

## Project 1 – Grade Report (Part C)

For this part of the project, you are asked to implement the class **Student**, which **derives** from the class **Person**.

Add to your project the **Student.h** and **Student.cpp** files and replace your **Main.cpp** with the new **Main.cpp** file.

**Member variables** already declared:

- An **int studentID** that stores the ID of a student.
- An **int numberOfCourses** that stores the number of courses the student has taken this semester.
- A **Boolean tuitionWasPaid** that determines whether the tuition was paid.
- A **vector coursesEnrolled** that stores objects of type **Course**.

You will need to implement the following **member functions**:

- **Default constructor:**
  - Initializes all member variables, except the vector (the vector class has its own constructor that initializes any vector that is declared; therefore, you do not need to explicitly initialize a vector).
- Function **setStudentInfo**
  - **Parameters (in this order):**
    - A **string** storing the first name
    - A **string** storing the last name
    - An **int** storing the id number
    - A **Boolean** storing a value that determines if the tuition was paid
    - A **vector** storing **objects of the class Course**
  - Call the parent function **setName** to set the first and last name of the student.
  - Set all member variables to the given values passed by the parameters.
  - **NOTE:** You can get the number of courses using the function **size** of the STL vector class, but you need to cast it to an **int**.
- Function **getID**
  - Returns the student's ID number.
- Function **getNumberOfCourses**
  - Returns the number of courses the student was enrolled in.
- Function **getCreditsEnrolled**
  - The vector stores objects of class **Course**, which have information on the number of credits of each course. You can retrieve that information to calculate the total number of credits.
- Function **isTuitionPaid**
  - Return a **Boolean** value that determines whether the tuition was paid.
- Function **isEnrolledInCourse**
  - **Parameter:** a **string** storing a course number

- Returns true if the student was enrolled in the course specified by the parameter or false otherwise.
- Do **NOT** traverse the vector if the student was not enrolled in any courses. Use an IF/ELSE statement.
- Function **getGpa**
  - Calculates and returns the semester GPA.
  - Use a **switch** statement instead of IF/ELSE to process all grades.
- Function **billingAmount**
  - Calls the function **getCreditsEnrolled** to calculate the total billing amount.
- Function **printStudentInfo**
  - Calls the parent's **printName** function and uses the member variable **studentID** to print the student's information in this format:  
**studentID – Lastname, Firstname**
- Function **printStudentInfo (overloaded)**
  - **Parameter:** a **double** storing the tuition rate
  - Prints student's information in the format shown below.
    - Note that there are two cases: show the grade if the tuition was paid, show a message and \*\*\* if the tuition was not paid.

```

Student Name: Parker, Pete

Student ID: 654321
Number of courses enrolled: 4

Course No   Course Name   Credits Grade
CSC150     ComputeSci    4       A
CHM348     Chemistry     4       A
ENG101     English       3       B
BIO234     Biology       4       A

Total number of credit hours: 15
Current Term GPA: 3.80

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Student Name: Luthor, Lex

Student ID: 345678
Number of courses enrolled: 3

Course No   Course Name   Credits Grade
CSC201     ComputeSci    4       ***
HIS101     History       3       ***
BIO234     Biology       4       ***

Total number of credit hours: 11
*** Grades are being held for not paying the tuition. ***
Amount Due: $550.00

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```

- Function **getCoursesEnrolled**

- Returns the vector that stores the course in which the student was enrolled.
- **Destructor**
  - (left empty)

The **Main.cpp** file contains test cases to test all your function. The **EXPECTED** output is shown below.

```
Student ID: 654321
Number of courses enrolled: 4
Total credits: 15
Tuition was paid.
Peter is enrolled in CSC150
Peter is not enrolled in BIO111
Total GPA: 3.80
Total amount paid: $750.00
Change student's name...

Print student's new name...
Parker, Pete

Print all information:
654321 - Parker, Pete

Print grade report:
Student Name: Parker, Pete

Student ID: 654321
Number of courses enrolled: 4

Course No   Course Name   Credits   Grade
CSC150      ComputeSci    4         A
CHM348      Chemistry     4         A
ENG101      English       3         B
BIO234      Biology       4         A

Total number of credit hours: 15
Current Term GPA: 3.80

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Student ID: 345678
Number of courses enrolled: 3
Total credits: 11
Tuition was not paid.
Lex is not enrolled in CSC150
Lex is enrolled in HIS101
Total GPA: 4.00
Total amount due: $550.00

Print all information:
345678 - Luthor, Lex

Print grade report:
Student Name: Luthor, Lex

Student ID: 345678
Number of courses enrolled: 3

Course No   Course Name   Credits   Grade
CSC201      ComputeSci    4         ***
HIS101      History       3         ***
BIO234      Biology       4         ***

Total number of credit hours: 11
*** Grades are being held for not paying the tuition. ***
Amount Due: $550.00

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Press any key to continue . . .
```

**NO** need to turn in this section of the project. You will turn in the whole project when instructed to do so.