



General Information for all exercise (read carefully!)

- We only accept solutions based on an executable script. Copy&pasting commands from a text file or typing in commands on-the-fly will not be accepted.
- Just having running code does not mean that you pass the exercise. You must be able to explain both the code, as well as the results produced by the execution.
- We expect that you use RStudio. You can start RStudio typing `rstudio` into the bash in the CIP pool or use your local installation on a laptop.
- Always run your solutions once on the PC you are using in the exercise before one of the lecturers looks at them. We cannot wait while you are installing libraries because you are running it for the first time on that machine.
- In case data is loaded from the internet (i.e., if you use a URL for data loading), make sure you have a working internet connection during the exercise or you download the data to your machine beforehand. The same is true for loading libraries.
- Presented solutions only count for students that are present. If only one of your group is present, the other does not get credit for the solution.

Basic data exploration with R

The aim of the first exercise is to familiarize yourself with R and RStudio and to execute some simple task.

Execute the following tasks with R:

1. Store `mtcars` in a new variable (`mtcars` is a built-in variable that is always available) and display its data type.
2. Use R to calculate the mean, median, and max for all columns.
3. Visualize the miles per gallon¹ (`mpg`) as well as plot its density (Two plots required, just a density plot is not sufficient!).
4. Extend `cars` with a new column that contains the fuel consumption measured in $\frac{l}{100km}$.
5. Visualize the relationship between the miles per gallon and $\frac{l}{100km}$.

¹Use the US gallon, not the imperial gallon.