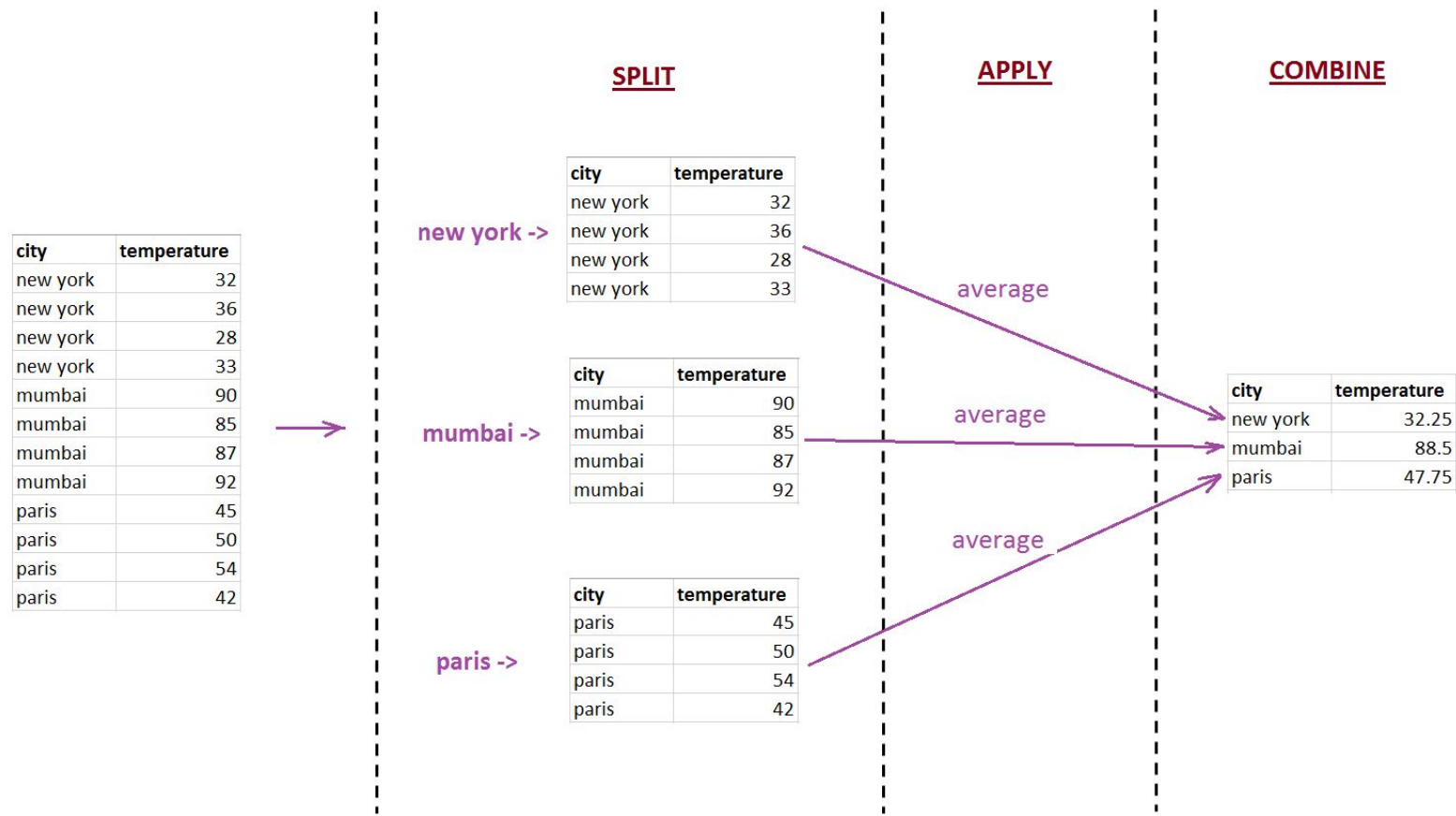# LAB#05

Artificial Intelligence

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Lab Objectives

Pandas: Groupby, Adding and Removing Rows and Columns, Renaming the existing columns, loc and iloc

Matplotlib and Seaborn for Data Visualization

GroupBy

loc vs iloc

- loc:
  - Used for labeled Indexing, where index is a text label
  - Can use Numeric Indexing, but the last index will be included
  - Can accept Boolean data

- iloc:
  - Used for numeric indexing, where index is integer
  - Last index will not be included
  - Can not accept Boolean data

Tasks

Section 3: Data Grouping

- Group wines by quality rating and calculate the mean alcohol content.
- Group wines by pH level (acidic, neutral, basic) and calculate the mean quality rating.

Section 4: Data Sorting

- Sort wines by quality rating in descending order.
- Sort wines by alcohol content in ascending order.

Tasks

- **Section 5: Data Concatenation**
  - Concatenate the red wine dataset with the white wine dataset

Why Data Visualization

A picture is worth a thousand words!

What is Data Visualization

- Data Visualization is the process to visualize the data in picture form

- Data Visualization allows us to communicate the insights from the data easily with the stakeholders

Matplotlib

- Library/Module for Data Visualization

- Submodule pyplot is used for creating various plots

- Inside a plot we have figure and axes

Figure and Axis

- Figure object is container which holds everything which we see on the page

- Axis is the part of the page that holds the data, it is the canvas on which we will draw our data to visualize it

Types of Plots to Cover

- Line Plot
- Bar Plot
- Scatter Plot
- Pie Plot

Some other Libraries

- Ggplot2
- Seaborn
  - etc