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

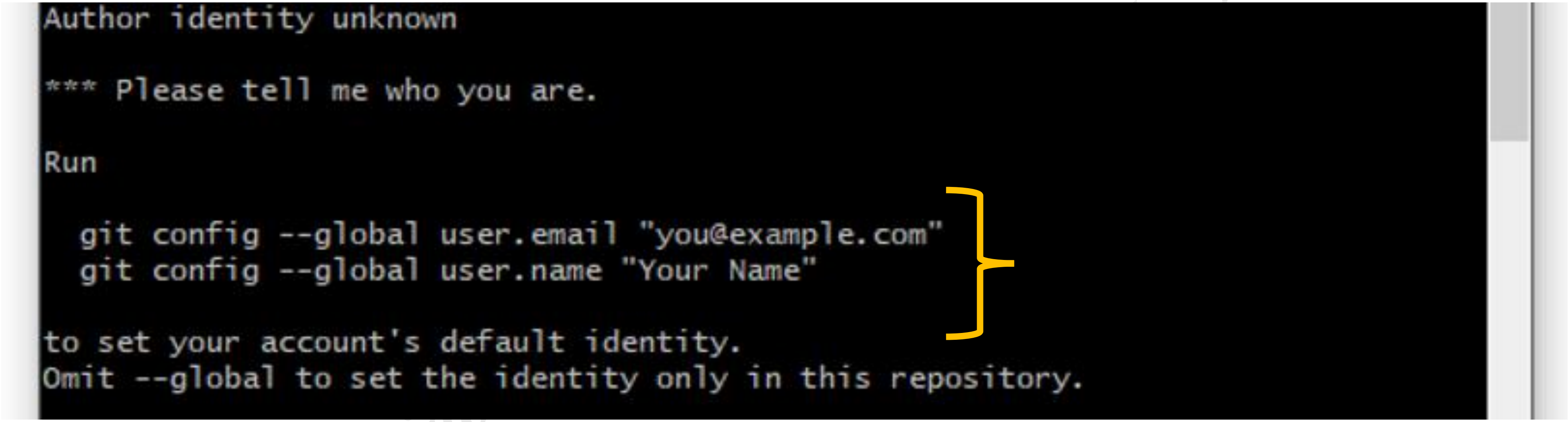
- Add and Commit
  - Create a folder on the desktop of your computer.
  - In RStudio, create a new scrip and write # Versão 1
  - Save this file in the folder with the name Versão Exemplo.R
  - Inside the folder, click using the mouse right button and choose Git Bash Here

  - 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.



```
Author identity unknown

*** Please tell me who you are.

Run

  git config --global user.email "you@example.com"
  git config --global user.name "Your Name"

to set your account's default identity.
Omit --global to set the identity only in this repository.
```

- 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

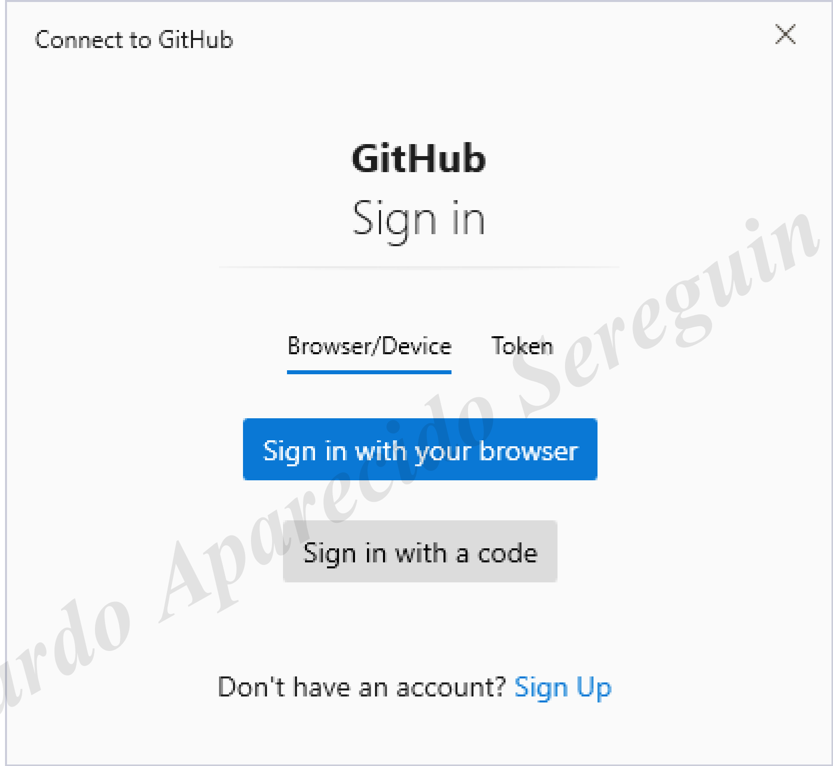
  - In your Github, create a new repository and name it as you like.
  - Copy the link from the created repository
  - In Git, write **git remote add origin ....(folder link)...........**
  - Finally, type **git push – u origin master** (it sends the file to the repository, remaining on the main branch)

    - 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!

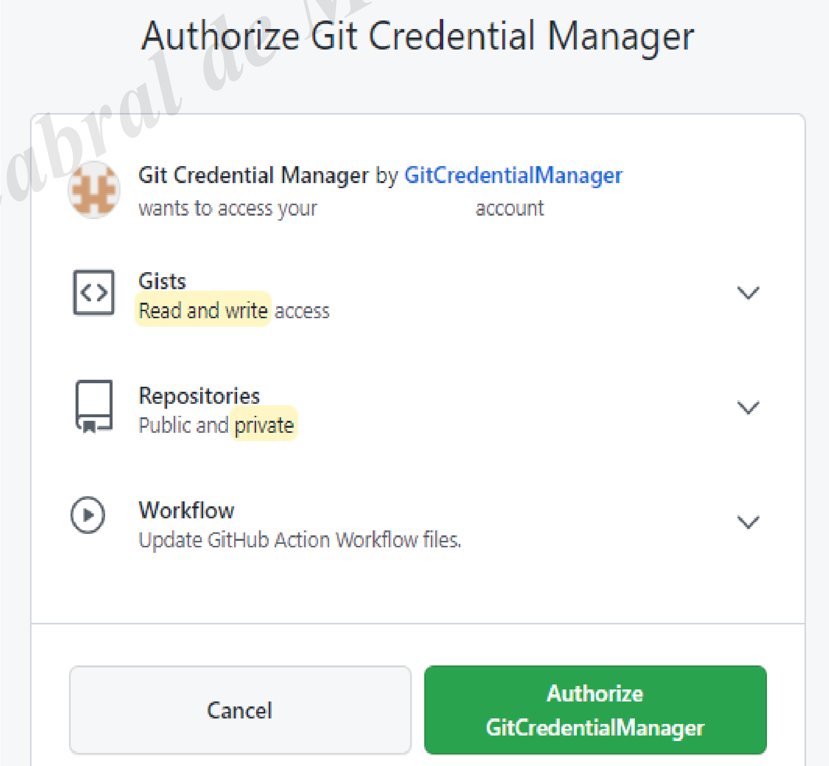
Git and Github: initial connection

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



Connect to GitHub

Don't have an account? Sign Up



Authorize Git Credential Manager

Git Credential Manager by GitCredentialManager wants to access your account

Gists
Read and write access

Repositories
Public and private

Workflow
Update GitHub Action Workflow files.

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