0101-Basics

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1 TP 01 - R Basics - 1/4

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1.1 About

- R is a programming language for statistical computing and data visualization. It has been adopted in the fields of data mining, bioinformatics, and data analysis.
- The core R language is augmented by a large number of extension packages, containing reusable code, documentation, and sample data.
- R software is open-source and free software. It is licensed by the GNU Project and available under the GNU General Public License.It is written primarily in C, Fortran, and R itself. Precompiled executables are provided for various operating systems.
- As an interpreted language, R has a native command line interface. Moreover, multiple third-party graphical user interfaces are available, such as RStudio—an integrated development environment—and Jupyter—a notebook interface.

1.2 Using R

You have 2 options to use R : - Install R on your computer : https://cran.r-project.org/ - You can use Google Colab : https://colab.research.google.com/notebooks/intro.ipynb (you will have to change the kernel to R)

For local usage, you can use : - RStudio : https://www.rstudio.com/products/rstudio/download/ - VSCode : https://code.visualstudio.com/download or other IDE such as PyCharm, Sublime Text, Atom, etc. - Jupiter Notebook : https://jupyter.org/install

1.3 Ressources

All "classical" ressources are available in moodle : - https://moodle-msa.unilasalle.fr/moodle/course/view.php?id=111

All dedicated ressources are available in the dedicated github repository : - https://github.com/AlexandreGazagnes/Unilassalle-Public-Ressources

For the github repository, you will find for each session : - The code in R (.R file) - The jupyter notebook (.ipynb file) - The .pdf file from the jupyter notebook (.pdf file) - A link to a google colab

notebook (the url to the notebook) - The silabus of the session (pdf file) - The data files if needed (csv file)

1.4 Hello, World!

[ ]:
```
# Your 1st line
print("Hello World!")
```

[ ]:
```
# Using a variable
txt < -"Hello World!"
print(txt)
```

[ ]:
```
# '<-' is the same than '='
txt = "Hello World!"
print(txt)
```

[ ]:
```
# Concatenate 2 strings
text1 < -"R is"
# or text1 = "R is"
text2 < -"awesome"
paste(text1, text2)
```

1.5 Simple Maths operations

[ ]:
```
3+3 # Addition
3-3 # Subtraction
3*3 # Multiplication
3/3 # Division
3^3 # Exponentiation
3%%3 # Modulus / remainder
3%/%3 # Integer division
```

[ ]:
```
# A very basic error
num < -5
num = 5
text < -"Some text"
num + text
# Not possible to cat text and num
```

1.6 Variable names

[ ]:
```r
# Legal variable names:
myvar <- "John"
my_var <- "John"
myVar <- "John"
MYVAR <- "John"
myvar2 <- "John"
.myvar <- "John"
```

[ ]:
```r
# Illegal variable names:
# 2myvar <- "John"
# my-var <- "John"
# my var <- "John"
# _my_var <- "John"
# my_v@ar <- "John"
# TRUE <- "John"
```