

# Lab 10 (Due: Nov 04)

## PYTHON PROGRAMMING FOR DATA SCIENCE - COSC 3360

Department of Computer Science and Electrical Engineering

Fall Semester, 2022

### Exercises

Create a **New Project** for every exercise. Take a screenshot of the source code along with its output and place the **source code** and the **screenshot** in a **zipped folder** named **LastNameFirstName\_Lab10**

#### Exercise 1

Ask user to enter a line of text as a string, **tokenize** the string with the **split()** method, and output the tokens in reverse order using the **reversed()** and **join()** functions (see slides 278-280). For example, the input: *hello world, how are you?* should produce the output: *you? are how world, hello*. Use space characters as delimiters

#### Exercise 2

Ask user to enter a line of text as a string, **tokenize** the string using space characters as delimiters and output only those words ending with the letters 'ed' (see slides 275-276). For example, the input: *It ended as intended* should produce the output: *ended* and *intended*

#### Exercise 3

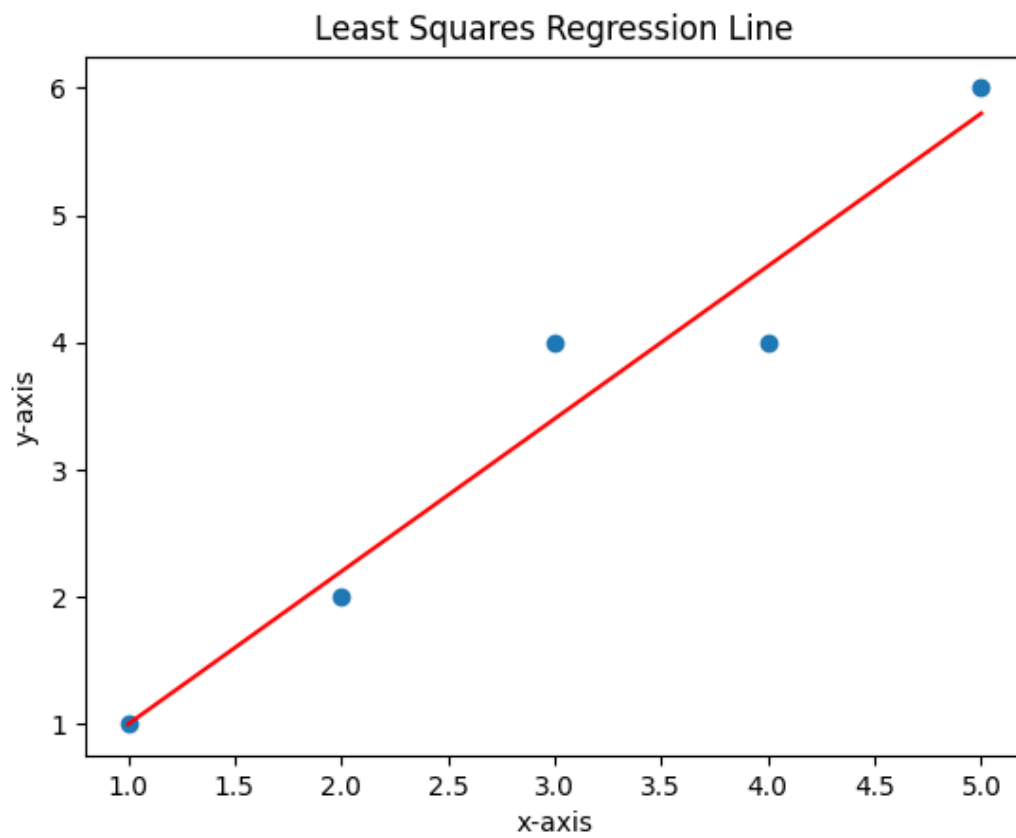
Given the following two lists:  $x = [1, 2, 3, 4, 5]$  and  $y = [1, 2, 4, 4, 6]$  create a **scatter** plot of the data as well as the **best-fit line** using the equation from slide 323, see Figure in the next page

**Note 1:** First, create two **numpy** arrays out of the two lists. You can use the **x.transpose()** method to *transpose* a matrix, the **np.matmul(x, y)** method to multiply matrices  $x$  and  $y$ , and the **np.linalg.inv(x)** to *inverse* a matrix

**Note 2:** Equation from slide 323 should yield the *y-intercept*,  $b$ , and the *slope*,  $m$ , of the line. Plot the **best-fit line** using the equation of the line:  $y = mx + b$ . See the last 5 lines of code from slide 328 on how to plot the line given the equation of the line

**Note 3:** Your algorithm should be able to work for *any* number of data points not just for 5

*See overleaf*



**Note:** Submit through **Canvas**