

# Exercises I

- 1 Extract 20 random integer numbers and put into a vector  
Get the maximum, the minimum, the median  
Compute the sum of all the numbers

- 2 Given a number  $N$  compute  $N!$

- 3 Given an integer  $N$  return  $\sum_{n=1}^N \frac{1}{n}$

- 4 Extract randomly 10 numbers from  $[-20, 20]$   
Get the sum for the positive and the negative numbers  
Get the maximum between the absolute values of the sums

- 5 Extract 1000 numbers from a  $\mathcal{N}(2, 0.6)$  and compute the mean, the standard deviation and the quantiles

- 6 Create the matrix

$$A = \begin{pmatrix} 1 & 2 & 3 \\ 4 & 2 & 1 \\ 2 & 3 & 0 \end{pmatrix}$$

Determine the transpose, its inverse and multiply by the inverse

*suggestions: check the documentation on how to compute the inverse of a matrix*

- 7 Given this dataset from a larger study collecting Heart Rate and Body Temperature in Fahrenheit:

## Exercises II

Gender	Age	HeartRate	Temperature F
M	33	69	97.00
M	32	72	98.80
M	42	68	96.20
F	33	75	97.80
F	26	68	98.80
M	37	79	101.30
F	32	71	97.80
F	45	73	97.40
F	31	77	99.20
M	49	81	99.20

- Create a vector with the Age values
- Create a vector with the Temperature values
- Create a data.frame with this 2 columns
- Transform temperature in Celsius and compute the mean
- Compute the average age of the samples in this study
- Create a vector of factors indicating the Gender
- Add the Gender vector to the dataframe
- How many Males and Females are in this study?  
NB try to use logical expression on Gender variable
- Compute the average temperature in Celsius for Males and Females separately

### 8 Download the dataset `BodyTemperature.txt` from the web-site

- import the data in R using the first row as name of the variables
- check the number of samples and the number of variables available

## Exercises III

- check the type of object stored in R
- add a column called `Temperature C` with the converted temperature in Celsius
- Compute the average heart rate
- Compute the average heart rate for each Gender subclass
- Compute the average heart rate for subject with more than 40 years
- Compute the maximum `Temperature in C` for subject with less than 40 years