Simple template for R Markdown

for Advanced Methods for Regression and Classification

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01.10.2024

General information:

R Markdown conveniently combines R code with textual explanations (in Latex or html coding). This will be useful for our exercises, but is really useful in general when you would like to have documented R output. Solve the tasks with R code, and place short comments to answer the questions. There is no need for producing a fancy document. Keep things as simple as possible. Always show the (relevant) R code - never hide it.

R and R-Studio need to be installed, as well as LaTeX(e.g. for Windows as Miktex https://miktex.org/ and for Linux as TexLive https://www.tug.org/texlive/). Then open this file in R-Studio with *File - Open File*, and press the button *Knit*. The result is a pdf file.

Submit both, the .Rnw and the .pdf file to TUWEL.

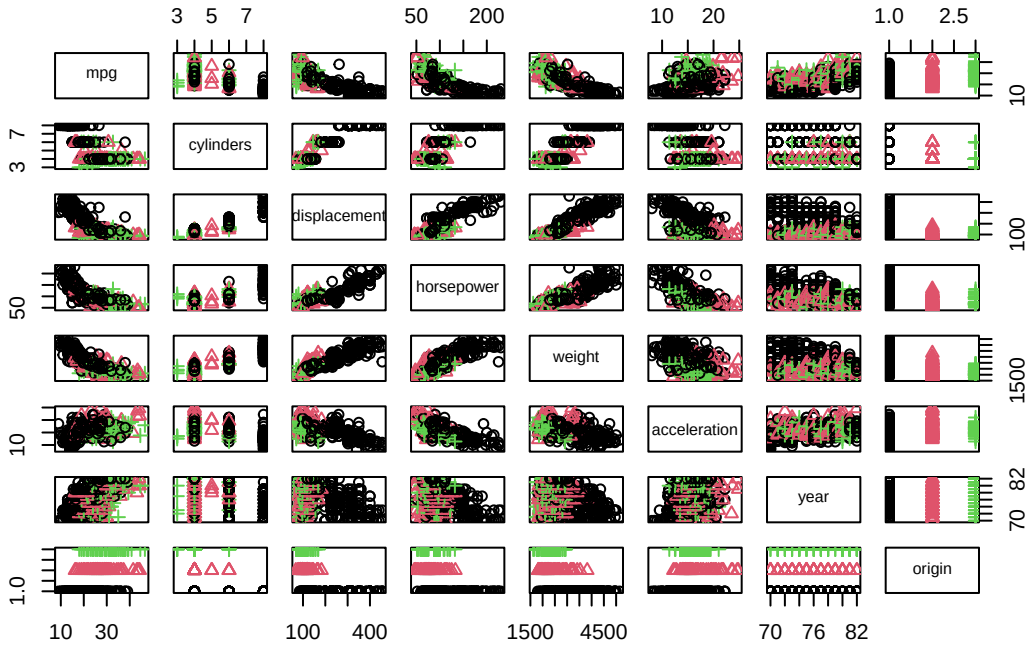
Some simple examples:

Load and plot data:

```
data(Auto,package="ISLR")
x <- Auto[,-9]
```

Plot the selected data, with origin as color and symbol:

```
plot(x, col=x$origin, pch=x$origin)
```



Estimate the correlation matrix of the numeric variables

Pearson: investigates linear relationsships (default)

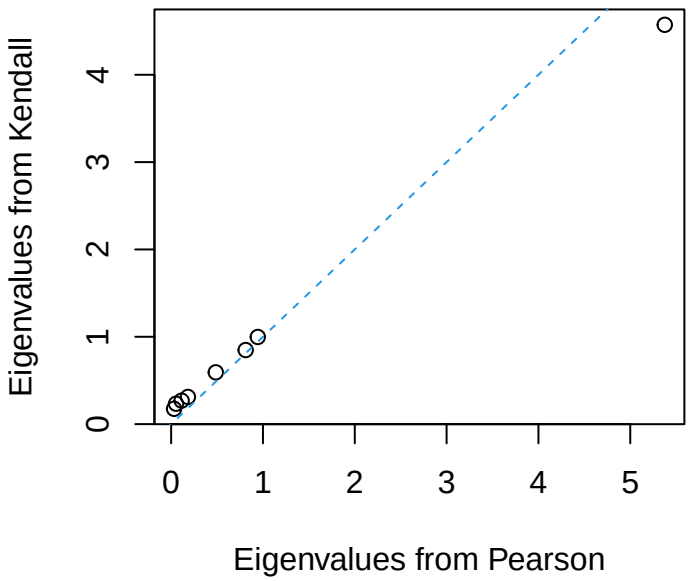
```
cor.pearson <- cor(x)
```

Kendall: investigates non-linear relationsships

```
cor.kendall <- cor(x, method = "kendall")
```

Do eigen-decomposition and compare eigenvalues:

```
eigen.pearson <- eigen(cor.pearson)
eigen.kendall <- eigen(cor.kendall)
plot(eigen.pearson$values,eigen.kendall$values,
     xlab="Eigenvalues from Pearson",ylab="Eigenvalues from Kendall")
abline(c(0,1),col=4,lty=2)
```


Eigenvalues from Kendall
0
1
2
3
4
0
1
2
3
4
5
Eigenvalues from Pearson