import java.util.ArrayList;

import java.util.Scanner;

class Student {

private String name;

private int rollNumber;

private String grade;

public Student(String name, int rollNumber, String grade) {

this.name = name;

this.rollNumber = rollNumber;

this.grade = grade;

}

public String getName() {

return name;

}

public int getRollNumber() {

return rollNumber;

}

public String getGrade() {

return grade;

}

}

class StudentManagementSystem {

private ArrayList<Student> students = new ArrayList<>();

public void addStudent(Student student) {

students.add(student);

}

public void removeStudent(int rollNumber) {

students.removeIf(student -> student.getRollNumber() == rollNumber);

}

public Student searchStudent(int rollNumber) {

for (Student student : students) {

if (student.getRollNumber() == rollNumber) {

return student;

}

}

return null;

}

public void displayAllStudents() {

for (Student student : students) {

System.out.println("Name: " + student.getName() +

", Roll Number: " + student.getRollNumber() +

", Grade: " + student.getGrade());

}

}

}

public class StudentManagementSystemApp {

public static void main(String[] args) {

Scanner scanner = new Scanner(System.in);

StudentManagementSystem studentManagementSystem = new StudentManagementSystem();

while (true) {

// Display menu

System.out.println("Student Management System Menu:");

System.out.println("1. Add Student");

System.out.println("2. Remove Student");

System.out.println("3. Search Student");

System.out.println("4. Display All Students");

System.out.println("5. Exit");

// Get user's choice

System.out.print("Enter your choice (1-5): ");

int choice = scanner.nextInt();

switch (choice) {

case 1:

addStudent(scanner, studentManagementSystem);

break;

case 2:

removeStudent(scanner, studentManagementSystem);

break;

case 3:

searchStudent(scanner, studentManagementSystem);

break;

case 4:

studentManagementSystem.displayAllStudents();

break;

case 5:

System.out.println("Exiting Student Management System. Thank you!");

System.exit(0);

break;

default:

System.out.println("Invalid option. Please choose a valid option.");

}

}

}

private static void addStudent(Scanner scanner, StudentManagementSystem studentManagementSystem) {

System.out.print("Enter student name: ");

scanner.nextLine(); // consume the newline character

String name = scanner.nextLine();

System.out.print("Enter student roll number: ");

int rollNumber = scanner.nextInt();

System.out.print("Enter student grade: ");

String grade = scanner.next();

Student student = new Student(name, rollNumber, grade);

studentManagementSystem.addStudent(student);

System.out.println("Student added successfully.");

}

private static void removeStudent(Scanner scanner, StudentManagementSystem studentManagementSystem) {

System.out.print("Enter the roll number of the student to remove: ");

int rollNumber = scanner.nextInt();

studentManagementSystem.removeStudent(rollNumber);

System.out.println("Student removed successfully.");

}

private static void searchStudent(Scanner scanner, StudentManagementSystem studentManagementSystem) {

System.out.print("Enter the roll number of the student to search: ");

int rollNumber = scanner.nextInt();

Student student = studentManagementSystem.searchStudent(rollNumber);

if (student != null) {

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

System.out.println("Name: " + student.getName() +

", Roll Number: " + student.getRollNumber() +

", Grade: " + student.getGrade());

} else {

System.out.println("Student not found.");

}

}

}