# Programming Assignment #5 (P5) (40 points)

Goal: File and SQL processing

This is individual work. Write your own code – abide by CPP academic integrity policy.

Write Python code to perform the following tasks:

Task 1: Given the P5\_scores.csv file containing student’s name, test scores, and project score, we’d create a new csv file that add an extra column, grade, to each student with following rubrics: each test score weights 20% while the project weights 40%. If a student receives 90% or above, give an A; 80% to 90% (not including 90%) give a B; with the rest assigning a C grade. Save the new data file (with grade) to grades.csv. Note: you may process csv file in Python directly, or use Pandas dataframe to add a column, then save the dataframe to csv.

Task 2: The given a P5\_names.txt file is a collection of student names. For each student, randomly generate a GPA in the range of [2.0 to 4.0], as well as randomly choose a major from the major list [‘CS’, ‘Bio’, ‘Chem’, ‘Math’]. Save the results (name, GPA, major) to a csv file, say, profile.csv (Bonus: instead of csv file create a JSON file, e.g. profile.json to save the data.

Task 3: Database practice.

(1) Create a database that contains two tables, one from the above grades.csv file and one from the above profile.json file.

(2) Grade inquiry -- Select one student by name and display his/her grade.

(3) Change of Major processing -- Select a student and update his/her major. (e.g. display the current major, then enter the new major, then update the database, or what you think a reasonable way to handle.)

(4) Select excellent CS students – find names of all CS students who earned an A grade or with GPA > 3.5.

(5) Do an additional database query operation of your choice.

Submission: Zip up all Python codes, output files, and screenshots for Task 3 and submit on Canvas.

Grading criteria: Correctness and completeness of tasks.

Task 1: 5 points

Task 2: 5 points

Task 3: 20 points

Bonsu: 5 points (json file practice)