Dummy homework

Name

Here is a simple R Markdown template for presenting homework exercises. Notice that use of R Markdown is not compulsory.

- Template includes some basic examples about code blocks, equations, figures and cross-referencing.

- Rmd file can be compiled with the key combination `Ctrl + Shift + K` or by pressing the `Knit` button on R Studio interface.

- Code chunk can be inserted with the key combination `Ctrl + Alt + I` or by pressing the `Insert` button on R Studio interface.

- Equations work very similarly to LATEX. However, cross-referencing differs significantly from LATEX syntax.

- Notice that cross-referencing is not provided in base R Markdown. Bookdown package provides output formats that enable cross-referencing.

- More information and examples about R Markdown, see

  - R Markdown: The Definitive Guide.

  - R Markdown Cookbook.

  - Especially, Chapter 1 of the book "R Markdown: The Definitive Guide" includes instructions for installation of R Markdown.

Dummy exercise

Code blocks

Below is an example code block.

```
emis <- read.table("emissions.txt", header = TRUE, sep = "\t", row.names = 1)
fit <- lm(NOx ~ ., data = emis)
head(emis)
```

```
##    NOx Humidity  Temp Pressure
## 1 0.72    96.50 78.10    29.08
## 2 0.70   108.72 67.93    29.98
## 3 0.95    61.37 88.27    29.34
## 4 0.85    91.26 73.63    29.03
## 5 0.79    96.83 71.02    29.05
## 6 0.71    95.94 76.11    29.04
```

Equations and inline R code

Value of the *coefficient of determination* is approximately $R^2 \approx 0.84$. Previous value was actually computed with inline R command (see Rmd file)! Coefficient of determination can be calculated with the formula

$$R^2 = 1 - \frac{SSE}{SST}.$$

Additionally, one can have numbered equations and cross-reference them,

$$R^2 = 1 - \frac{SSE}{SST}. \tag{1}$$

Coefficient of determination R^2 is calculated according to Equation (1).

Plotting

Notice that labeled text is quite useful for making clean figure captions (see Rmd file).

```
pairs(emis, pch = 19, col = "midnightblue", gap = 0, upper.panel = NULL,
      cex.labels = 1)
```
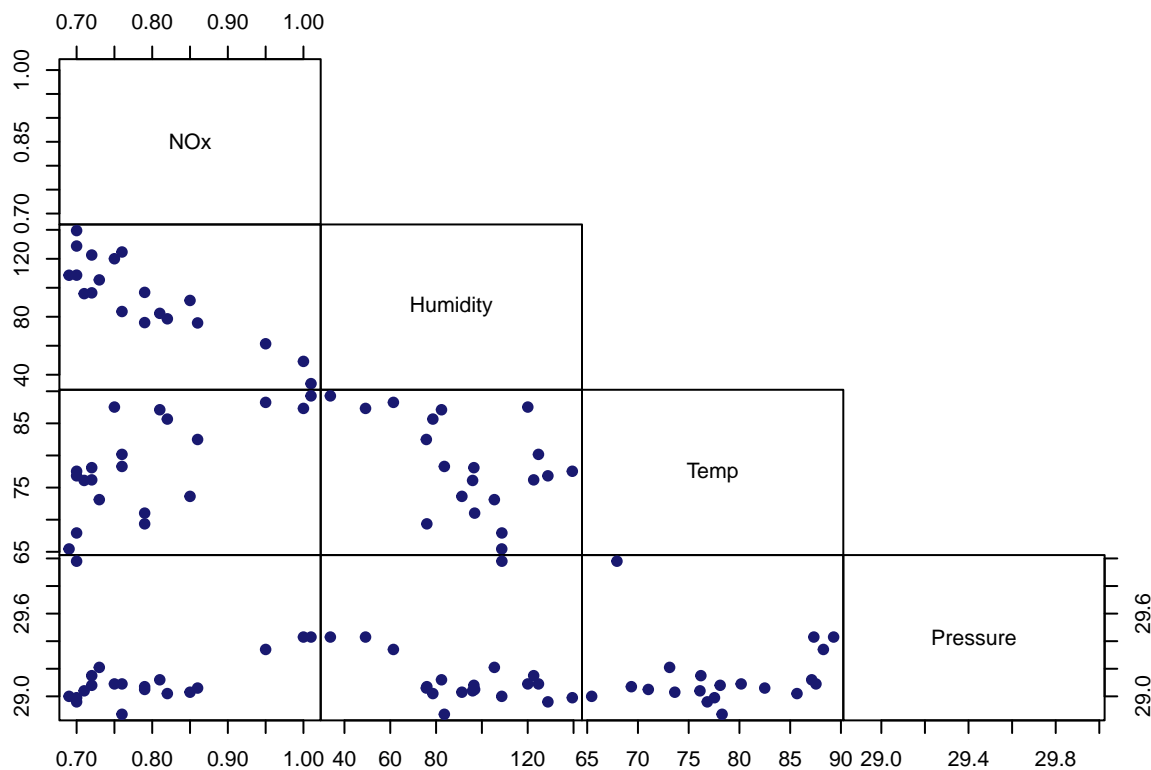

Figure 1: Scatter plot of variables.

Figure 1 suggests that there is negative correlation between variables `NOx` and `Humidity`.

Working directory

Notice that while compiling R Markdown document, the working directory is by default the location of Rmd file.

```
getwd()
```

```
## [1] "/home/perej/teaching/multivariate/template"
```

See Chapter 16.6 of the book "R Markdown Cookbook" for more information.