 # MODULE 1 : DATA EXPLORATION

DATA-MANIPULATION-1

Wrangling data to extract meaningful insights

Club Informatique & Télécom
Data Cell

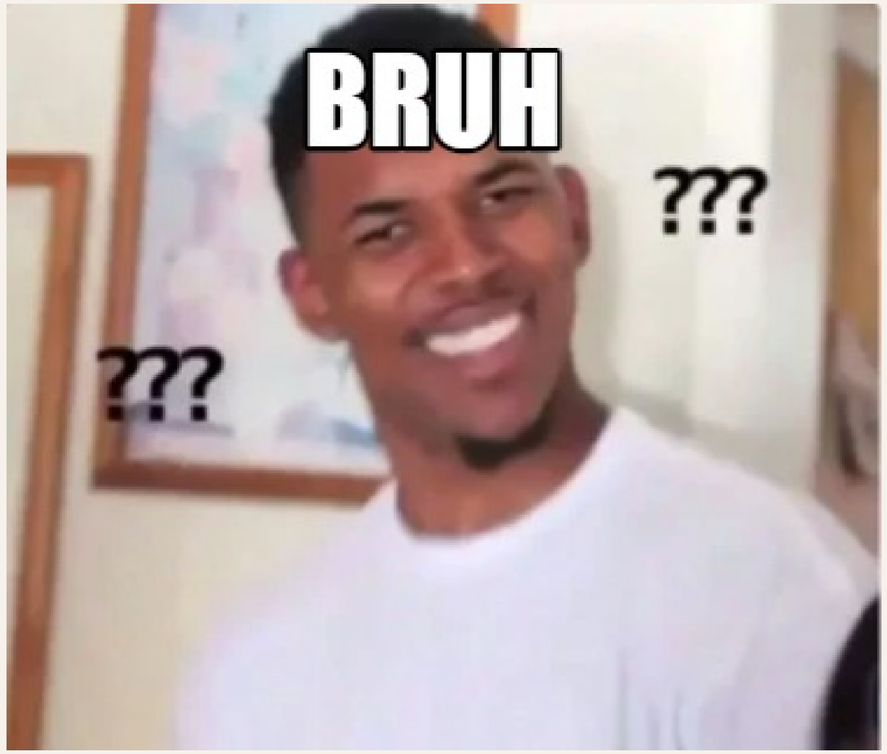
Data Manipulation - 1

- What is data wrangling ?
- Pandas data structures
- Viewing / inspecting data
- Selecting data
- Cleaning data
- Today’s lab : Olympic Data

Data Manipulation

Data wrangling is the process of transforming and structuring data from one raw form into a desired format with the intent of improving data quality and making it more consumable and useful for analytics or machine learning. It’s also sometimes called data munging.

alteryx.com


BRUH
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Data Wrangling

Pandas library

Pandas Data Structures

`pd.Series` + `pd.Series` = `pd.DataFrame`

	apples
0	3
1	2
2	0
3	1

+

	oranges
0	0
1	3
2	7
3	2

=

	apples	oranges
0	3	0
1	2	3
2	0	7
3	1	2

Viewing / inspecting data

`df.head(n)`	First n rows of the DataFrame
`df.tail(n)`	Last n rows of the DataFrame
`df.shape`	Number of rows and columns
`df.info()`	Index, Datatype and Memory information
`df.describe()`	Summary statistics for numerical columns
`s.value_counts(dropna=False)`	View unique values and counts
`df.apply(pd.Series.value_counts)`	Unique values and counts for all columns

Selecting data

`df[col]`	Returns column with label col as Series
`df[[col1, col2]]`	Returns columns as a new DataFrame
`s.iloc[0]`	Selection by position
`s.loc['index_one']`	Selection by index
`df.iloc[0,:]`	First row
`df.iloc[0,0]`	First element of first column

Data Cleaning

`pd.isnull()`	Checks for null Values, Returns Boolean Arrray
`df.dropna() / df.dropna(axis=1)`	Drop all rows / columns that contain null values
`df.fillna(x)`	Replace all null values with x
`s.fillna(s.mean())`	Replace all null values with the mean
`s.astype(float)`	Convert the datatype of the series to float
`s.replace([2,3],['two', 'three'])`	Replace all 2 with 'two' and 3 with 'three'
`df.rename(columns={'old': 'new'})`	Selective renaming
`df.set_index('column_one')`	Change the index

Time to practice !