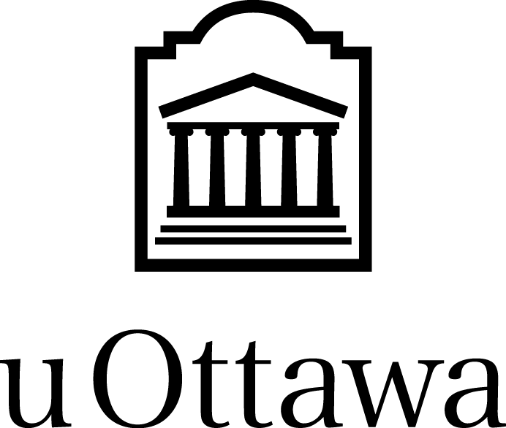
**University of Ottawa**



Master of Systems Science and Engineering

GNG5300: Full Stack Cloud Development

Assignment-1

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**Professor: Masoud Dorrikhteh 03 October 2022**

One Page Summary

Given, a course management program with certain functionalities to do:

Initial Assumption:

1. A main class that holds the action of students, admin on courses and students,
2. Admin credentials can only be access by initiating Admin class. No one can access admin class.
3. Submitting a grade can only be done by admin. For simplicity, I am just adding or updating the grade in students list
4. Stored students and courses list in main class to maintain a central source for data flow.

Here, the attributes of students and admin are defined in the derived or child class of main/parent class CMP i.e., Course Management Program and the functionalities can be called from initiating either Admin or Student class based on what action to be taken. Also, admin can add/modify/delete a course or student and can assign grade to the student.

OOP concepts that I have applied:

Inheritance: Student and Admin class inherited from CMP class,

Encapsulation: to access the attributes in their respective class only. For instance, students in CMP class since this class must only be accessed by program and admin and not by students. Also, program\_admin is encapsulated in admin class since only Admin must have access to the admin functionalities that a student shouldn’t perform.

Polymorphism: Used functional polymorphism wherever I must achieve the same behaviour, but different actions based on parameters passed. For example, admin action of adding a course or a student. Both are same operation but with dynamic inputs.

Abstraction: I hide methods inside admin and student functionalities so that those methods can’t be accessed from class instance directly.

**Attributes and Actions:**

Class CMP(Course Management Program) –

No attributes,

Actions - admin\_functionality (add/modify/delete student and course and submit grade for student), and student functionality (enroll/unroll from a course)

Class Admin:

Attributes: program\_admin (flag to check who is doing the action)

Actions: student\_func and course\_func which calls admin functionality of parent CMP class

Class Student:

Attributes: student\_name, student\_id(to identity students if two students has same name)

Actions: Enroll and unroll methods

Note: Parameters to pass in the code where I have initialized the class.