Homework 7 *(Due: Oct 25)*
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_HW7***

Exercise 1

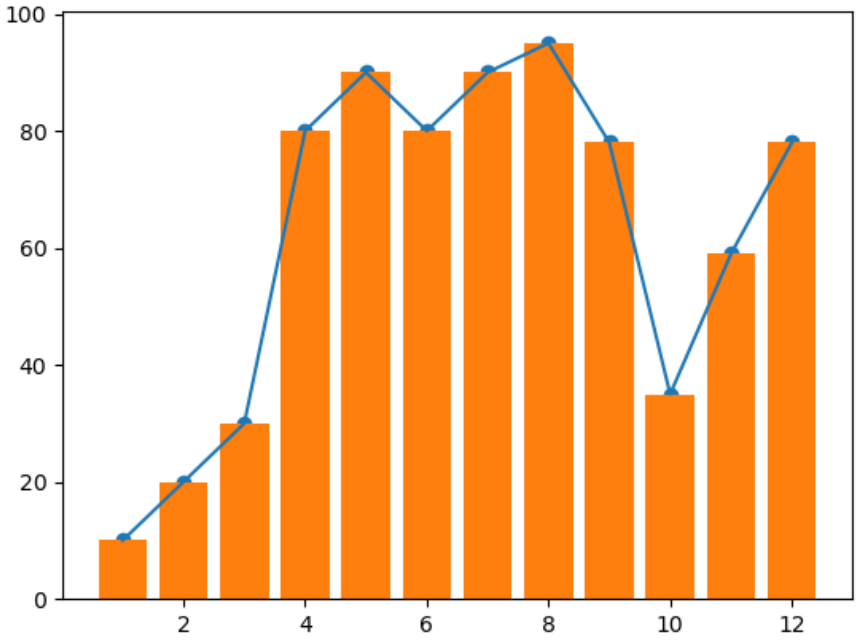
Using an *infinite* loop, enter your homework grades (enter at least 10 grades) of *float* data type and append them into a *grades list*. Break the loop when the user enters a grade smaller than 0. Create a **NumPy** array out of the *grades list*; create a **Panda Series** out of the **NumPy** array and rename the indices to begin from 1 instead of 0 (since you know the length of the list you can create a new list using **list comprehension** that begins from 1). Using a built-in **method**, print the **descriptive** statistics of the grades entered (e.g., mean, std, max, min, 25% percentile, etc.). Create **three plots within a single graph**, namely a **plot**, a **scatter**, and a **bar** superimposed one over the other; the **x-axis** is the indices beginning with 1 and the **y-axis** is the grades entered (see first Figure in the next page)

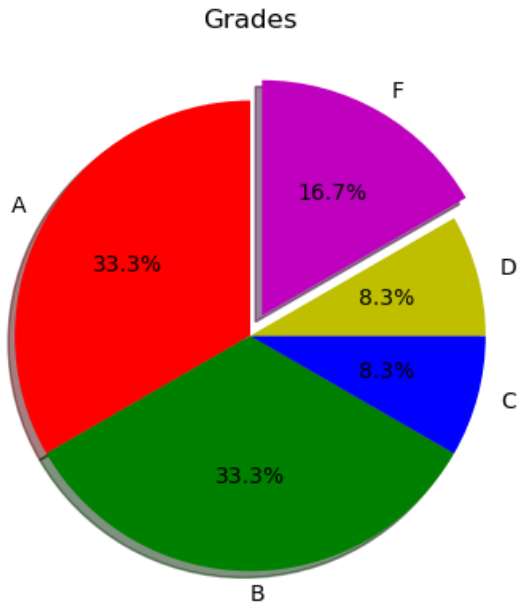
Note: Do not hard code the name of indices beginning with 1 as you do not know in advance how many grades the user will enter, that is why you are advised to use a **list comprehension**

Exercise 2

Based on the Ex. 1, and after having created a **Panda Series**, create 5 lists from the **Panda Series**, one for each grade, that is, A to F. For instance, a list that holds B grades taken from the *grades* **Panda Series** would be: B = list(grades[(grades >= 80) & (grades < 90)]). Create a **pie chart** where the slices are the number of elements in each one of the lists of A, B, C, D, F. For colors, use r, g, b, y, m, start at 90°, use *shadow*, and *explode* the F grades in the **pie chart** (see second Figure in the next page)

Note: Submit through **Canvas**


100
80
60
40
20
0
2
4
6
8
10
12


Grades
F
16.7%
A
33.3%
D
8.3%
8.3%
C
33.3%
B