**Lab Report**

**Course Tittle:** Object Oriented Programming Lab

**Course Code:** CSE 215

**Experiment No:** 10

**Experiment Name:** Designing Student Management System by utilizing Encapsulation, Dependency and Collection Framework of JAVA

**Submitted To:**

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Design a SemesterEnrollmentSystem with classes to manage students, semester, enrollment.Semester has smester\_id, name, fees, availability status.Student can enroll to the Semester.The system also keeps track of Enrollment with due dates and late fees.Now,

1.Design the UML diagram of above mentioned scenario.

**Student**

- semesterId: String

- name: String

- fees: double

- availability: boolean

student: Student

**Semester**

- String studentId

- String name

←



**SemesterEnrollmentSystem**

+static void main(String[] args)

+ Student(String studentId, String name)

+ String getStudentId()

+ String getName()

+ Enrollment(Semester semester, Student student)

-Date calculateDueDate()

+boolean makePayment(double amount)

- String enrollmentId

- Semester semester

- Student student

- Date dueDate

- double lateFees

**Enrollment**

+ Semester(String semesterId, String name, double fees)

+ enrollStudent(student: Student) : Boolean

+ isAvailable() : boolean

package lab\_9;  
  
import java.util.\*;  
  
  
class Student {  
 private String studentId;  
 private String name;

2.Write the java code of above UML.

public Student(String studentId, String name) {  
 this.studentId = studentId;  
 this.name = name;  
 }  
  
 public String getStudentId() {  
 return studentId;  
 }  
  
 public String getName() {  
 return name;  
 }  
  
 @Override  
 public String toString() {  
 return "Student ID: " + studentId + ", Name: " + name+"\n";  
 }  
}

package lab\_9;  
  
class sem {  
 private int semesterId;  
 private String name;  
 private double fees;  
 private boolean isAvailable;  
  
 public sem(int semesterId, String name, double fees, boolean isAvailable) {  
 this.semesterId = semesterId;  
 this.name = name;  
 this.fees = fees;  
 this.isAvailable = isAvailable;  
 }  
  
 public int getSemesterId() {  
 return semesterId;  
 }  
  
 public String getName() {  
 return name;  
 }  
  
 public double getFees() {  
 return fees;  
 }  
  
 public boolean isAvailable() {  
 return isAvailable;  
 }  
  
 @Override  
 public String toString() {  
 return "Semester ID: " + semesterId + " Name: " + name + ", Fees: $" + fees + ", Available: " + isAvailable;  
 }  
}

package lab\_9;  
  
import java.util.Date;  
  
class Enrollment {  
 private Student student;  
 private sem semester;  
 private Date dueDate;  
 private double lateFee;  
  
 public Enrollment(Student student, sem semester, Date dueDate, double lateFee) {  
 this.student = student;  
 this.semester = semester;  
 this.dueDate = dueDate;  
 this.lateFee = lateFee;  
 }  
  
 public Student getStudent() {  
 return student;  
 }  
  
 public sem getSemester() {  
 return semester;  
 }  
  
 public Date getDueDate() {  
 return dueDate;  
 }  
  
 public double getLateFee() {  
 return lateFee;  
 }  
  
 public boolean isLate() {  
 Date currentDate = new Date();  
 return currentDate.after(dueDate);  
 }  
  
 @Override  
 public String toString() {  
 return "Enrollment Details - " + student + "\n" + semester + ", Due Date: " + dueDate + ", Late Fee: $" + lateFee;  
 }  
}

package lab\_9;  
  
import java.util.Date;  
  
public class semester {  
 public static void main(String[] args) {  
 *// Create students* Student student1 = new Student("1839", "Raduan Ahamed");  
 Student student2 = new Student("1830", "Rawnok Riddi");  
  
 *// Create semesters* sem semester1 = new sem(1, "Fall 2022", 4000.0, true);  
 sem semester2 = new sem(2, "Fall 2023", 3200.0, true);  
  
 *// Create enrollments* Enrollment enrollment1 = new Enrollment(student1, semester1, new Date(), 200.0);  
 Enrollment enrollment2 = new Enrollment(student2, semester2, new Date(), 150.0);  
  
 *// Display enrollment details* System.*out*.println(enrollment1);  
 System.*out*.println("Is late: " + enrollment1.isLate());  
  
 System.*out*.println(enrollment2);  
 System.*out*.println("Is late: " + enrollment2.isLate());  
 }  
}

**Output:**

Enrollment Details - Student ID: 1839, Name: Raduan Ahamed

Semester ID: 1 Name: Fall 2022, Fees: $4000.0, Available: true, Due Date: Sat Dec 09 16:45:24 BDT 2023, Late Fee: $200.0

Is late: true

Enrollment Details - Student ID: 1830, Name: Rawnok Riddi

Semester ID: 2 Name: Fall 2023, Fees: $3200.0, Available: true, Due Date: Sat Dec 09 16:45:24 BDT 2023, Late Fee: $150.0

Is late: true