Data Analytics with Python

This practice is designed to help you understand the material better. You should answer all questions by writing a Python program

Problem 1

Run the following code and see what is the result:

$$\begin{split} x &= np.array([[1, 2, 4], & [-10, 4, 5]]) \\ y &= np.array([[0, 7], & [9, 10]]) \\ np.concatenate((x, y), axis = 1) \end{split}$$

- Change the axis from 1 to 0 and re-run the code. What happens?
- What do you think is the function of **np.concatenate** in Python?

Problem 2

• Define a 2D numpy array as below and call it ${\bf x}$

$$\begin{pmatrix} 1 & 2 & 3 & 4 \\ 5 & 6 & 7 & 8 \\ 9 & 10 & 11 & 12 \end{pmatrix}$$

- Write a code to select the left half of the array and call it **x_l**.
- Write a code to select the right half of the array and call it x_r .
- Multiply the left half by the right half element wise.

Problem 3

Run the following lines one by one and explain what you understand from **np.zeros** and **np.ones** in Python:

np.zeros(3)np.zeros((2, 3))np.ones(4)np.ones((2, 5))