## ****Exercise 10: Implementing the MVC Pattern****

### ****Scenario****

Developing a simple web application for managing student records using the MVC (Model-View-Controller) pattern.

### ****Step 1: Create a New Java Project****

Create a new Java project named MVCPatternExample.

### ****Step 2: Define Model Class****

public class Student {

private String name;

private String id;

private String grade;

public Student(String name, String id, String grade) {

this.name = name;

this.id = id;

this.grade = grade;

}

// Getters

public String getName() {

return name;

}

public String getId() {

return id;

}

public String getGrade() {

return grade;

}

// Setters

public void setName(String name) {

this.name = name;

}

public void setGrade(String grade) {

this.grade = grade;

}

}

### ****Step 3: Define View Class****

public class StudentView {

public void displayStudentDetails(String name, String id, String grade) {

System.out.println("Student Details:");

System.out.println("Name : " + name);

System.out.println("ID : " + id);

System.out.println("Grade : " + grade);

System.out.println();

}

}

### ****Step 4: Define Controller Class****

public class StudentController {

private Student model;

private StudentView view;

public StudentController(Student model, StudentView view) {

this.model = model;

this.view = view;

}

public void setStudentName(String name) {

model.setName(name);

}

public void setStudentGrade(String grade) {

model.setGrade(grade);

}

public void updateView() {

view.displayStudentDetails(model.getName(), model.getId(), model.getGrade());

}

}

### ****Step 5: Test the MVC Implementation****

public class TestMVC {

public static void main(String[] args) {

// Create model

Student student = new Student("Alice", "S101", "A");

// Create view

StudentView view = new StudentView();

// Create controller

StudentController controller = new StudentController(student, view);

// Initial display

controller.updateView();

// Update model via controller

controller.setStudentName("Bob");

controller.setStudentGrade("B+");

// Display updated info

controller.updateView();

}

}

OUTPUT:

