Lab #5
C++ Classes

Purpose:

The purpose of this lab is to write some code in C++ that uses aspects of the language that has been covered in class thus far.

Source code files for the lab are on Canvas. You will save all your source files for the lab to the GitHub account you created in Lab 0.

Preparation:

Review class presentations and chapters from the text according to the syllabus.

Procedure:

1) Start up CodeLite and open the workspace ECEGR2020 you created for Lab 0

2) In the workspace, create a new project: File -> New -> New Project. Name the project Lab_4 and make the Type a "Simple executable (g++)"

3) For each function below, program, run and debug each. In your lab report, be sure to place the output of each function to show that your program worked.

Program the Following:

You'll be updating the Student program from Lab 4 in stages to be more object oriented. To start off, you'll be making a Student class and testing out that is works properly.

A) Instead of the Student struct, make it class. The properties of the class student should be private

```
int  ID;
char *firstName;
char *lastName;
float GPA;
```

The first and last names are allocated on the heap

B) Make the following public methods for the Student class

Get and Set ID and GPA
Get and Set FirstName and LastName (handle memory correctly for the names)

C) Constructors – default, copy constructor and a parametrized constructor for the class
Be sure to handle memory management where needed

D) Destructor that cleans up all allocated memory correctly

E) Create a program that tests all aspects of your Student class. Within the comments of the test program, tell how you are sure that class methods are working properly and how you know that there are no memory leaks

In addition to the Student class, you also need to create a Professor class and an Employee class. These new classes need all the same type of constructors and destructors, their properties are private and use Get/Set methods to retrieve and set the properties.

Professor class properties

```
int  ID;
char *firstName;
char *lastName;
float salary;
bool tenured;
Department department;          // Make an enum list of Departments
```

Employee class properties

```
int  ID;
char *firstName;
char *lastName;
float salary;
```