MBA USP ESALQ

Data Wrangling

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Data Preparation in R

Data wrangling

- We will mainly use the dplyr.
  - Dplyr is a package contained in the tidyverse
  - It contains useful functions for the manipulation/preparation of databases
  - Material for reference:
    - https://dplyr.tidyverse.org/
    - https://github.com/rstudio/cheatsheets/blob/master/data-transformation.pdf
    - Wickham, H. & Grolemund, G. **R for Data Science**: Wtps://r4ds.had.conz/index.html

Data wrangling

- **Pipe**: chaining of several functions in sequence
- **Rename**: change of variable names
- **Mutate**: change of variables content and creation of new variables
- **Filter**: selection of observations based on logical criteria
- **Select**: selection of variables
- **Summarise**: creation of tables with summary statistics (descriptive statistics)
- **Group by**: to group observations based on criteria
- **Join**: to join (*merge*) databases

Projects creation and Scripts R Markdown

R Markdown

- **Introduction to R Markdown**
- **Basic formatting of the text**
- **Formulas insertion**
- **Chunks**
- **To generate outputs (HTML; PDF, DOC)**

- Material for reference:
  - https://rmarkdown.rstudio.com/index.html

Data Science & Analytics Projects in the GitHub

Git

- Useful software for version control
- It records changes made in the files
- We will use it in conjunction with the Github
- To install the Git on the computer (https://git-scm.com/downloads)
  - It's just to pass all steps in the suggested configurations

Github

- Website used to keep the files
  - https://github.com/
- It's organized in repositories (folders) that can be shared, and they can be published.
  - It's useful to store and share portfolio of projects
- Computer files can be sent to Github (via Git)

Git and Github

- Add and Commit

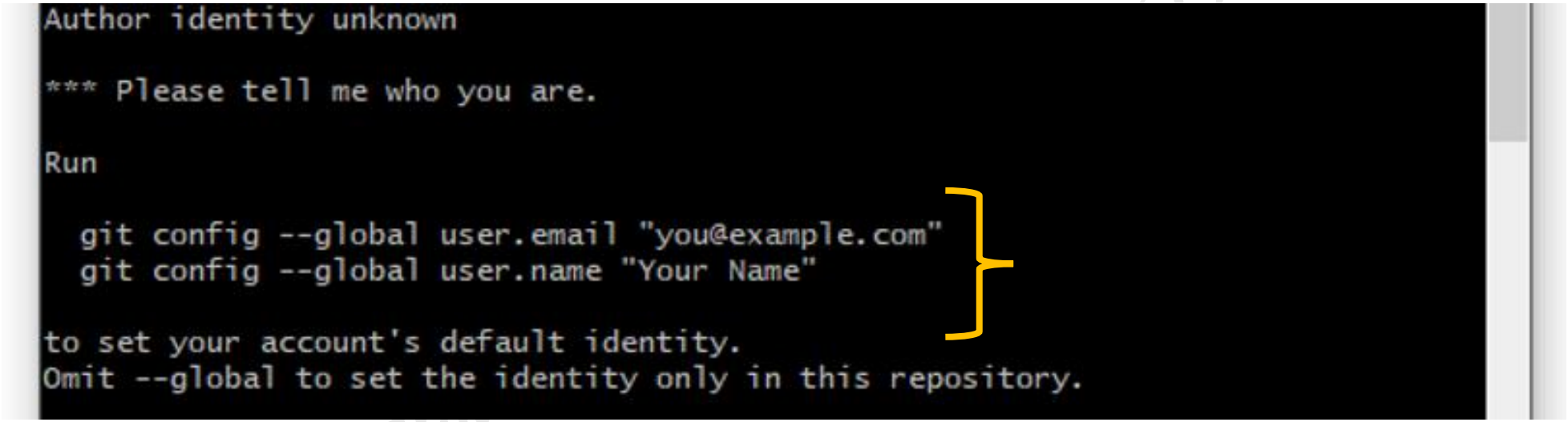
  - Create a folder on the desktop of your computer.
  - In RStudio, create a new scrip and write # Versão 1
  - Save this file in the folder with the name Versão Exemplo.R
  - Inside the folder, click using the mouse right button and choose Git Bash Here

  - In Git, write **git init** (it initializes Git in the selected folder)
  - Write **git add "Versão Exemplo.R"** (it adds the file to the index)
  - Use **git commit -m "título"** to generate versions (it is the versions)

The commit name, example: "First Version"

Git: initial settings

- The first time that Git is used, there is an initial sign up.



- After this message, type a command and then the other
  - **git config -global user.email “your email"**
  - **git config -global user.name “your name”**

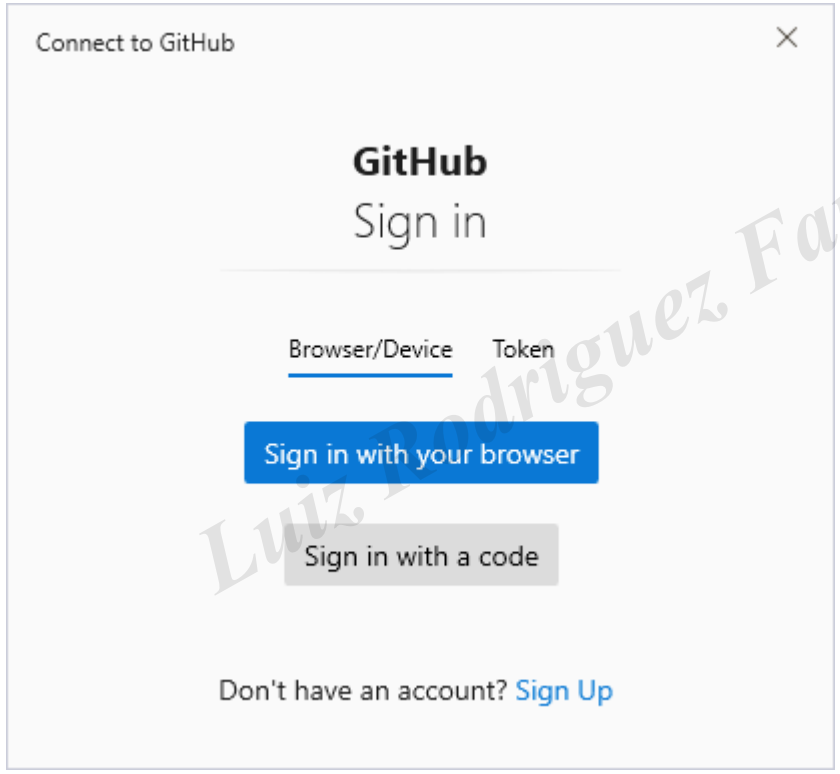
Usually, it arises after the first commit. After registering, remake the commit

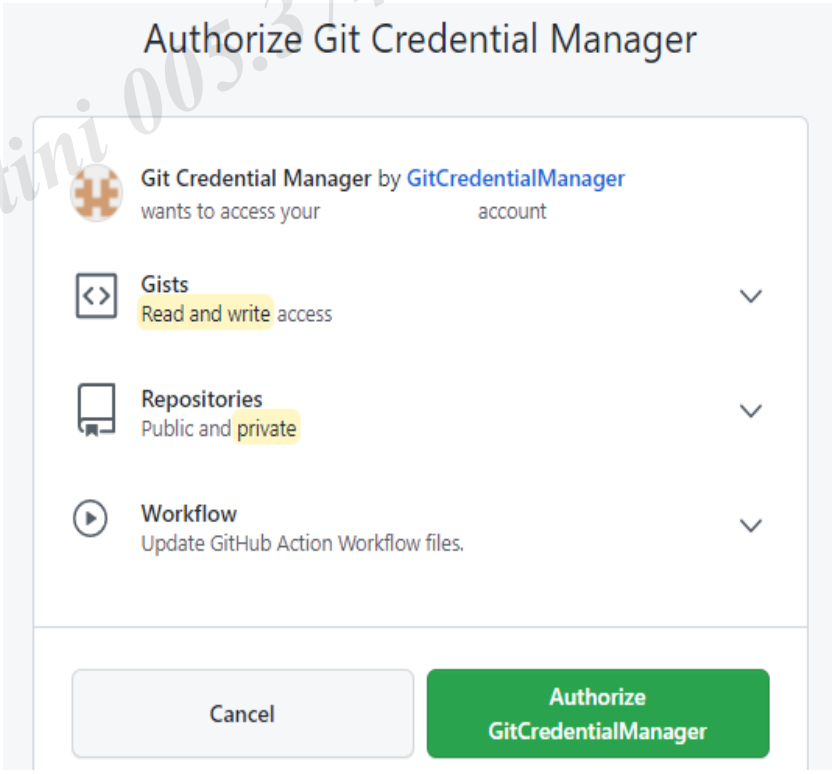
Git and Github

- Push
  - In your Github, create a new repository and name it as you like.
  - Copy the link from the created repository
  - In Git, write **git remote add origin .....(folder link).....**.
  - Finally, type **git push – u origin master** (it sends the file to the repository, remaining on the main branch)
    - It will request login into Github on the first time
  - After update, it is possible to verify that the file is already in your Github!

Git and Github: initial connection

- If it is the first time using Git, there is a login





This is through the browser

Git and Github

- Versions creation and comparison

  - Open the file Example Version and write another line: # Versão 2
  - After saving, close it, and open the Git Bash Here in the folder pressing the mouse right button
  - Use the same procedures:

  - **git add “Versão Exemplo.R”**
  - **git commit -m “Segunda Versão”**
  - **git push –u origin master**

Note that it was not necessary to inform the address

  - The new version is already available in Github and we can compare them!

Git and Github

- Creating branches in the repository
  - In the previous command, we change the main branching of the repository
  - We could create new branches in Github
  - **git checkout -b “nome da nova branch”**
  - In Git, there is already the indication of the change from “master” to "new"
  - The same add and commit procedures
  - **git push -u origin “nome da nova branch”**

Git and Github

- Importing repositories (Clone and Pull)

  - It can be useful to save files on your computer that are in the Github
  - A way of “downloading” these files is through the clone function

  - Create a folder on your computer
  - Inside the folder, open the Git Bash Here pressing the mouse right button
  - In the Github, click on **code** and copy the link in the repository chosen
  - In Git, type **git clone .....(repository link).....**
  - After changes in Github, indicate **cd “repository” to** download again
  - Then, type **git pull** (the file was updated on the computer)

Git and Github

- Copying public repository (Fork)
  - It is possible to copy repositories that are published in the Github
  - Search for some theme of interest
  - Access the repository
  - On the top right corner, there is the **Fork** button
  - After clicking it, you can see the repository on your list (on your profile)

Git, Github and RStudio

- It is possible to integrate Git, Github and RStudio

- In RStudio, click on File→ New Project →Version Control →Git

  - In “Repository URL” indicate the link of the repository in Github

- After creating a document (R Script, R Markdown), click on Git and make **commit** and then **push**

  - It is also possible create **pull** of the files of the repository that was indicated

Functions and Iterations with Purrr Package

Functions, Purrr

- **Creating functions in R**
- **Assign conditions (“IF”)**
- **Iterations with Purrr (map functions)**

- Material for reference:

  - Wickham, H. & Grolemund, G. **R for Data Science**: Wtps://r4ds.had.conz/index.html
  - https://github.com/rstudio/cheatsheets/blob/master/purrr.pdf