

Lab 4

Due Date: Sep 25, 2019

Total Points: 15 points

The purpose of this lab is to practice working with basic and aggregate or composite classes.

Part 1:

Design a *Course* class that contains individual course information and has the following private attributes:

long	courseNumber
string	courseName
int	numberOfCredits

All class attributes must be **private** and accessed through **public** member functions.

You need to write the following public methods:

- Default constructor that sets courseNumber to 0, courseName to "", and numberOfCredits to 0.
- Overloaded constructor that takes 3 parameters used to initialize the 3 attributes.
- Set function(s) that set the objects data.
- Print function that displays the object data in a neat fashion.

After you design your class, write a main program that instantiates 2 Course objects, sets and displays their information as described below:

- For the first object:
 1. Ask the user to enter the course number, name and number of credits (the user should enter for example 21541, CS211, and 1 respectively).
 2. Create the object using the overloaded constructor (and the data from above).
 3. Call the print function to print the object data. For example:

```
Course Number:    21541
Course Name:      CS 211
Number of Credits: 1
```

- For the second object:
 1. Create the object using the default constructor.
 2. Call the print function to display the second object's data.
 3. Prompt the user to enter new data for the second object (for example 21345, CS331, and 3).
 4. Call the set function(s) to set the object's attributes to the user input.
 5. Call the print function to display the new object data.

Note: You must divide your files into .cpp and .h file.

Part 2:

In this part, you will design aggregate classes to record personal and academic information about instructors at a university. The classes are: *Instructor*, and *Course* (from Program 1). All class attributes must be **private** and accessed through **public** member functions.

1. You need to write appropriate constructor (default and overloaded), accessor (print and get if necessary) and mutator (set) functions for each class. The attributes of each class are summarized below:

Instructor class contains personal and academic information. You may assume every instructor teaches 3 courses. Instructor class has the following private attributes:

string	firstName
string	lastName
char	gender ('M' for Male and 'F' for Female)
long	employeeID
string	officeNum
Course	courses[3]

Course class contains individual course information and has the following private attributes:

long	courseNumber
string	courseName
int	numberOfCredits

2. After you design your classes, write a main program that instantiates 2 instructor objects and displays their information:

- For the first object:
 1. use the overloaded constructor to create an instructor object and initialize its attributes to the following:

Mayssaa Najjar F 2390876 ACD324 21540 CS211 3 21541 CS211 1 21345 CS331 3

2. Then call the print function to display the instructor object's data.

- For the second object,
 1. use the default constructor to create an instructor object
 2. call the print function to display the instructor's data
 3. call the instructor set function to change the object's attributes to the following:

Michelle James F 2390878 SBSB3024 24540 CS111 3 24541 CS111 1 22275 CS351 3

4. call the instructor print function to display the new object's data.

Note: You will have a total of two .h files (Course.h and Instructor.h) and three .cpp files (Course.cpp, Instructor.cpp, and main.cpp).