OOP Lab-06 Tasks

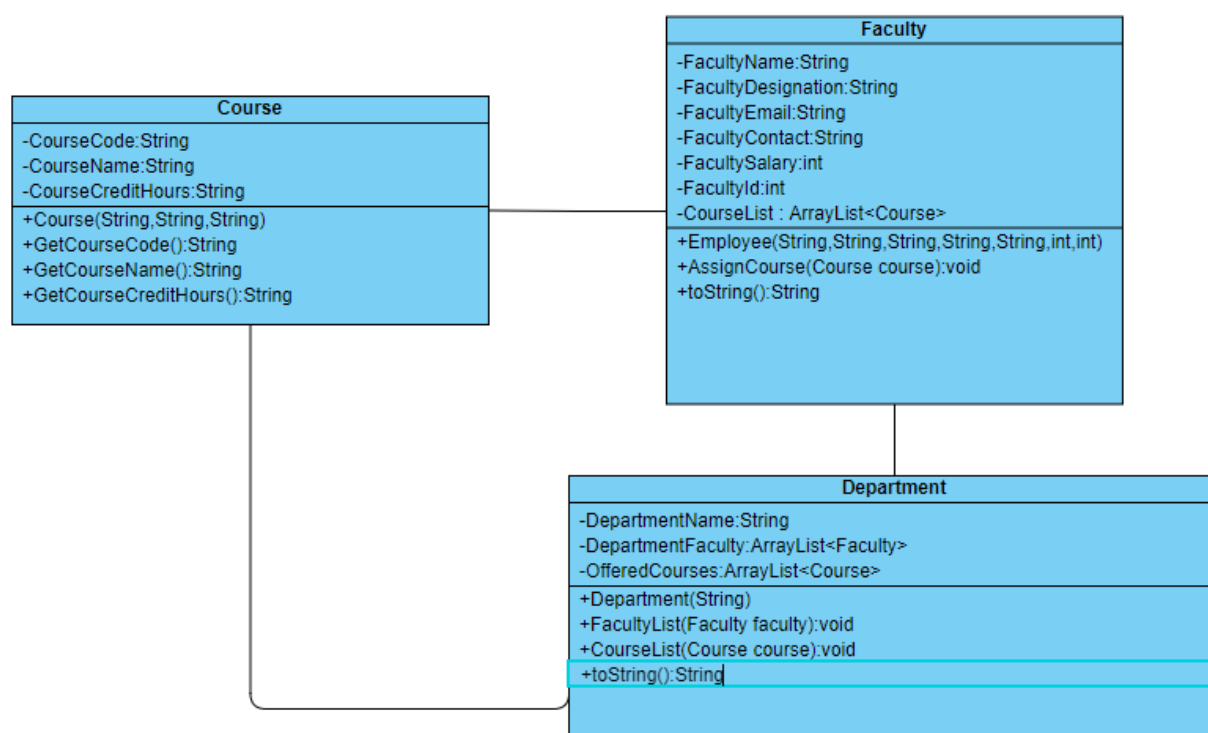|	
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Designing and implementing Java programs that deal with:

1. **Association and**
2. **Aggregation**

Exercises

Exercise 1(a)

Create a jav program based on the guivrn UML diagram and implement the relation between the classes as shown in the diagram

Exercise 1(b)

Create Driver class named as **Association_aggregation_1**. Create proper Objects of all classes as follows
- 2 Objects of Course class
- 3 Objects of Faculty class
- 3 Objects of Departement Class

And properly display all the information

```java
package com.mycompany.mavenproject2;
import java.util.ArrayList;
class Course{
    private String courseCode,courseName,courseCreditHours;

    //constructor
    Course(String courseCode,String courseName, String courseCreditHours){
        this.courseCode = courseCode;
        this.courseName = courseName;
        this.courseCreditHours = courseCreditHours;
    }
    //methods
    public String getCourseCode(){
        return courseCode;
    }
    public String getCourseName(){
        return courseName;
    }
    public String getCourseCreditHours(){
        return courseCreditHours;
    }

}

class Faculty{
    private String facultyName,facultyDesignation,facultyEmail,facultyContact;
    private int facultySalary, facultyId;
    private ArrayList<Course> courseList = new ArrayList<Course>();

    //constructor
    Faculty(String facultyName, String facultyDesignation, String facultyEmail, String
facultyContact, int facultySalary, int facultyId){
        this.facultyName = facultyName;
        this.facultyDesignation = facultyDesignation;
        this.facultyEmail = facultyEmail;
        this.facultyContact = facultyContact;
        this.facultySalary = facultySalary;
        this.facultyId = facultyId;
    }
    //methods
    public void assignCourse(Course course){
        courseList.add(course);
    }
    public String getFacultyName(){
        return facultyName;
    }
    public String getFacultyDesgination(){
        return facultyDesignation;
    }
    public String getFacultyEmail(){
```

```java
            return facultyEmail;
        }
        public String getFacultyContact(){
            return facultyContact;
        }
        public int getFacultySalary(){
            return facultySalary;
        }
        public int getFacultyId(){
            return facultyId;
        }
        public void printAll(){
            System.out.println("Faculty Name : "+facultyName+"\n"+
                    "Faculty Designation : "+facultyDesignation + "\n"+
                    "Faculty Email : "+ facultyEmail+ "\n"+
                    "Faculty Contact : "+facultyContact+"\n"+
                    "Faculty Salary : "+facultySalary+"\n"+
                    "Faculty Id : "+facultyId+"\n=============== Faculty Courses ===============
\n");

            for(int i = 0;i<courseList.size();i++){
                System.out.println( "* Course "+(i+1)+" : ");
                System.out.println("Course code : "+courseList.get(i).getCourseCode());
                System.out.println("CourseName : "+courseList.get(i).getCourseName());
                System.out.println("CourseCreditHours : "+courseList.get(i).getCourseCreditHours());

            }
        }
    }

class Department{
    private String departmentName;
    private ArrayList<Faculty> departmentFaculty = new ArrayList<Faculty>();
    private ArrayList<Course> offeredCourses = new ArrayList<Course>();

    //methods
    Department(String departmentName){
        this.departmentName = departmentName;
    }

    public void facultyList(Faculty faculty){ //assigning faculty
        departmentFaculty.add(faculty);
    }
    public void courseList(Course course){
        offeredCourses.add(course);
    }
    public void printAll(){
        System.out.println("Department Name : "+departmentName);
        System.out.println("============= Faculty List =============");
        for (int i = 0; i <departmentFaculty.size() ; i++) {
            System.out.println("* Faculty "+(i+1));
            System.out.println("Faculty Name : "+departmentFaculty.get(i).getFacultyName()+"\n"+
                    "Faculty Designation : "+departmentFaculty.get(i).getFacultyDesgination()+ "\n"+
```

```java
                    "Faculty Email : "+ departmentFaculty.get(i).getFacultyEmail()+ "\n"+
                    "Faculty Contact : "+departmentFaculty.get(i).getFacultyContact()+"\n"+
                    "Faculty Salary : "+departmentFaculty.get(i).getFacultySalary()+"\n"+
                    "Faculty Id : "+departmentFaculty.get(i).getFacultyId());
        }
        System.out.println("============= Course List =============");

        for (int i = 0; i <offeredCourses.size() ; i++) {
                    System.out.println("* Course "+(i+1));
                System.out.println("Course code : "+offeredCourses.get(i).getCourseCode());
                System.out.println("CourseName : "+offeredCourses.get(i).getCourseName());
                System.out.println("CourseCreditHours :
"+offeredCourses.get(i).getCourseCreditHours());
        }
    }
}
public class Mavenproject2 {

    public static void main(String[] args) {
        //Two objects of course
        Course c1 = new Course("0000","oop","12");
        Course c2 = new Course("001","CP","18");
        //Three objs of Faculty
        Faculty f1 = new Faculty("Syed
Raza","Lecturer","asyedraza85632@gmail.com","121212121",24000,1234);
        Faculty f2 = new Faculty("Aimen","TA","aimen@gmail.com","232323232",10000,1248);
        Faculty f3 = new
Faculty("Muskan","Lecturer","muskan123@gmail.com","98989898",15000,1233);
        //Three objs of Department
        Department d1 = new Department("Computer Science");
        Department d2 = new Department("IPP");
        Department d3 = new Department("Maritime");

        //Assigning faculty to depart
        d1.facultyList(f1);
        d1.facultyList(f2);
        d1.facultyList(f3);
        //Assigning Courses to depart
        d1.courseList(c1);
        d1.courseList(c2);

        //assigning courses to faculty
        f1.assignCourse(c1);
        f1.assignCourse(c2);
        f1.printAll();
    //printing faculty and courses in a depart
        d1.printAll();


    }
}
```

Output:

Creating two course objects and assigning them to a faculty obj

```
Faculty Name : Syed Raza
Faculty Designation : Lecturer
Faculty Email : asyedraza85632@gmail.com
Faculty Contact : 121212121
Faculty Salary : 24000
Faculty Id : 1234
=============== Faculty Courses ===============

* Course 1 :
Course code : 0000
CourseName : oop
CourseCreditHours : 12
* Course 2 :
Course code : 001
CourseName : CP
CourseCreditHours : 18
```

Creating Two objects of courses and three objects of faculty and assigning them to an obj of department, then printing all the details

```
Department Name : Computer Science
============= Faculty List =============
*. Faculty 1
Faculty Name : Syed Raza
Faculty Designation : Lecturer
Faculty Email : asyedraza85632@gmail.com
Faculty Contact : 121212121
Faculty Salary : 24000
Faculty Id : 1234
* Faculty 2
Faculty Name : Aimen
Faculty Designation : TA
Faculty Email : aimen@gmail.com
Faculty Contact : 232323232
Faculty Salary : 10000
Faculty Id : 1248
* Faculty 3
Faculty Name : Muskan
Faculty Designation : Lecturer
Faculty Email : muskan123@gmail.com
Faculty Contact : 98989898
Faculty Salary : 15000
Faculty Id : 1233
============= Course List =============
* Course 1
Course code : 0000
CourseName : oop
CourseCreditHours : 12
* Course 2
Course code : 001
CourseName : CP
CourseCreditHours : 18
```