

```
package com.mycompany.mavenproject2;
```

```
abstract class Person {  
    private String id;  
    private String name;  
    private String email;  
  
    public Person(String id, String name, String email) {  
        this.id = id;  
        this.name = name;  
        this.email = email;  
    }  
  
    public String getId() {  
        return id;  
    }  
  
    public String getName() {  
        return name;  
    }  
  
    public String getEmail() {  
        return email;  
    }  
  
    @Override  
    public String toString() {  
        return "ID: " + id + ", Name: " + name + ", Email: " + email;  
    }  
}
```

```
}  
  
class Student extends Person {  
    private String major;  
    private double gpa;  
  
    public Student(String id, String name, String email, String major, double gpa) {  
        super(id, name, email);  
        this.major = major;  
        this.gpa = gpa;  
    }  
  
    public String getMajor() {  
        return major;  
    }  
  
    public double getGpa() {  
        return gpa;  
    }  
  
    @Override  
    public String toString() {  
        return super.toString() + ", Major: " + major + ", GPA: " + gpa;  
    }  
}
```

```
class Professor extends Person {  
    private final String department;  
    private final double salary;
```

```

public Professor(String id, String name, String email, String department, double salary) {
    super(id, name, email);
    this.department = department;
    this.salary = salary;
}

public String getDepartment() {
    return department;
}

public double getSalary() {
    return salary;
}

@Override
public String toString() {
    return super.toString() + ", Department: " + department + ", Salary: " + salary;
}
}

interface Course {
    void enrollStudent(Student student);
    void assignProfessor(Professor professor);
    void showCourseDetails();
}

class CourseImplementation implements Course {
    private String courseId;
    private String courseName;
    private Professor professor;

```

```

private Student[] students;

private int studentCount;


public CourseImplementation(String courseId, String courseName) {
    this.courseId = courseId;
    this.courseName = courseName;
    this.students = new Student[10]; // Fixed size array for simplicity
    this.studentCount = 0;
}


public String getCourseId() {
    return courseId;
}


@Override
public void enrollStudent(Student student) {
    if (studentCount < students.length) {
        students[studentCount++] = student;
        System.out.println("Enrolled student: " + student.getName());
    } else {
        System.out.println("Course is full, cannot enroll more students.");
    }
}


@Override
public void assignProfessor(Professor professor) {
    this.professor = professor;
    System.out.println("Assigned professor: " + professor.getName());
}

```

```

@Override

public void showCourseDetails() {
    System.out.println("Course ID: " + courseId + ", Course Name: " + courseName);
    System.out.println("Professor: " + (professor != null ? professor.getName() : "None"));
    System.out.println("Enrolled Students: ");
    for (int i = 0; i < studentCount; i++) {
        System.out.println(students[i]);
    }
}

}

public class Mavenproject2 {
    public static void main(String[] args) {

        Person[] people = new Person[10];
        int peopleCount = 0;

        Course[] courses = new Course[10];
        int coursesCount = 0;

        Student student1 = new Student("S123", "umair", "umair@example.com", "Computer Science",
3.8);

        Student student2 = new Student("S124", "awais", "awais@example.com", "Mathematics", 3.6);

        Professor professor1 = new Professor("P123", "sir imran", "imran@example.com", "Computer
Science", 90000);

        Professor professor2 = new Professor("P124", "sir waqar", "waqar@example.com", "Mathematics",
85000);

        people[peopleCount++] = student1;

```

```
people[peopleCount++] = student2;
people[peopleCount++] = professor1;
people[peopleCount++] = professor2;
```

```
Course course1 = new CourseImplementation("C123", "Data Structures");
Course course2 = new CourseImplementation("C124", "Calculus");
```

```
courses[coursesCount++] = course1;
courses[coursesCount++] = course2;
```

```
course1.enrollStudent(student1);
course2.enrollStudent(student2);
```

```
course1.assignProfessor(professor1);
course2.assignProfessor(professor2);
```

```
System.out.println("People in the university:");
for (int i = 0; i < peopleCount; i++) {
    System.out.println(people[i]);
}
```

```
System.out.println("\nCourses in the university:");
for (int i = 0; i < coursesCount; i++) {
    courses[i].showCourseDetails();
}
}
```