

## Lab 7 (Due: Oct 08)

# 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\_Lab7**

#### Exercise 1

Create a **list** of numbers from 10 to 20 and out of the list create two **sets** where the first set, set A, contains the numbers 10 to 20 (inclusive) and the second set, set B, contains the odd numbers of the list (**use set comprehension**). Ask the user whether they wish to **add**, **remove**, perform **union**, **intersection**, **difference**, **symmetric difference**, or **disjoint** between the two sets. For adding or removing elements, ask user on which set they wish to carry out the operation. Use *functions* for all seven operations

#### Exercise 2

Create a **2D list** with **3 rows** and **2 columns** and various values in it. Ask user which element of the array they wish to modify given the row and column numbers as well as the new value of the element; print list

#### Exercise 3

Ask user to enter the **min** and **max** values of a function (use **int**), e.g., -10 to 10. Create a **range** of numbers from **min** to **max** and assign it to a variable named **x**. Compute the **absolute** value of the range using a **list comprehension** using the format: [expression1 **if** condition **else** expression2 **for** item **in** iterable] and assign it to variable named **y**. **Plot** x, y and add a title to your plot as well as labels for x and y axes

*See overleaf*

**Exercise 4**

Using the following two dictionaries:

```
COSC1310grades = {"HW1" : 35, "HW2" : 49, "HW3" : 74, "HW4" : 67, "HW5" : 75}
```

```
COSC3360grades = {"HW1" : 89, "HW2" : 93, "HW3" : 74, "HW4" : 82, "HW5" : 93}
```

create a *single* graph, with two plots on it, one for each dictionary. The x and y values correspond to the key and value of each dictionaries. You can use the built-in functions to extract the keys and values from the dictionaries. Set the range of values of the y-axis using: **plt.ylim(0, 100)**. Add **labels**, **color**, **linewidth**, and **legend** to your graph

**Exercise 5**

Same as in Ex. 4, create two graphs with one plot each. Use the **subplots** function

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