

# Exercise 2

## 1. Manipulate airquality dataset

- i) Load the `airquality` dataset
- ii) Rename the column headers to lower case
- iii) Add a column with the variable `year`
- iv) Create a new `date` column in the format (YYYY-MM-DD, e.g. 2019-09-25)
- v) Try to do i)-iv) with `dplyr` and piping (`%>%`)

## 2. Convert table from wide to long format

- i) Load the file `tree_growth_data_wide.rds` from the `01_Data` folder and give it a name (e.g. `wide_table`)
- ii) Install the package `tidyr`
- iii) Convert the table to the format shown below using the function `pivot_longer` from the `tidyr` package

```
## # A tibble: 6 x 3
##   ts                series      value
##   <dtm>            <chr>      <dbl>
## 1 2019-05-31 23:00:00 dendrometer1_ch3 8336.
## 2 2019-05-31 23:10:00 dendrometer1_ch3 8336.
## 3 2019-05-31 23:20:00 dendrometer1_ch3 8336.
## 4 2019-05-31 23:30:00 dendrometer1_ch3 8336.
## 5 2019-05-31 23:40:00 dendrometer1_ch3 8336.
## 6 2019-05-31 23:50:00 dendrometer1_ch3 8336.
```

- iv) Save the table to the `01_Data` folder with a new name (e.g. `long_table`)

## Hints

### 1. Manipulate airquality dataset

- i) Use the command `data("airquality")` to load the dataset.
- ii) Use the function `rename` (`?rename`) from the `dplyr` package.  
→ Do not forget to load the `dplyr` package with `library(dplyr)`
- iii) See `?airquality` to find out in which year the measurements were taken. Use the function `mutate` to add the new column `year`.
- iv) Use the function `paste` (with `sep = "-"`) to combine the columns `year`, `month` and `day`.  
Use the function `as.Date` (with `format = "%Y-%m-%d"`) to create the new date column.
- v) Build a structure similar to:

```
new_data_frame <- airquality %>%
  function() %>% # add year column
  function() %>% # combine year, month and day columns
  function()     # add date column
```

### 2. Convert table from wide to long format

- i) Use the function `readRDS` (`?readRDS`).
- ii) See the file `04_Install_packages.R` in the `03_Scripts` folder.
- iii) Have a look at the vignette of the function with the command `vignette("pivot")`. A vignette is a help file with examples included.
- iv) Use the function `saveRDS` to save the table as an R object to file.  
→ Do not forget the file extension `.rds` at the end of the name