**Assignment: Enzyme Kinetics Data exploration with Pandas**

**Dataset Description:** You are provided with lists containing information about enzyme kinetics experiments. The dataset includes the following parameters:

* **Experiment\_ID**: Unique identifier for each experiment.
* **Enzyme\_Name**: Name of the enzyme used in the experiment.
* **Substrate**: Substrate used in the reaction.
* **Temperature**: Temperature at which the experiment was conducted.
* **pH**: pH of the reaction medium.
* **Reaction\_Rate**: Rate of the enzymatic reaction observed in the experiment.
* **Substrate\_Concentration**: Initial concentration of the substrate in the reaction.
* **Enzyme\_Concentration**: Concentration of the enzyme in the reaction.
* **Time**: Reaction time.

# Provided lists (Use this list in your code)

experiment\_ids = [1, 2, 3, 4, 5, 6, 7, 8, 9, 10]

enzyme\_names = ['Lipase', 'Amylase', 'Lipase', 'DNA Polymerase', 'Amylase', 'Lipase', 'DNA Polymerase', 'Amylase', 'Lipase', 'DNA Polymerase']

substrates = ['Triacylglycerol', 'Starch', 'Triacylglycerol', 'DNA Template', 'Starch', 'Triacylglycerol', 'DNA Template', 'Starch', 'Triacylglycerol', 'DNA Template']

temperatures = [25, 30, 25, 35, 30, 32, 28, 33, 29, 31]

ph\_values = [7.0, 6.5, 7.2, 6.8, 7.0, 6.7, 7.5, 6.9, 7.2, 6.8]

reaction\_rates = [0.05, 0.08, 0.06, 0.12, 0.09, 0.07, 0.11, 0.1, 0.08, 0.09]

substrate\_concentrations = [10, 15, 10, 20, 15, 12, 18, 14, 16, 11]

enzyme\_concentrations = [2, 1.5, 2, 1, 1.8, 2.2, 1.3, 1.9, 2.1, 1.7]

times = [10, 15, 12, 20, 18, 14, 16, 13, 19, 17]

Assignment questions

1. Create a Pandas DataFrame using the provided lists (**experiment\_ids**, **enzyme\_names**, **substrates**, **temperatures**, **ph\_values**, **reaction\_rates**, **substrate\_concentrations**, **enzyme\_concentrations**, **times**).
2. Display the first 5 rows of the DataFrame using **head()**.
3. Display the last 3 rows of the DataFrame using **tail()**.
4. Provide an overview of the DataFrame using **info()**.
5. Using **loc()**, display information for experiments conducted at a specific temperature (Temperature = 30).
6. Using **loc()**, display information for experiments conducted at a specific temperature (PH = 7).
7. Use boolean filtering to extract rows where the 'Reaction\_Rate' is greater than 0.1.
8. Create a new DataFrame containing only experiments with a specific enzyme (DNA Polymerase) and store it in variable “DNA\_Polymerase”.
9. Display a summary of the new DataFrame “DNA\_Polymerase” using **info()**.
10. Identify experiments where the reaction time is greater than 15 minutes.