**This assignment contains 8 % of your total grade.**

**Solve the following problems using Python.**

**You will write your name and the Python version you are using. You will be submitting only .py files. If you fail to submit .py files you will receive no grade for the problem.**

**Contact Andrea Marie George [grader] if you have any queries.**

**Problem 1: Diagonal Difference 4 points**

Given a square matrix, calculate the absolute difference between the sums of its diagonals.

For example, the square matrix is shown below:

1 2 3

4 5 6

9 8 9

The left-to-right diagonal 1 + 5+ 9 = 15 . The right to left diagonal 3 + 5+ 9= 17.

Their absolute difference is |15 – 7| = 2.

# Your program’s outcome should be an INTEGER |x| i.e. the absolute diagonal difference.

# The matrix could have both positive and negative numbers.

# You will be using **numpy** to solve the problem.

# Array size m x n must be less than 100 x 100.

**The array should be based on user input. You will be providing the evaluator with clear instructions on how to accept the input in a separate readme file with problem no.**

**Problem 2 : Fibonacci sequence 3 Points**

Each new term in the Fibonacci sequence is generated by adding the previous two terms. By starting with 1 and 2, the first 10 terms will be:1,2,3,5,8,13,21,34,55,89, …

By considering the terms in the Fibonacci sequence whose last value does not exceed 100,000, find the sum of the even-valued terms. **You will be providing the evaluator with clear instructions on how to accept the input in a separate readme file with problem no.**

**Problem 3 : Data set visualization 8 Points**

You will download **iris dataset** from this site[**https://archive.ics.uci.edu/dataset/53/iris**](https://archive.ics.uci.edu/dataset/53/iris)

Using python convert **.data** files into **.csv**.

Utilize **matplotlib** to select a graphical representation eg. Scatter plot, box and whiskers [of your choice] that best explain the features of the data set.

Write why you think that graphical representation is appropriate.

Upload your .csv, .py and all other files required to run the program. **You will be providing the evaluator with clear instructions on how to accept the input in a separate readme file with problem no.**