

# ***Programming II - Spring 2020***

## ***Project Document***

### **Instructions**

Work on this Project individually. **Absolutely NO collaboration is allowed.** Any traces of plagiarism would result in a ZERO marks and possible disciplinary action.

### **Submission Detail:**

- Phase 1 – UML class diagram and Documentation
  - In the first phase of the project, you are supposed to select the management. You will clearly identify various classes, their attributes, behaviors and interactions between classes. You will represent all this information in a class diagram and submit the diagram. Keep in mind that program design is fixed once class diagram has been submitted. You can refer to the material provided at the following link while creating your class diagram.  
<https://www.tutorialspoint.com/uml/index.htm>  
you need to provide a documentation which contains all the details just like it is given below ( See sample project-documentation section)
- Phase 2 - Implementation
  - You will work on implementing the project in light of your class diagram and will submit the code. Code should be well formatted. It should have sufficient comments. You have to describe the menu of your management system and describe the functionality of each command.

### **General Requirements**

- Your project should have at least 5 classes.
- Your project should have all the relationships implementation (Association, aggregation or Composition, inheritance with polymorphic Behavior)
- Your project should have a proper Menu

### **Project Ideas ( you can pick one of these or any other management system)**

1. Bank Management System
2. Library Management System
3. Gym Management System
4. Document Management System
5. Project Management System
6. Hospital Management System
7. Order tracking System
8. Movie Management system
9. Inventory Management system (Like gourmet etc)
10. A BIKE RENTAL SYSTEM
11. AIRLINE MANAGEMENT SYSTEM

## **Sample project-documentation:**

You are required to implement the simple and basic Computer management system (CMS). It should maintain records of: Students, Teachers and Classes

**Student: Attributes are** Name, ID and CGPA

**Teacher: Attributes are** Name, ID and Scale (integer type)

**Class: Attributes are** Students (Strength should be variable but use of memory should be optimized.), ID and Teacher

Write getters, setters, constructors and destructors for each.

### **Menu**

Program should display follow menu:

Press

1: Create new class

2: Swap Teachers

3: Display all CRs

4: Add 2 classes

5: Add Student to a class

6: Delete Student

7: Display Class

8: Show the better class

9: Show Student information

10: Show Teacher information

Here is the explanation to each.

### **Working of Menu:**

#### **Create Class:**

When user enters 1, He/she should be asked for class id, class teacher Information, no. of students and their Information.

After giving all this information, class should be created.

#### **Swap Teachers:**

When user enters 2, program should display all class ids and ask user to enter two of them so that the teachers of both classes may be swapped with each other.

#### **Show All CRs:**

When user enters 3, program should display all CRs.

**Add 2 Classes:**

When user enters 4, program should display all class ids and ask user to enter 2 of those ids and then add these two classes to generate a new class. The teacher for this new class will be the one with greater scale. And Students with highest CGPAs will be added in this class.

**Add Student to a Class:**

When user enters 5, program displays all available classes. Then it should ask user to enter the class id of that class in which you want to add new student. Handle all possible wrong entries.

**Delete Student:**

When user enters 6, program should ask user to enter student id whom you want to delete. When user enters the id then program first displays all information of student and then delete this.

**Display Class:**

When user enters 7, program should ask class id, and then display all information of the class whose id is entered.

**Show the Best Class:**

When user enters 8, program should display all available classes and then ask user for 2 classes and then program will display the best class among these. The criteria for better class are, class with more no. of students having CGPA higher than 3.00 is better among these. Program should handle unusual case if there is.

**Show Student Information:**

When user enters 9, program should ask for Student id, after that it should display all information of student whose id is entered (name, CGPA, his class id and his teacher name).

**Show Teacher Information:**

When user enters 10, program should ask for Teacher id, after that it should display all information of Teacher whose id is entered (name, class, his class id and student names in his class).

**Note:**

All class data members should not be access directly.