**Project 4**

**Objective:**

The purpose of this lab project is to expose you to Loops, and enforce selection, and to strengthen your skills in writing programs.

**Problem Specification:**

Write a Python program to calculate a students GPA for the semester. The program should accept a student’s name, ID#, and the number of courses he/she is taking, then for each course the following data is needed

* The course number a string e.g. BU 101
* Course credits “an integer” e.g. 4
* The grade received for the course “a one character string.” E.g. ‘B’

The program should display the student’s name, ID#, the total number of credits he/she are taking for the semester, and Grade Point Average (GPA) for the semester. A warning message should be also printed if the GPA is less than 2.0 and a congratulatory message if the GPA is 3.0 or above.

**Requirements:**

* Input student’s name, ID#, course number, number of credits for the course and grade using proper prompts.
* Use a prompt loop to repeat for multiple students until ‘N’ or ‘n’ is entered in response to the prompt.
* Add comments briefly to clarify what you are doing, do not overkill with comments.
* Create constants representing the points for each grade.
* A grade earns 4 points
* B grade earns 3 points
* C grade earns 2 points
* D grade earns 1 points
* F grade earns 0 points
* Calculate using the constants you defined, and whatever data the user enters.
* Include data validation for all data entered

ID Range 0-9999

Number of courses 0 – 5

Grades are A, B, C, D, or F.

* Have your program print proper titles for the output.
* Output the report as specified above.
* Comment thoroughly.

**Hints:**

* Work from the inside out. That is, start the program with one course for one student without loops, when you know it works, then you include the loops,
* The **GPA** for the semester is calculated as follows:
  + Calculate the points for a course; add them to an accumulator that keeps the **total points**.
  + Points for a course are calculated by multiplying the grade points by the number of credits for the course.
  + The numbers of credits for a course are accumulated into **total credits**.
  + Find the **GPA** by dividing the **total points** by the **total credits**.

**Grading criteria:**

5 points Proper comments, spacing, naming of variables, and general program appearance.

5 points Constants are defined and used properly.

5 points Appropriate and descriptive names are used for identifiers.

5 points proper data types are used and **upper ()** method is used to convert strings where necessary.

10 points ID range is validated, and a loop repeats until a valid ID# is entered.

10 points Grades are validated, and a loop repeats until A, B, C, D, or F is entered.

10 points A while loop continues until ‘N’ or ‘n’ is entered.

10 points A for loop repeats for each student to handle data entry for the number of courses taken.

5 points Titles are included and are appropriate.

5 points number of courses he/she is taking is validated.

10 points A message is printed

15 points Program runs correctly and produces the intended results.

5 points test runs to account for all outcomes are submitted.

**Submission Details:**

Submit a print-out of:

* Script (source program)
* Test results. Supply your own test data to demonstrate all possibilities.

**\*\*\* Due Date: 05/02/2023 \*\*\***