A good example of a report using R Markdown

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1. Introduction

This is an example of Markdown for a class report. For example, this report is about the lab of laying out multiple plots on a page.I will place some text here and insert a local image.

`An individual ggplot object contains multiple pieces - axes, plot panel(s), titles, legends -, and their layout is defined and enforced via the gtable package, itself built around the lower-level grid package. Plots themselves become graphical objects, which can be arranged on a page using e.g. the`gridExtra`or`egg`packages, which provide helper functions for such multi-object layouts. The following schematic illustrates the main relations between these packages.`

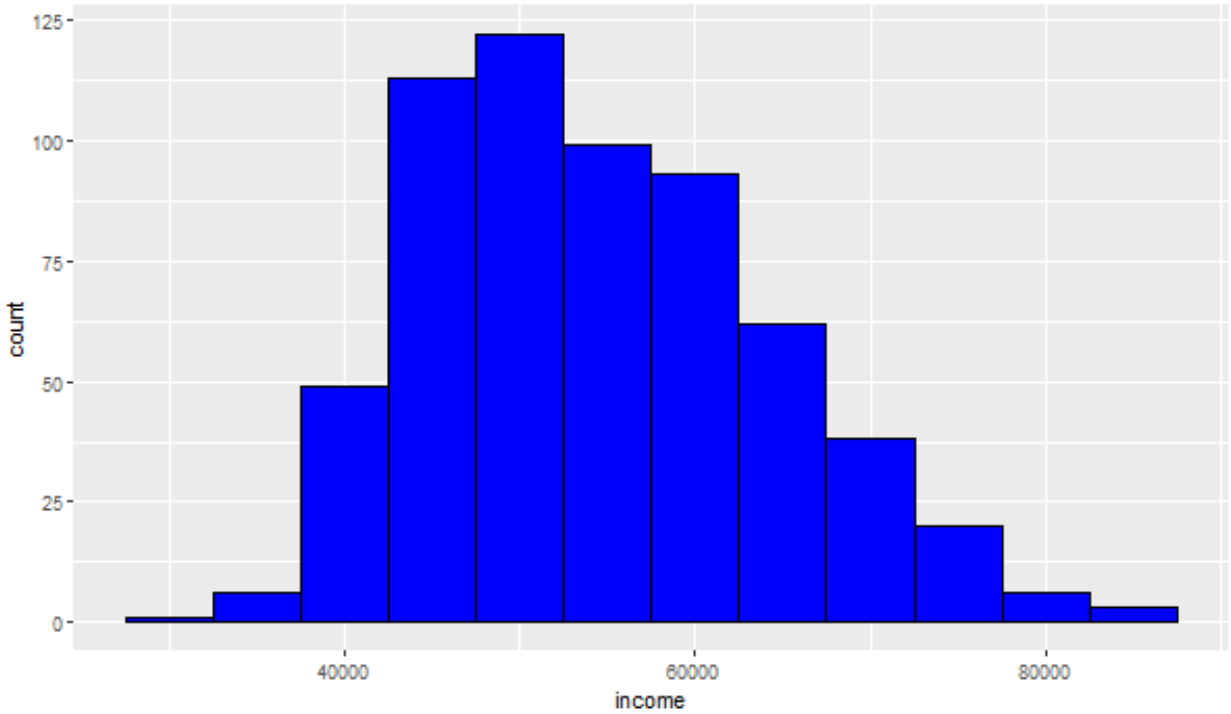

Figure 1: Schematic illustration of the links between packages ggplot2, gtable, grid, egg and gridExtra.

2. Data Overview

This data discription is from one student in DSCI605. It is used as example here for your reference. Please have your data informaiton like source(Download Data), varibles, size, years etc in this section.

Data Source

The data is also available here. https://www.google.com

I selected the CO2 dataset found in the base data sets of R. I explored the data with plots for descriptives, distributions, and correlations. For each plot, I give interpretation after writing code for it. At the bottom of the document is the full view of all the plots together.

This data set comes from a study that manipulated the temperature of grass to see how CO2 uptake rates might be effected. Plants came from two different locations (Quebec or Mississippi) and they were either chilled or unchilled the night before CO2 measurements were taken...

Variables

Here is some more context for some of the variables. I use *1*,*2*,... to order the items.

1.Type: Continuous,Discrete

2.Test: How to indent the text

```
Whitespaces are often meaningless in Markdown. Markdown will also ignore spaces used
for indentation by default. However, we may want to keep the indentation in certain
cases, e.g., in verses and addresses. In these situations, we can use line blocks by
starting the line with a vertical bar (|). The line breaks and any leading spaces will be
preserved in the output. For example:
```

Show you how to do the indent in R markdown.
  The line indents.
Ensure that your math
  This line indents too.
  been placed on a single long line

3.Conc: ambient CO2 levels (mL/L)

4.Uptake: rate of CO2 consumption (per second)

3. Data Analysis and Visualization

This is an R Markdown document. Markdown is a simple formatting syntax for authoring HTML, PDF, and MS Word documents. For more details on using R Markdown see http://rmarkdown.rstudio.com.

*When you click the **Knit** button a document will be generated that includes both content as well as the output of any embedded R code chunks within the document. You can embed an R code chunk like this:*

```
summary(cars)
```

```
##      speed           dist
##  Min.   : 4.0   Min.   :  2.00
```

```
##  1st Qu.:12.0   1st Qu.: 26.00
##  Median :15.0   Median : 36.00
##  Mean   :15.4   Mean   : 42.98
##  3rd Qu.:19.0   3rd Qu.: 56.00
##  Max.   :25.0   Max.   :120.00
```

Set *eval* to be 'true', then you can see the result of printing the code of summary(cars) Here is some more context for some of the variables:

- Type: geographic location of plant
- Treatment: chilled or not the night prior
  - subitem1
  - subitem2
- Conc: ambient CO2 levels (mL/L)
- Uptake: rate of CO2 consumption (per second)

Including Plots

You can also embed plots. There are some plotting examples below.

In Figure 2, we see `Figure2` in R.

```
par(mfrow=c(2,2))
plot(1:10, col=2)
plot(density(runif(100, 0.0, 1.0)))
plot(runif(100, 0.0, 1.0),type="l")
```

In Figure 3, we see `Figure3` in R.

```
par(mfrow=c(2,2))
plot(1:10, col=2)
plot(density(runif(100, 0.0, 1.0)))
plot(runif(100, 0.0, 1.0),type="l")
```

In Figure 4, we can see another plotting example.

Here is another example about inserting image in R Markdown.

Note that the `echo = FALSE` parameter was added to the code chunk to prevent printing of the R code that generated the plot. If you set it TRUE, you can print your code in the file.

Here is some more context for some of the variables:

-Type: geographic location of plant

-Treatment: chilled or not the night prior

-Conc: ambient CO2 levels (mL/L)

-Uptake: rate of CO2 consumption (per second)

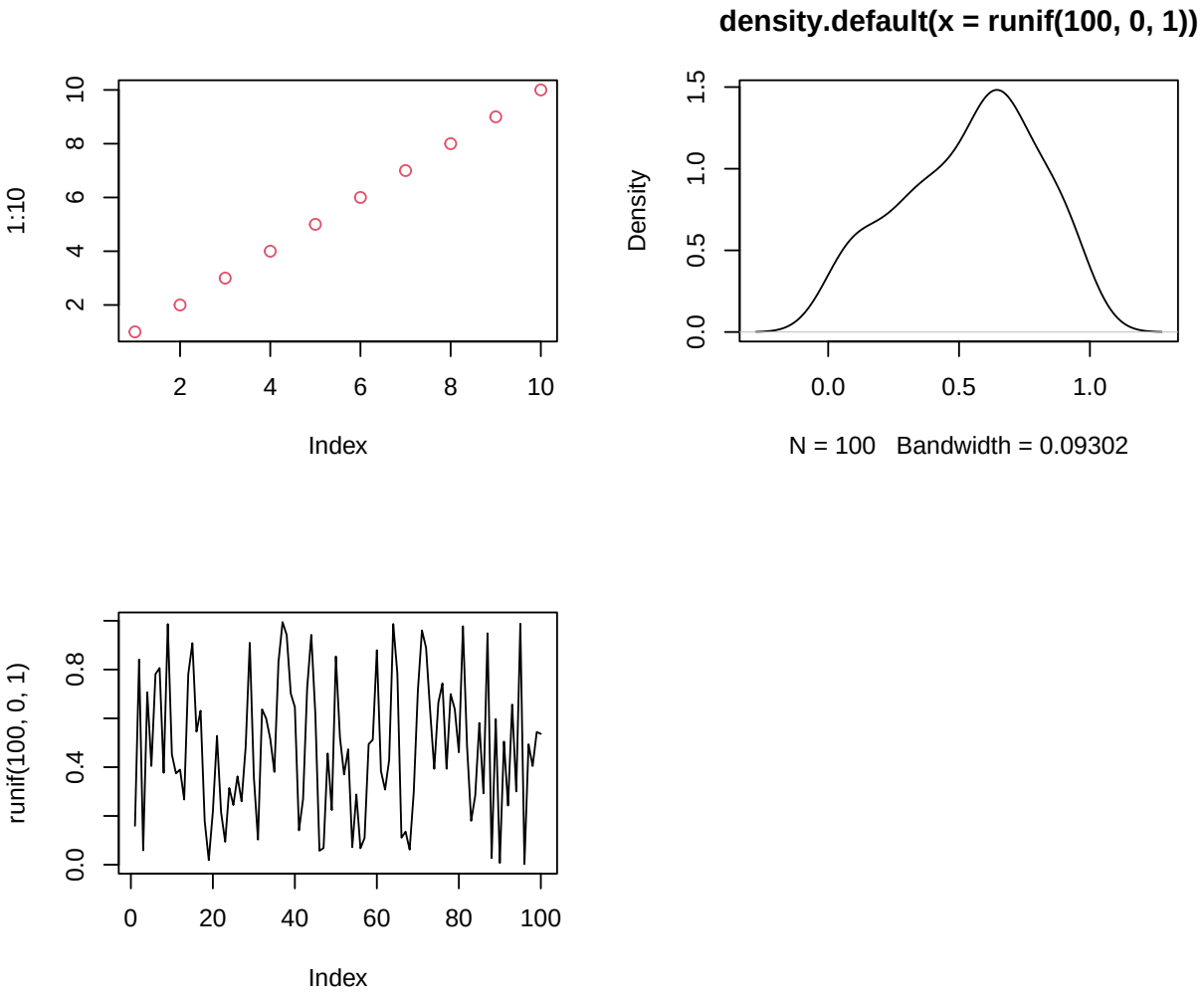

Figure 2: plotting example

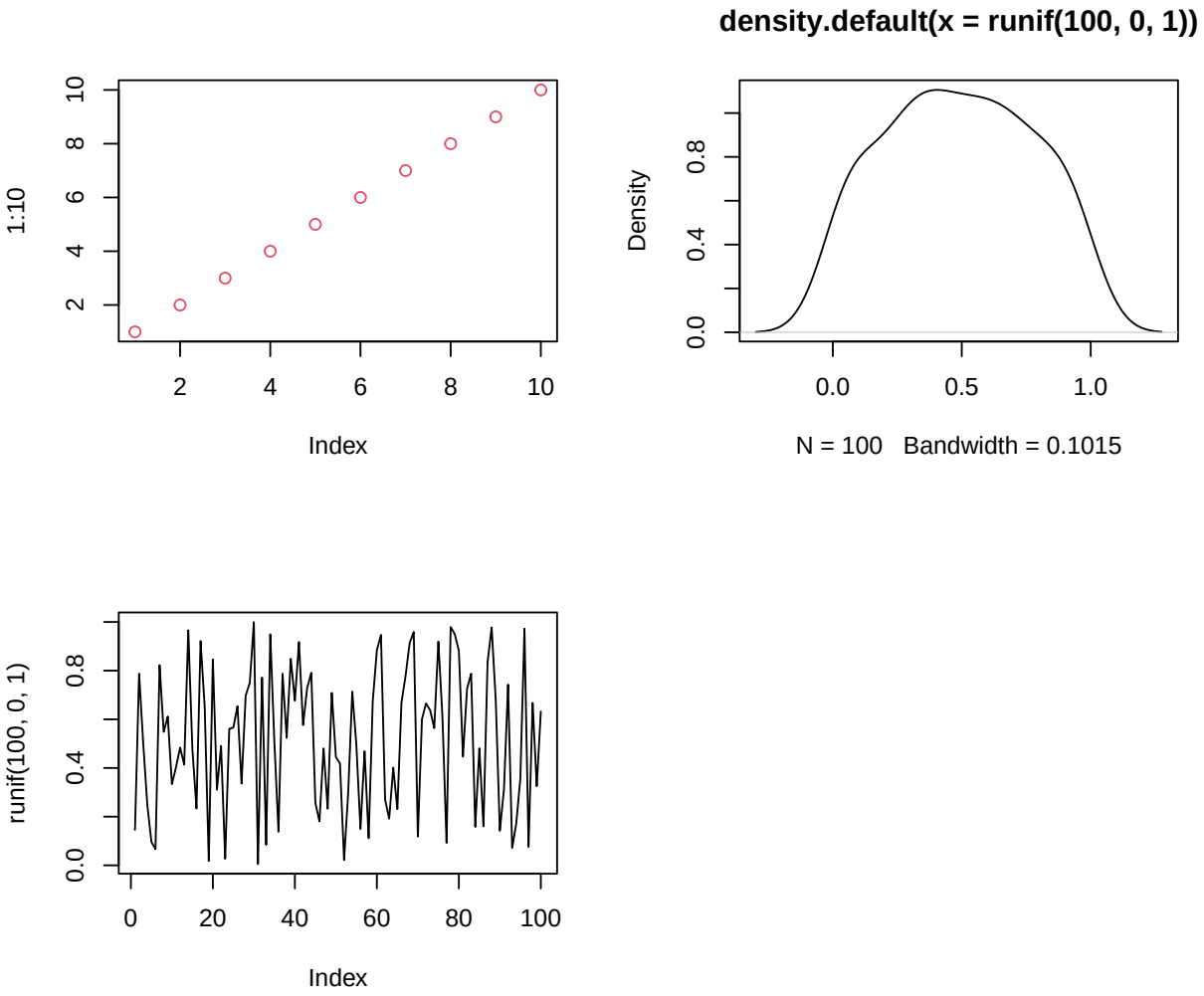

Figure 3: plotting example

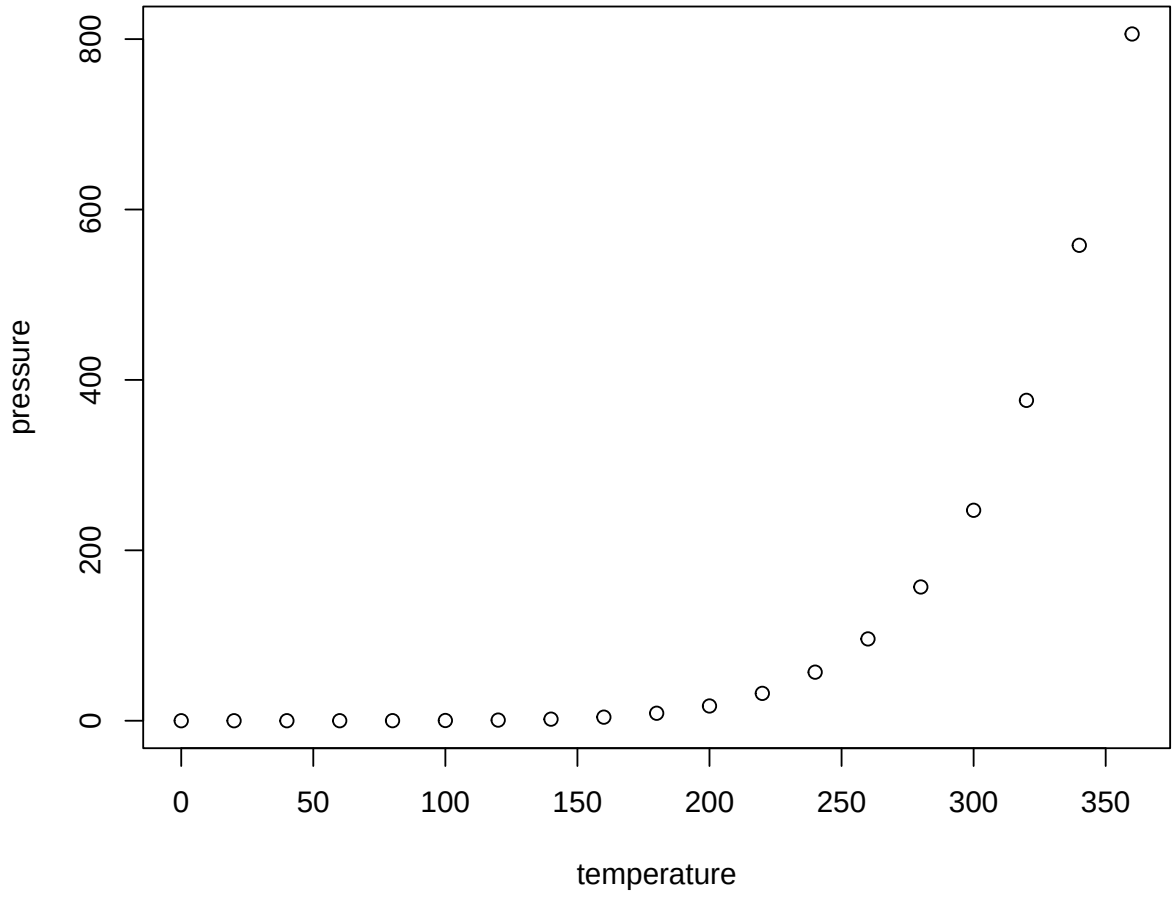

Figure 4: plotting example

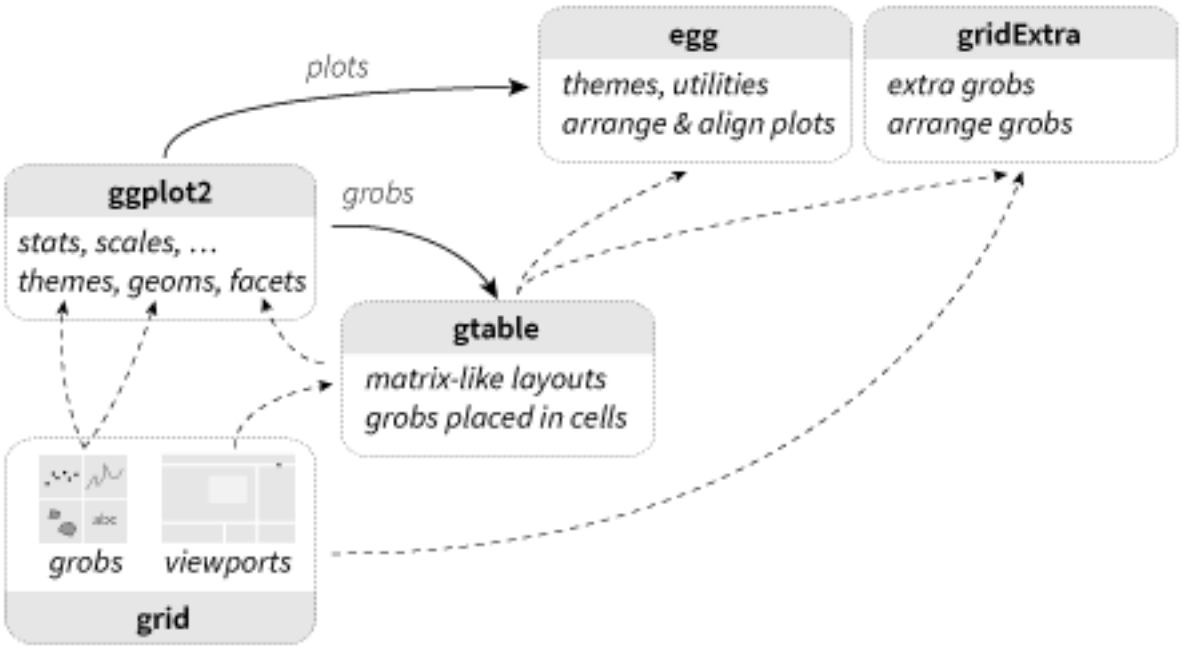

Figure 5: Schematic illustration of the links between packages ggplot2, gtable, grid, egg and gridExtra.

Including Tables

It is also very easy to make a table with knitr's `kable` function:

```
library(knitr)
# I want to make a table
kable(mtcars[1:5,],caption= "A Knitr's kable.")
```

Table 1: A Knitr's kable.

	mpg	cyl	disp	hp	drat	wt	qsec	vs	am	gear	carb
Mazda RX4	21.0	6	160	110	3.90	2.620	16.46	0	1	4	4
Mazda RX4 Wag	21.0	6	160	110	3.90	2.875	17.02	0	1	4	4
Datsun 710	22.8	4	108	93	3.85	2.320	18.61	1	1	4	1
Hornet 4 Drive	21.4	6	258	110	3.08	3.215	19.44	1	0	3	1
Hornet Sportabout	18.7	8	360	175	3.15	3.440	17.02	0	0	3	2

```
kable(mtcars[1:5,],caption= "A new one.")
```

Table 2: A new one.

	mpg	cyl	disp	hp	drat	wt	qsec	vs	am	gear	carb
Mazda RX4	21.0	6	160	110	3.90	2.620	16.46	0	1	4	4
Mazda RX4 Wag	21.0	6	160	110	3.90	2.875	17.02	0	1	4	4
Datsun 710	22.8	4	108	93	3.85	2.320	18.61	1	1	4	1
Hornet 4 Drive	21.4	6	258	110	3.08	3.215	19.44	1	0	3	1

	mpg	cyl	disp	hp	drat	wt	qsec	vs	am	gear	carb
Hornet Sportabout	18.7	8	360	175	3.15	3.440	17.02	0	0	3	2

Another test Including Tables

In Table 3, we see `A table` in R.

```
library(knitr)
# I want to make a table
kable(mtcars[1:5,],caption= "\\label{tab:tbl1}A `kable` table")
```

Table 3: A `kable` table

	mpg	cyl	disp	hp	drat	wt	qsec	vs	am	gear	carb
Mazda RX4	21.0	6	160	110	3.90	2.620	16.46	0	1	4	4
Mazda RX4 Wag	21.0	6	160	110	3.90	2.875	17.02	0	1	4	4
Datsun 710	22.8	4	108	93	3.85	2.320	18.61	1	1	4	1
Hornet 4 Drive	21.4	6	258	110	3.08	3.215	19.44	1	0	3	1
Hornet Sportabout	18.7	8	360	175	3.15	3.440	17.02	0	0	3	2

4. Conclusion

Please note: The text below is just for your reference. It is from a student's homework. It is not the `real` conclusion. You need to provide your conclusion of your final project here.

The plot above shows visualization of the iris data using different functions in R. The scatter plot shows the relationship between the two variables sepal.length and sepal.width. It can be observed that there is a positive relationship between sepal.length and sepal.width since most of the points on the scatter plot spread towards the right area of the plot.

This file includes how to insert the image, the hyperlink, label the graphs and make a table in R markdown file.