Copy all branches from [jtr13/bookdown-template](#) and not just `master`.

Create repository from template

Next, we set up Github pages: free way to host your projects

1. Click on Settings

andrea villanes / MyFirstBookdown Public

generated from [jtr13/bookdown-template](#)

Unwatch 1 Star 0 Fork 0

<> Code Issues Pull requests Actions Projects Wiki Security Insights **Settings**

master 1 branch 0 tags

Go to file Add file Code

andrea villanes Initial commit b2db715 8 minutes ago 1 commit

docs	Initial commit	8 minutes ago
.gitattributes	Initial commit	8 minutes ago
.gitignore	Initial commit	8 minutes ago
02-tears.Rmd	Initial commit	8 minutes ago
03-race.Rmd	Initial commit	8 minutes ago
README.md	Initial commit	8 minutes ago
_bookdown.yml	Initial commit	8 minutes ago
_output.yml	Initial commit	8 minutes ago
index.Rmd	Initial commit	8 minutes ago
style.css	Initial commit	8 minutes ago

About My first bookdown project

Readme

Releases No releases published [Create a new release](#)

Packages No packages published [Publish your first package](#)

Click on Pages

[Code](#) [Issues](#) [Pull requests](#) [Actions](#) [Projects](#) [Wiki](#) [Security](#) [Insights](#) [Settings](#)

Options

Manage access

Security & analysis

Branches

Webhooks

Notifications

Integrations

Deploy keys

Autolink references

Actions

Environments

Secrets

Pages

GitHub Pages

GitHub Pages is designed to host your personal, organization, or project pages from a GitHub repository.

Source

GitHub Pages is currently disabled. Select a source below to enable GitHub Pages for this repository. [Learn more.](#)


None ▾

Save

Theme Chooser

Select a theme to publish your site with a Jekyll theme using the `gh-pages` branch. [Learn more.](#)

Choose a theme



Publish privately to people with read access to this repository
Try it risk-free for 14 days using a GitHub Enterprise organization, or [learn more about changing the visibility of your GitHub Pages site.](#)

×

Under Source, click Master and choose the /docs folder, and Save

GitHub Pages

GitHub Pages is designed to host your personal, organization, or project pages from a GitHub repository.

Source

GitHub Pages is currently disabled. Select a source below to enable GitHub Pages for this repository. [Learn more.](#)

 Branch: master ▼

 /docs ▼

Save

Theme Chooser

Select a theme to publish your site with a Jekyll theme using the `gh-pages` branch. [Learn more.](#)

Choose a theme



Publish privately to people with read access to this repository

Try it risk-free for 14 days using a GitHub Enterprise organization, or [learn more about changing the visibility of your GitHub Pages site.](#)



We get a URL that tells us where the site will be published.



Your site is ready to be published at <https://andreavillanes.github.io/MyFirstBookdown/>

... notice it doesn't work yet. Let that bake.

Go back to the repo

- Paste the link of the URL to the About section

The screenshot shows a GitHub repository interface. At the top, there are buttons for 'Go to file', 'Add file', and 'Code'. Below these, a commit by 'andreavillanes' is shown with a list of files: 'docs', '.gitattributes', '.gitignore', '02-tears.Rmd', '03-race.Rmd', 'README.md', '_bookdown.yml', '_output.yml', 'index.Rmd', and 'style.css'. On the right sidebar, the 'About' section is highlighted with a red box, showing the project description 'My first bookdown project' and the URL 'andreavillanes.github.io/myfirstbookd'. Other sections like 'Releases', 'Packages', and 'Environments' are also visible.

master 1 branch 0 tags

Go to file Add file Code

andreavillanes Initial commit ✓ b2db715 21 minutes ago 1 commit

docs	Initial commit	21 minutes ago
.gitattributes	Initial commit	21 minutes ago
.gitignore	Initial commit	21 minutes ago
02-tears.Rmd	Initial commit	21 minutes ago
03-race.Rmd	Initial commit	21 minutes ago
README.md	Initial commit	21 minutes ago
_bookdown.yml	Initial commit	21 minutes ago
_output.yml	Initial commit	21 minutes ago
index.Rmd	Initial commit	21 minutes ago
style.css	Initial commit	21 minutes ago

About

My first bookdown project

andreavillanes.github.io/myfirstbookd

Readme

Releases

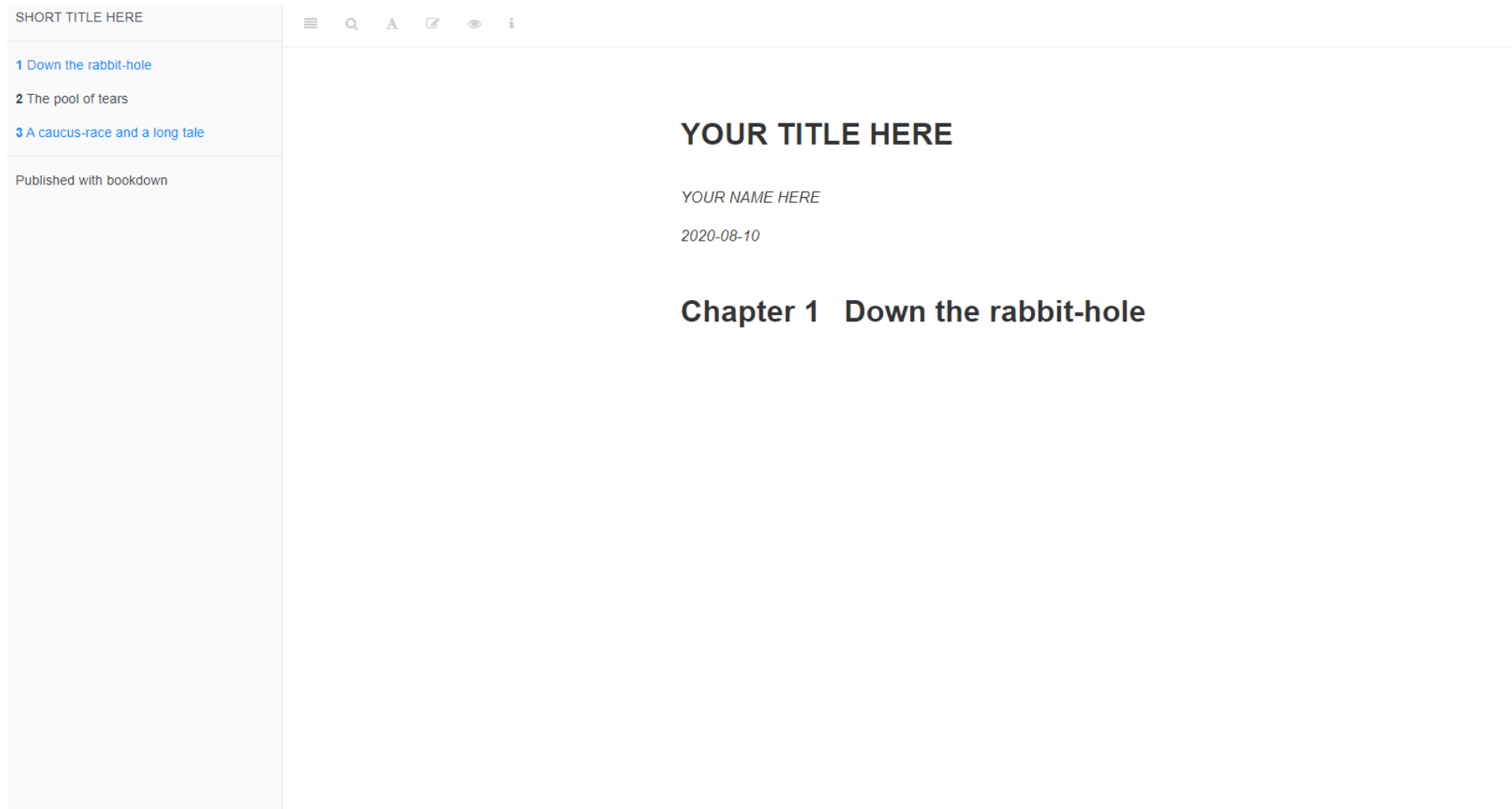
No releases published
[Create a new release](#)

Packages

No packages published
[Publish your first package](#)

Environments 1

Click on the URL, and you will see the site published

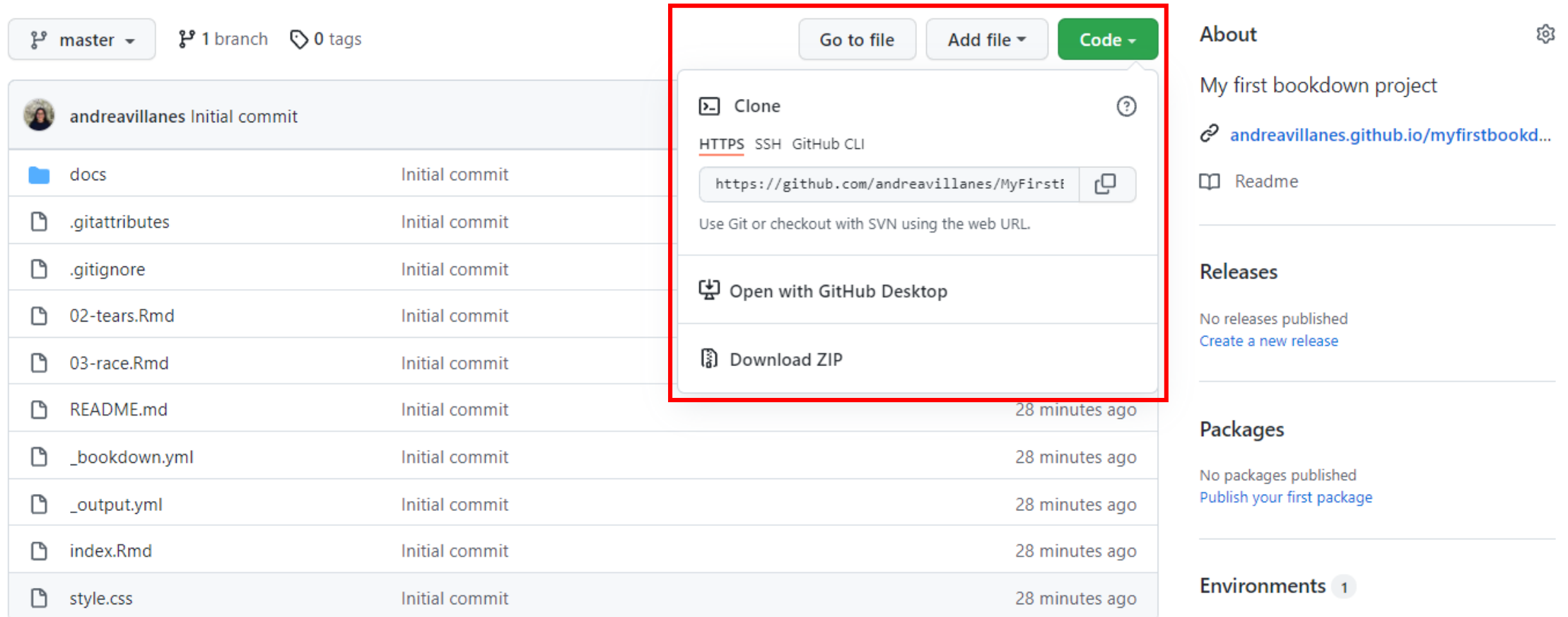


Now, we modify the site.

How? – We clone the repo and make the changes. We are pulling down a full copy of all the repository data that GitHub has at that point in time.

Go back to the repo

- Click on the Code button and copying the link



The screenshot shows a GitHub repository page for 'andreavillanes Initial commit'. The repository contains several files and folders, all marked as 'Initial commit' and '28 minutes ago'. A red box highlights the 'Code' button and its dropdown menu, which is open. The dropdown menu shows options to 'Clone' (with HTTPS, SSH, and GitHub CLI links), 'Open with GitHub Desktop', and 'Download ZIP'. The 'Code' button is green and has a dropdown arrow. The repository page also includes a sidebar with 'About', 'Releases', 'Packages', and 'Environments' sections.

master 1 branch 0 tags

andreavillanes Initial commit

File/Folder	Commit	Time
docs	Initial commit	28 minutes ago
.gitattributes	Initial commit	28 minutes ago
.gitignore	Initial commit	28 minutes ago
02-tears.Rmd	Initial commit	28 minutes ago
03-race.Rmd	Initial commit	28 minutes ago
README.md	Initial commit	28 minutes ago
_bookdown.yml	Initial commit	28 minutes ago
_output.yml	Initial commit	28 minutes ago
index.Rmd	Initial commit	28 minutes ago
style.css	Initial commit	28 minutes ago

Go to file Add file Code

Clone ?

HTTPS SSH GitHub CLI

<https://github.com/andreavillanes/MyFirstBookdown>

Use Git or checkout with SVN using the web URL.

Open with GitHub Desktop

Download ZIP

About

My first bookdown project

andreavillanes.github.io/myfirstbookdown/

Readme

Releases

No releases published

[Create a new release](#)

Packages

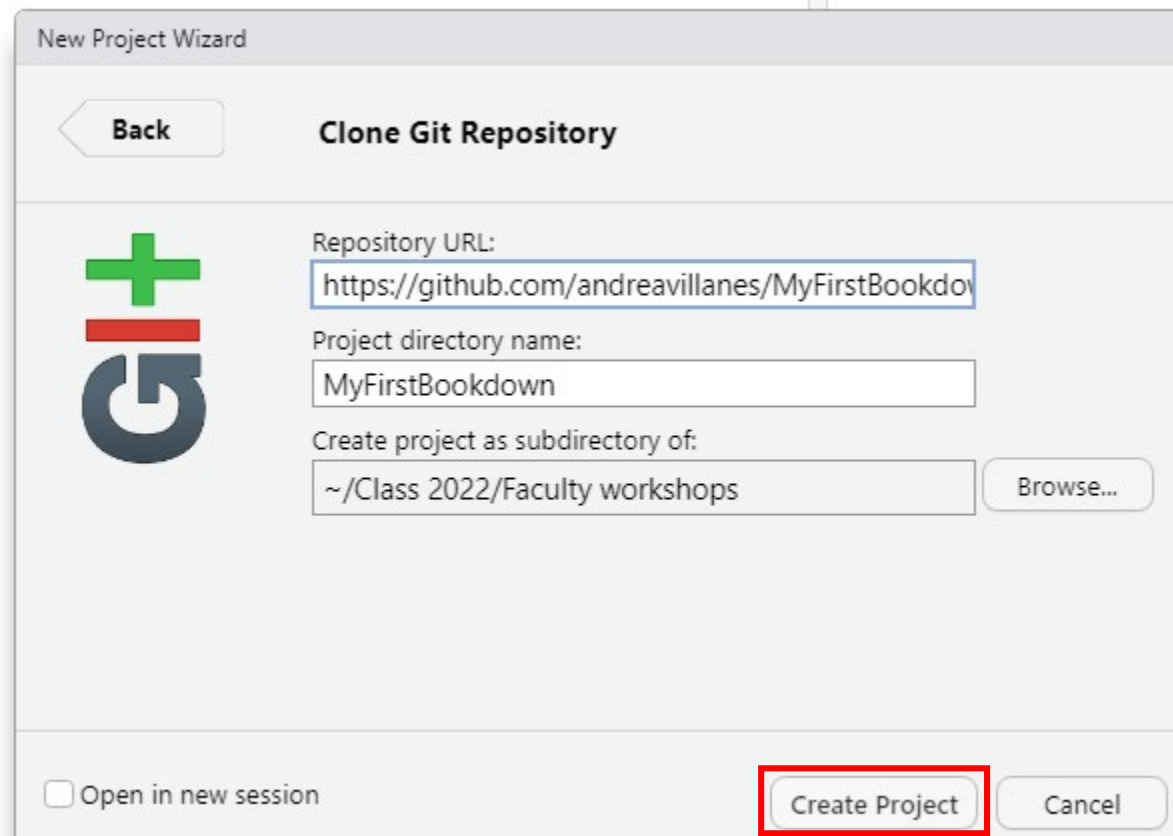
No packages published

[Publish your first package](#)

Environments 1

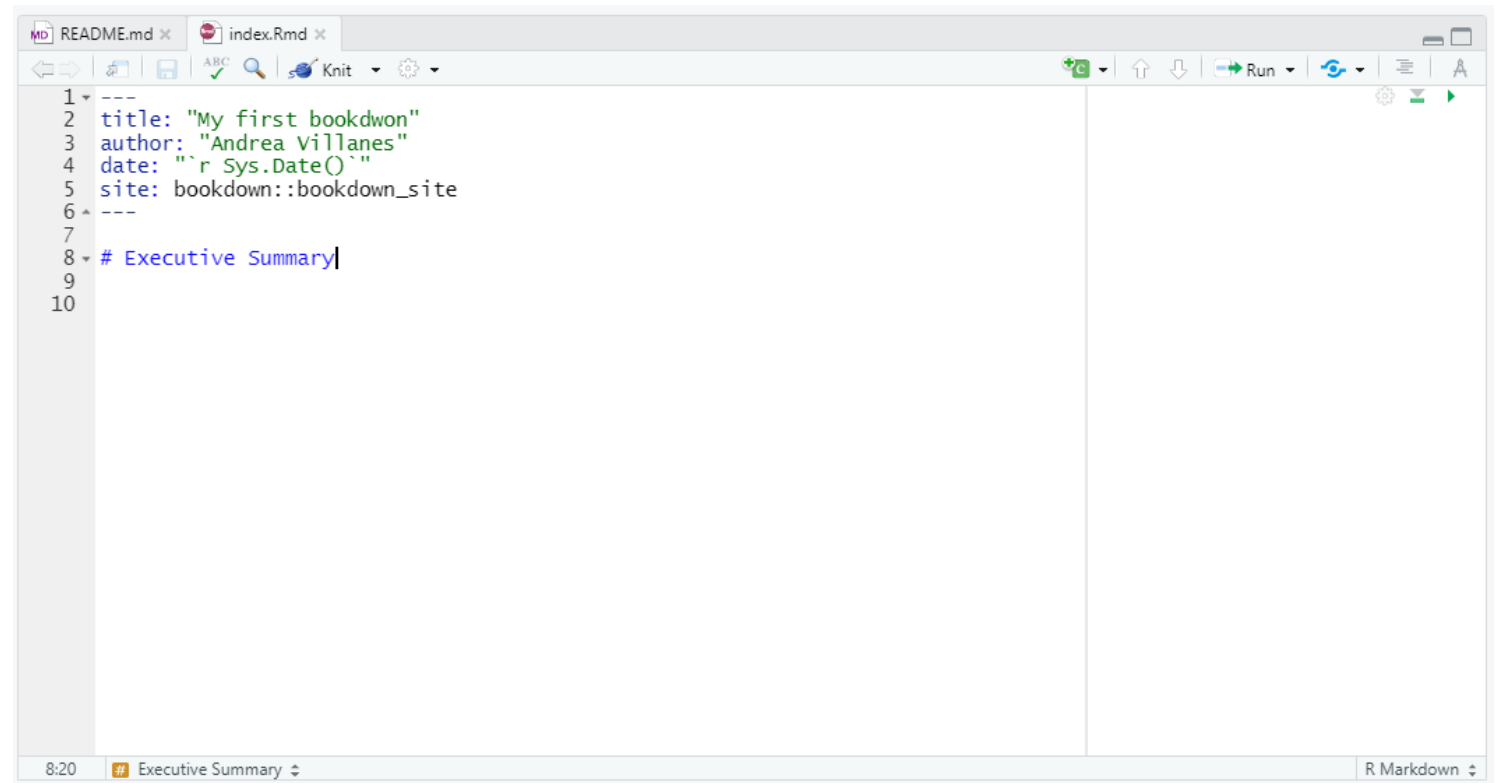
Open RStudio

- Click on File → New Project → Version Control → Git → Paste the link



Now, the remaining instructions are in the README file

- We have done everything up to: `#### Edit some key files`
- Start editing the `index.Rmd` file
- Save your changes



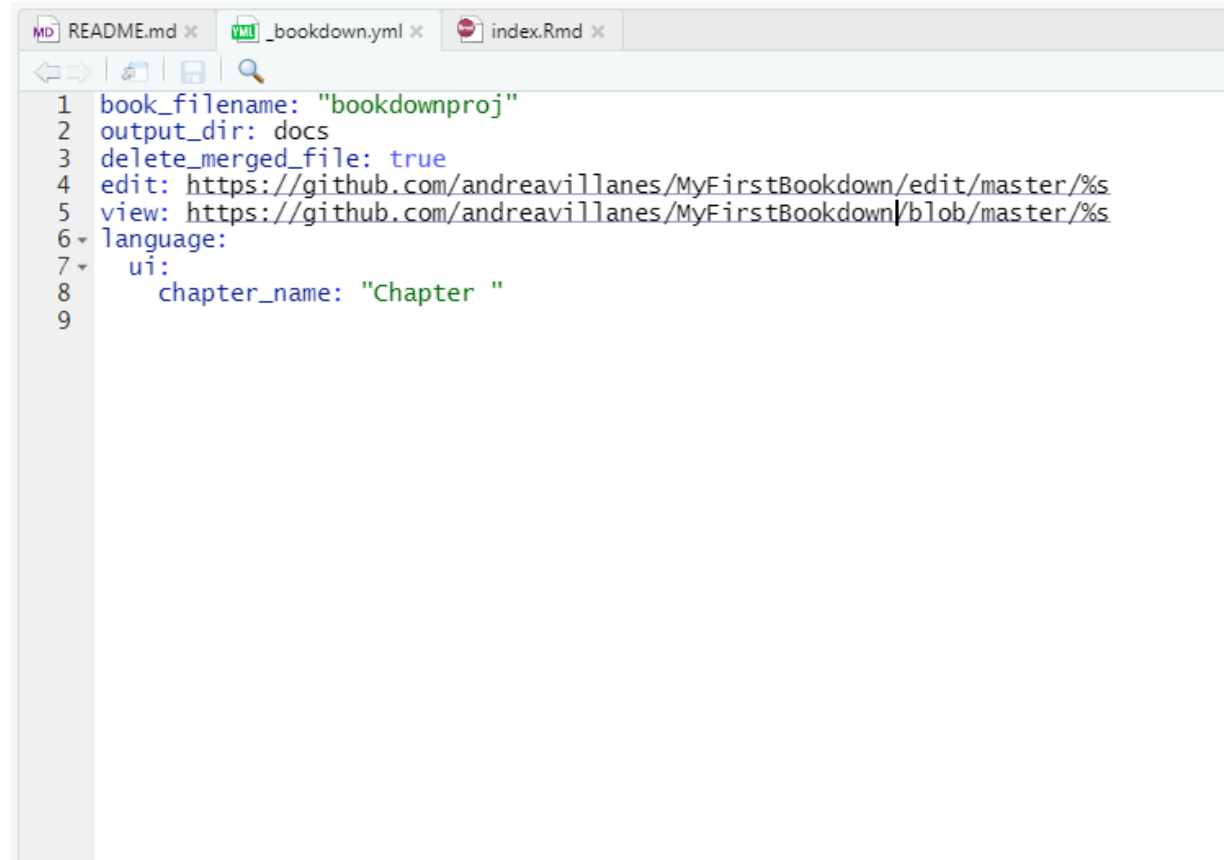
The screenshot shows the RStudio editor interface with two tabs: 'README.md' and 'index.Rmd'. The 'index.Rmd' tab is active, displaying the following R Markdown code:

```
1 ---
2 title: "My first bookdwon"
3 author: "Andrea Villanes"
4 date: "`r Sys.Date()"`
5 site: bookdown::bookdown_site
6 ---
7
8 # Executive Summary
9
10
```

The status bar at the bottom indicates the current line is 8, column 20, and the file is 'Executive Summary'.

Go to the _bookdown.yml file

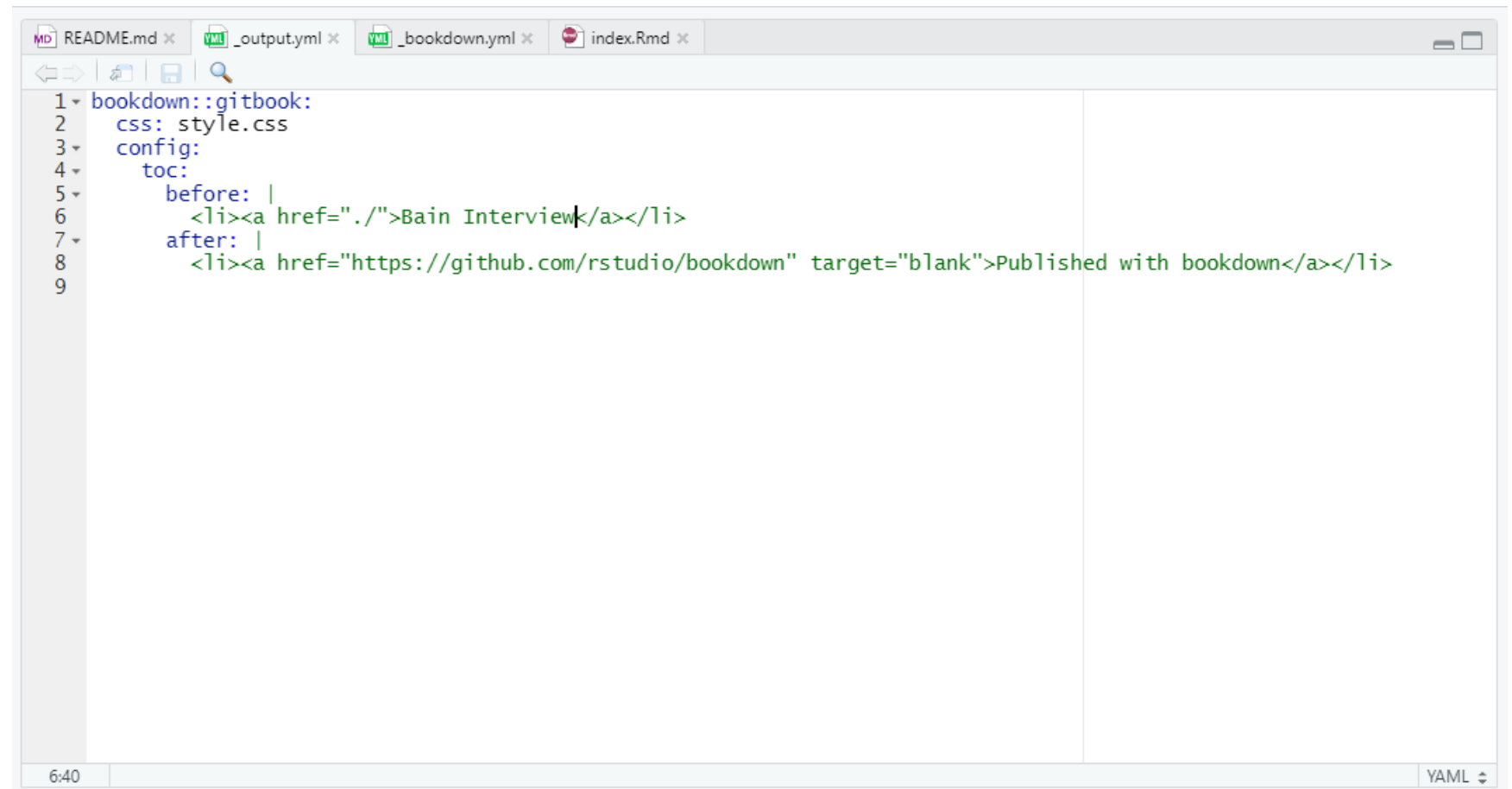
- Enter/edit your github username and repo name, and save the changes

A screenshot of a code editor window with three tabs: 'README.md', '_bookdown.yml', and 'index.Rmd'. The '_bookdown.yml' tab is active, showing a YAML configuration file. The file contains settings for book filename, output directory, deletion of merged files, GitHub edit and view URLs, language, and a user interface chapter name. Line numbers 1 through 9 are visible on the left side of the editor.

```
1 book_filename: "bookdownproj"
2 output_dir: docs
3 delete_merged_file: true
4 edit: https://github.com/andreavillanes/MyFirstBookdown/edit/master/%s
5 view: https://github.com/andreavillanes/MyFirstBookdown/blob/master/%s
6 language:
7   ui:
8     chapter_name: "Chapter "
9
```


Go to the _output.yml file

- Edit the Short Title, and save the changes



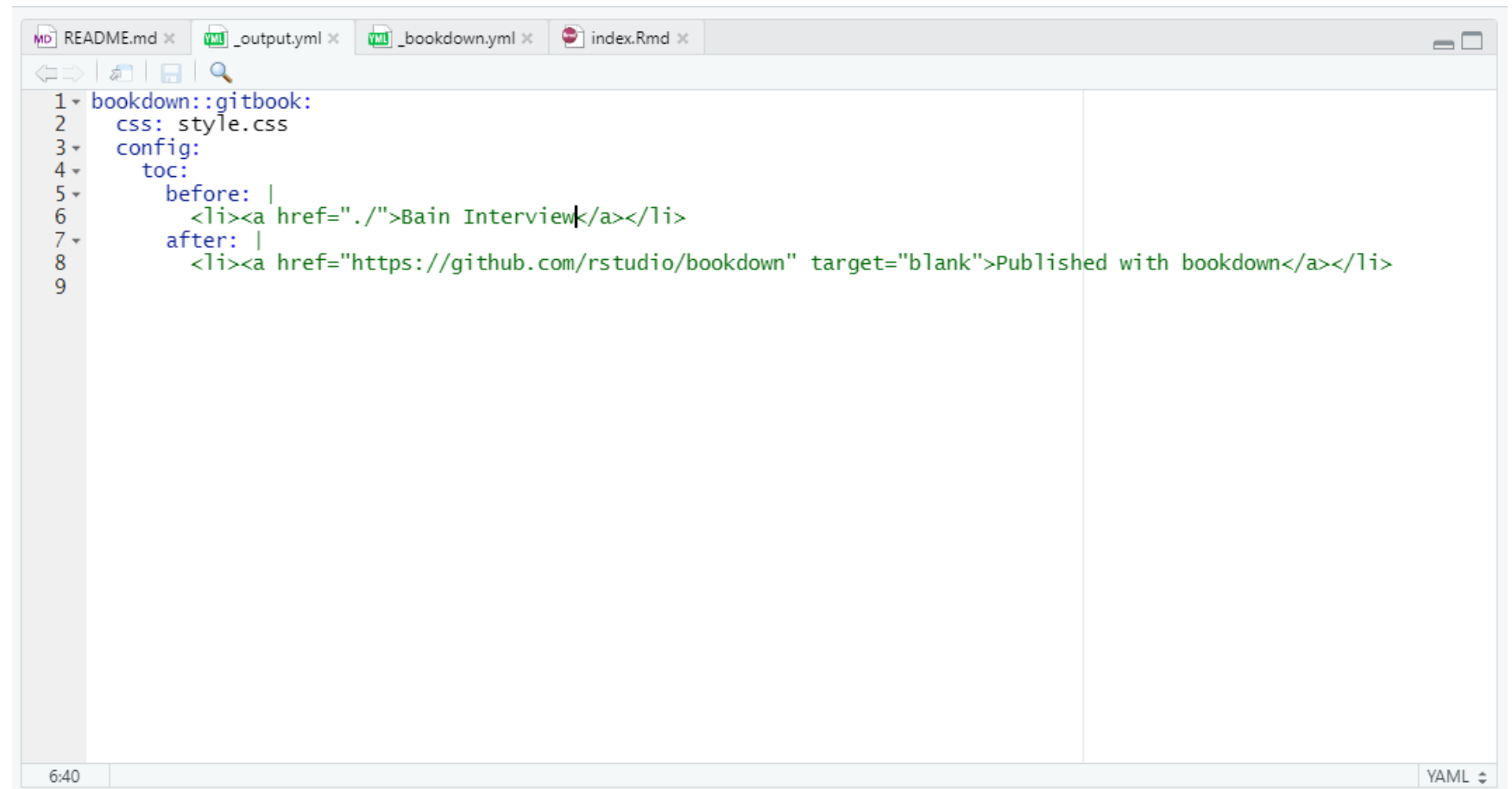
The screenshot shows an RStudio editor window with four tabs: README.md, _output.yml (active), _bookdown.yml, and index.Rmd. The _output.yml file contains the following YAML configuration:

```
1 bookdown::gitbook:
2   css: style.css
3   config:
4     toc:
5       before: |
6         <li><a href=".">Bain Interview</a></li>
7       after: |
8         <li><a href="https://github.com/rstudio/bookdown" target="blank">Published with bookdown</a></li>
9
```

The status bar at the bottom left shows the time 6:40, and the bottom right shows the file type as YAML.

Go to the _output.yml file

- Edit the Short Title, and save the changes



The screenshot shows an RStudio editor window with four tabs: README.md, _output.yml (active), _bookdown.yml, and index.Rmd. The _output.yml file contains the following YAML configuration:

```
1 bookdown::gitbook:
2   css: style.css
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4     toc:
5       before: |
6         <li><a href=".">Bain Interview</a></li>
7       after: |
8         <li><a href="https://github.com/rstudio/bookdown" target="blank">Published with bookdown</a></li>
9
```

The status bar at the bottom left shows the time 6:40, and the bottom right shows the file type as YAML.

Time to render the book.

Install `**bookdown**` with
`install.packages("bookdown")`

Now, we render the book

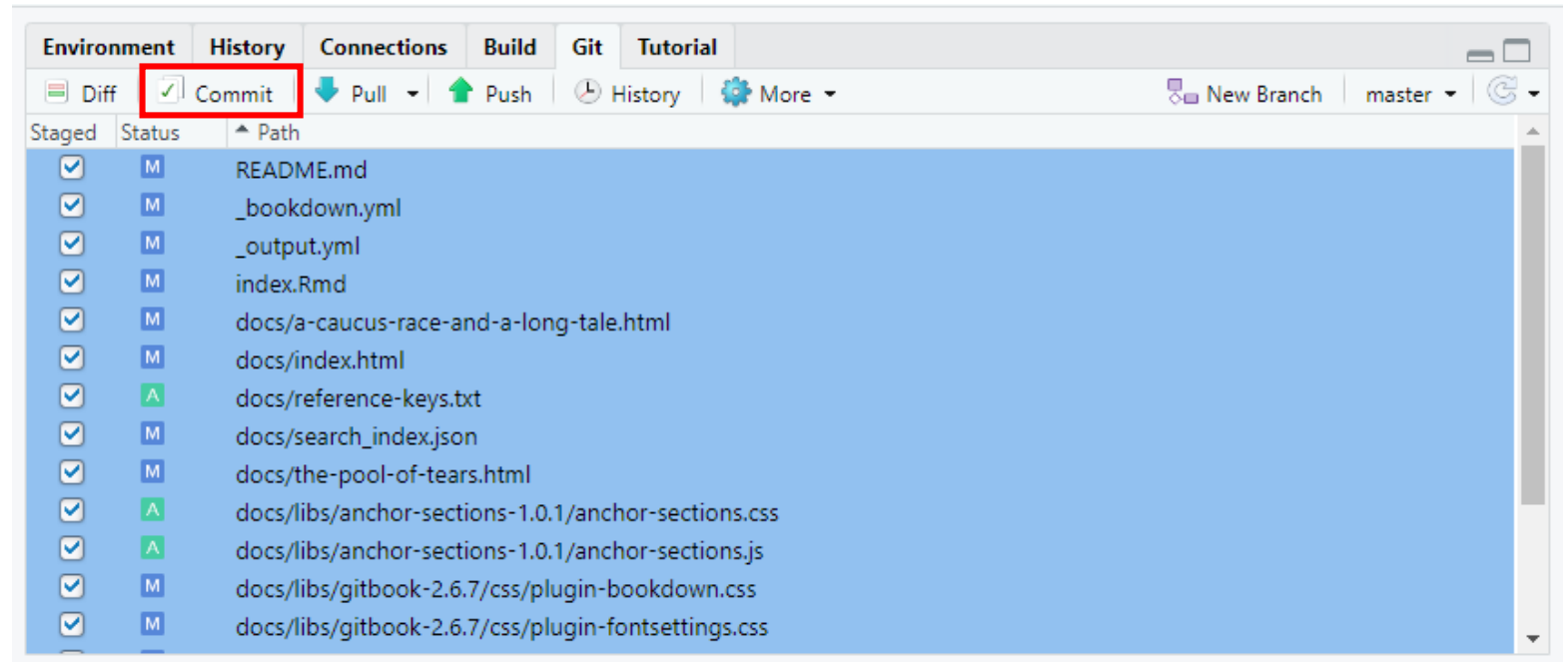
- In the console, enter:

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

- View the book locally.
- You will see your local version of the bookdown file.
- If everything looks good, we can commit those changes

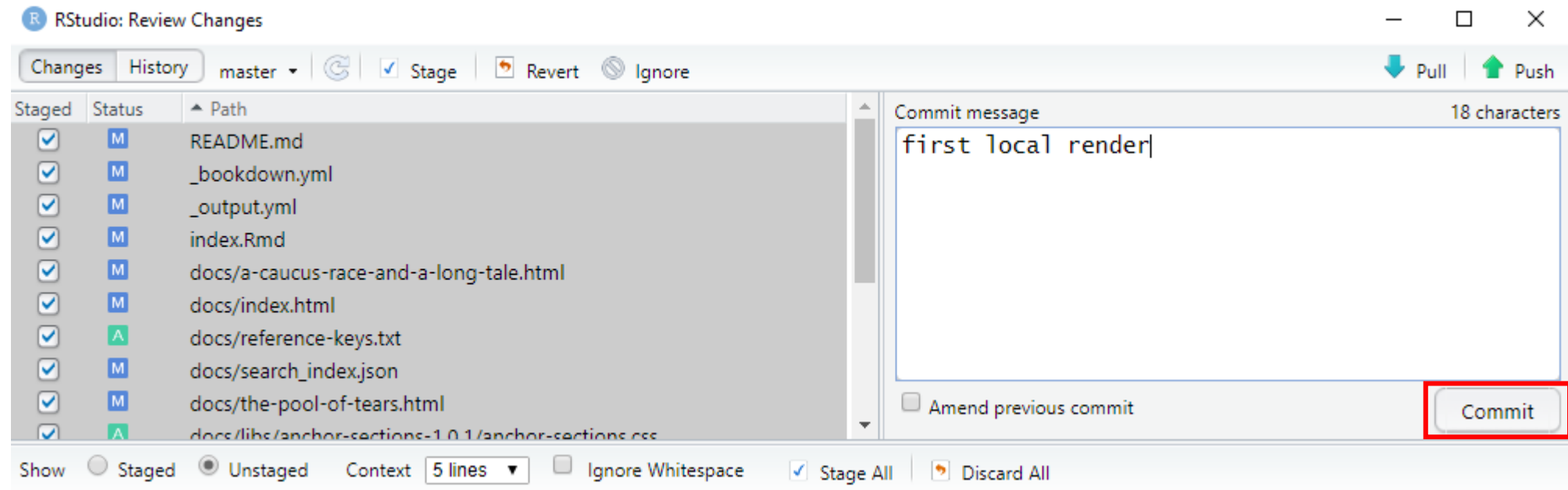
To commit to changes...

- Go to the Git window
- Control + A to select all the files, and check all the files.
- Click on Commit

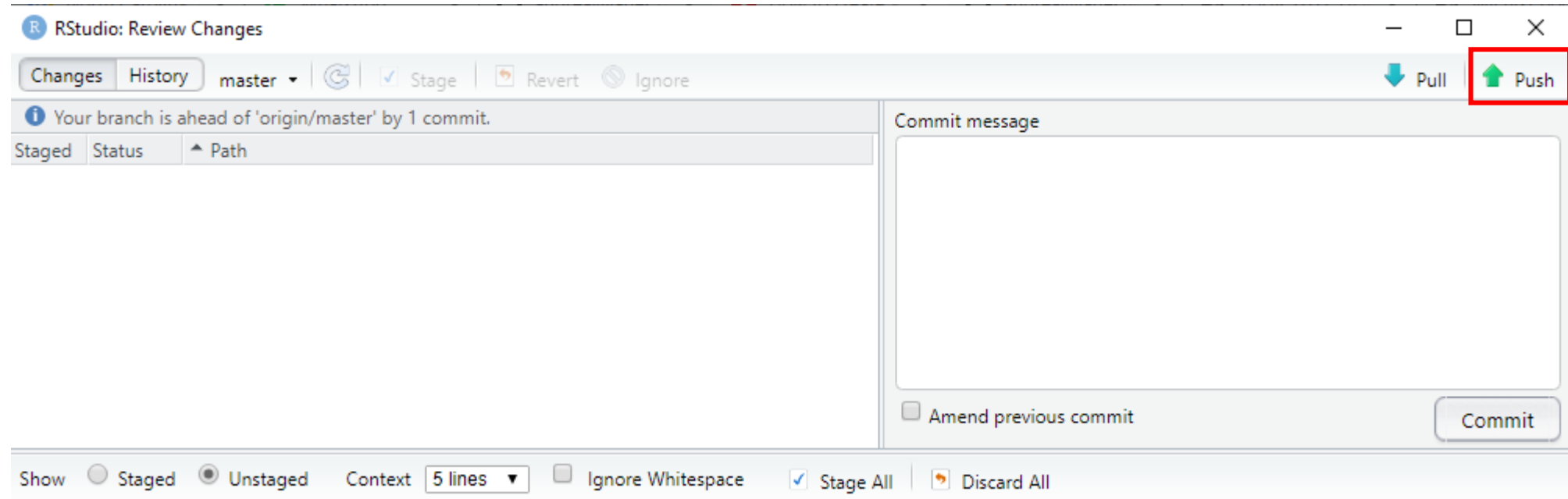


Once you clicked on Commit...

- Write a commit message.
- Click on Commit.



And then push the changes



Go back to your repo

- Write `usethis::browse_github()` on the console to go back to your repo
- Click on the URL. Notice that it will take some minutes to be updated.
- In the meantime, you can edit your README file.

Lastly, you can modify your .Rmd files, and include any type of analysis/code you want.

Tip: remember to render the book locally before committing/pushing to Github.

[1 Executive Summary](#)[2 Methodology](#)[2.1 Data Used](#)[3 Analysis](#)[3.1 Model Evaluation](#)[4 Results](#)[4.1 Recommendations](#)

Published with bookdown

My first bookdown

Andrea Villanes

2021-10-13

Section 1 Executive Summary

We can use any arithmetic operator, like addition, subtraction, multiplication, division, exponentiation, and modulus operations:

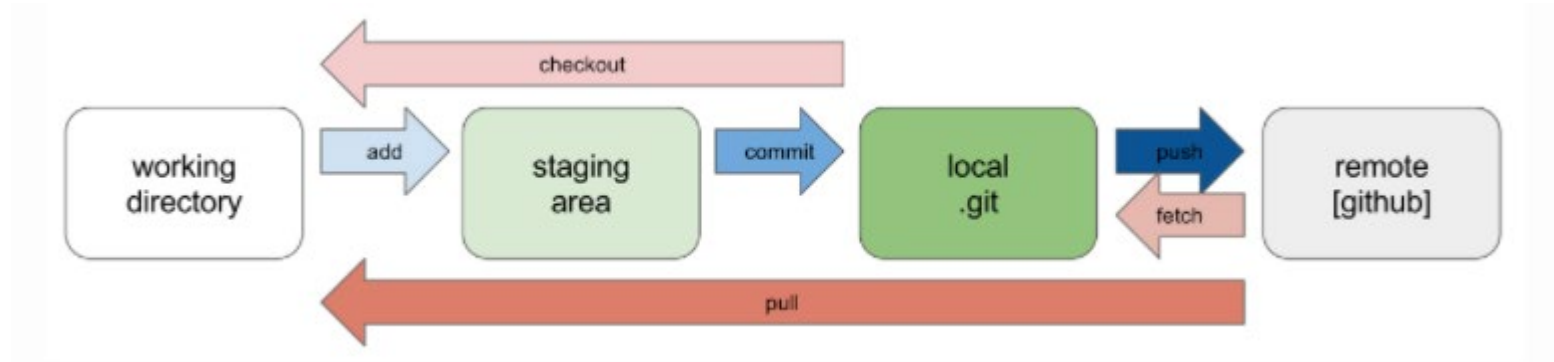
```
# addition
1 + 1

# subtraction
6 - 4

# multiplication
2 * 2

# division
10 / 5
10.2 / 5
```

Basic Git Workflow



Excellent resource on the steps we followed on Github: <https://nceas.github.io/oss-lessons/version-control/4-getting-started-with-git-in-RStudio.html>