

Assignment 01: Set up

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11 febbraio, 2017

1 Overview

Purpose

The purpose of this assignment is twofold.

1. To check if your computation environment is up and running; and
2. To become familiar with GitHub workflow

Goal

- Clone the assignment repository
- Make a working branch
- Replicate the present PDF file with your name on the author line
- Commit the change and send a Pull Request

2 Prerequisite

GitHub Account

Make a github account if you don't have one.

- GitHub

Softwares

Please install the following softwares (they are free)

- R
- RStudio
- LaTeX system (texlive for Windows/Linux, MacTeX for macOS)
- GitHub Desktop

When you finish installation, follow the instructions.

3 Instructions

Step 1. Clone the assignment repository

Click the invitation link. Your assignment repository is automatically created. Click “Clone or download” and then click “Open in Desktop”. Then GitHub Desktop opens.

Step 2. Make a new brach with a descriptive name

Do not start to work on the problem yet! Make a new branch with a descriptive name. Let’s say, “workbench”.

Step 3. Open the assignment directory by RStudio

Then open the folder in which the repository resides, by

- [Windows] Clicking the gear button and then “Open in Explorer”
- [Mac] Right-Clicking (Two-finger click) on the repository name in the left area, and then clicking “Open in Finder”

Double click “*.Rproj” file. RStudio should open.

Step 4. Open this assignment file

Look at the “Files” pane on RStudio. Open “01-setup” and click “problem.Rmd”. Now you see the source file of this instruction manual.

Step 5. Knit

Click “knit” button above the editor pane. If this is the first time you try to knit Rmd to PDF you are prompted to install and/or update dependencies. Success?

Now, do you see the rendered PDF file? Congratulations, you are good to go!

If you don’t see the PDF, hang in there. Since this is typical, don’t be ashamed of having caused an error. As you learn how to code, you’ll read even more error messages (not less!!).

What you need to do is read the error message carefully. Try to figure out what is missing. After a careful reading of error message, you sometimes can fix it yourself. But not always. If you still don’t know what to do, copy the error message and ask google about that. If you still can’t fix, ask the TA or lecturer.

Your problem was probably caused by a missing packages? As a matter of fact, this Rmd depends on not-preinstalled package called “tidyverse”. Please install this.

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

`install.packages("package_name")` is a typical way of package installation on R.

Step 6. Make modification

You may want to modify the source because the output PDF file has strange author name on it: "Your name". Find the way to change the author name. Put your name there.

And save the file and knit again.

4 Example text

4.1 Data analysis

```
library(tidyverse)

## Warning: package 'tidyverse' was built under R version 3.3.2
## Loading tidyverse: ggplot2
## Loading tidyverse: tibble
## Loading tidyverse: tidyr
## Loading tidyverse: readr
## Loading tidyverse: purrr
## Loading tidyverse: dplyr

## Warning: package 'ggplot2' was built under R version 3.3.2
## Warning: package 'tibble' was built under R version 3.3.2
## Warning: package 'tidyr' was built under R version 3.3.2
## Warning: package 'readr' was built under R version 3.3.2
## Warning: package 'purrr' was built under R version 3.3.2
## Warning: package 'dplyr' was built under R version 3.3.2
## Conflicts with tidy packages -----
## filter(): dplyr, stats
## lag():    dplyr, stats

(iris_tbl <- as_data_frame(iris))

## # A tibble: 150 × 5
##   Sepal.Length Sepal.Width Petal.Length Petal.Width Species
##   <dbl>         <dbl>         <dbl>         <dbl> <fctr>
## 1         5.1         3.5         1.4         0.2  setosa
## 2         4.9         3.0         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         5.0         3.6         1.4         0.2  setosa
```

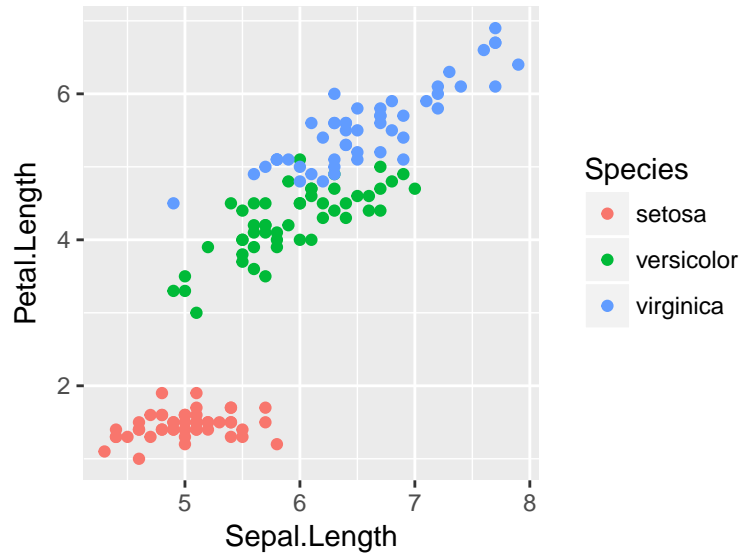


Figure 1: Iris Data

```
## 6      5.4      3.9      1.7      0.4 setosa
## 7      4.6      3.4      1.4      0.3 setosa
## 8      5.0      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
## # ... with 140 more rows
```

The following code produce Figure 1.¹

```
ggplot(iris_tbl) +
  geom_point(aes(x = Sepal.Length, y = Petal.Length, color = Species))
```

4.2 Matheamtical equation

Using LaTeX syntax, you can produce mathematical equations:

$$f(x) = f(0) + \int_0^x f'(y)dy. \quad (1)$$

Cross reference works like Equation (1) but the syntactic rule is different from LaTeX. See <https://bookdown.org/yihui/bookdown/markdown-extensions-by-bookdown.html#equations> for more detail.

¹See <http://stackoverflow.com/questions/38861041/knitr-rmarkdown-latex-how-to-cross-reference-figures-and-tables/38884378#38884378>