Laboration report in Statistics

Laboration X

Course code

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XX-XX-20XX

Contents

1. Introduction

Introduce the laboration; the data set used, the overall goal of the exercises and add any preparatory work, for instance reading data sets and loading packages. Any output should be hidden unless specifically asked for.

2. Exercises

Example of knitR

Example on how to run R-code directly in LaTeX

I run some code:

```
# Some code
library(xtable) # Loads package xtable
data(iris)
mean(iris$Sepal.Length)

## [1] 5.843333

x <- 10
x

## [1] 10
```

The output is a bit ugly so I hide some aspects of the code with:

```
## [1] 10
```

I write my report on the dataset iris.[1] I use references when needed. If I want to reference a specific page I can do that inside the citation. [1, p. 2-4] Still only one reference will be added to the bibliography.

I have read the data set iris which consists of 150 observations. The first observations can be seen here:

Showing output directly from R looks very ugly:

```
##   Sepal.Length Sepal.Width Petal.Length Petal.Width Species
## 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
## 6          5.4         3.9          1.7         0.4  setosa
```

It is much nicer (and efficient) to use for example the package *xtable* to produce structured output.

Table 2.1: A table with data

Sepal.Length	Sepal.Width	Petal.Length	Petal.Width	Species
5.10	3.50	1.40	0.20	setosa
4.90	3.00	1.40	0.20	setosa
4.70	3.20	1.30	0.20	setosa
4.60	3.10	1.50	0.20	setosa
5.00	3.60	1.40	0.20	setosa
5.40	3.90	1.70	0.40	setosa
4.60	3.40	1.40	0.30	setosa
5.00	3.40	1.50	0.20	setosa
4.40	2.90	1.40	0.20	setosa
4.90	3.10	1.50	0.10	setosa
5.40	3.70	1.50	0.20	setosa
4.80	3.40	1.60	0.20	setosa
4.80	3.00	1.40	0.10	setosa
4.30	3.00	1.10	0.10	setosa
5.80	4.00	1.20	0.20	setosa
5.70	4.40	1.50	0.40	setosa
5.40	3.90	1.30	0.40	setosa
5.10	3.50	1.40	0.30	setosa
5.70	3.80	1.70	0.30	setosa
5.10	3.80	1.50	0.30	setosa

If I use the caption argument in the xtable() function, a caption is automatically generated. This caption is automatically added to a list of tables (if that is used). This process is called floating in LaTeX and is done automatically by the xtable() function.

Figures

I have used my data, which can be seen on page 2, to create the nice looking figure 2.1 located on page 4.

Figures created in R are not automatically created in a floating environment (like tables), so this needs to be done manually in LaTeX with:

```
\begin{figure}
    \centering
    \includegraphics{} % R-code can be added here instead of the \includegraphics{}
    \caption{Caption}
    \label{fig:my_label}
\end{figure}
```

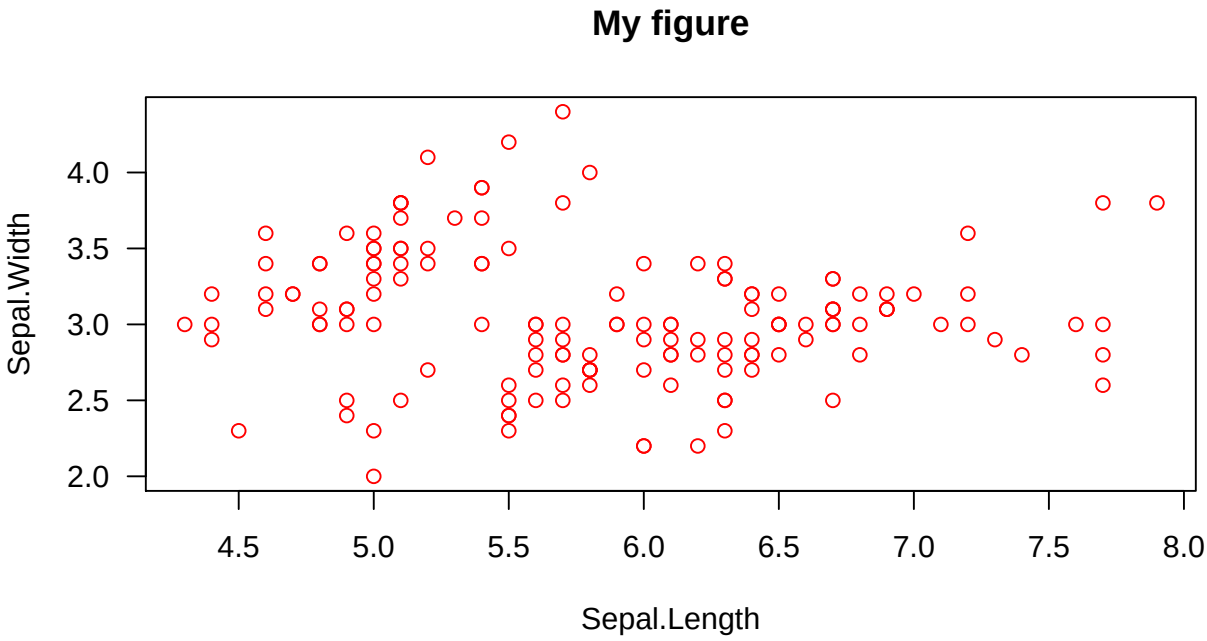

Figure 2.1: A figure

2.1 Exercise 1 - Linear regression

I have done an awesome analysis with linear regression on all 150 observations from the iris data set:

Table 2.2: Some output from the regression analysis

	Estimate	Std. Error	t value	Pr(>|t|)
(Intercept)	6.5262	0.4789	13.63	0.0000
Sepal.Width	-0.2234	0.1551	-1.44	0.1519

And a corresponding ANOVA table.

Table 2.3: ANOVA

	Df	Sum Sq	Mean Sq	F value	Pr(>F)
Sepal.Width	1	1.41	1.41	2.07	0.1519
Residuals	148	100.76	0.68		

If a list of tables was included in the document, all of these tables will be automatically listed there.

Bibliography

[1] Edgar Anderson. The irises of the gaspe peninsula. *Bulletin of the American Iris society*, 59:2–5, 1935.