

Programming Assignment Unit 3

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CS 1102: Programming 1

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```
package cs;

import java.util.ArrayList;
import java.util.Scanner;

public class StudentRecordManagement {

    // Student Class
    public static class Student {
        private String name;
        private int id;
        private int age;
        private double grade;

        public Student(String name, int id, int age, double grade) {
            this.name = name;
            this.id = id;
            this.age = age;
            this.grade = grade;
        }

        public String getId() {
            // TODO Auto-generated method stub
            return null;
        }

        public String getName() {
            // TODO Auto-generated method stub
            return null;
        }

        public void setGrade(double grade2) {
            // TODO Auto-generated method stub
        }

        // Getters and setters
    }

    // Student Management Class
    public static class StudentManagement {
        private static List<Student> students = new ArrayList<>();
        private static int totalStudents = 0;

        public static void addStudent(String name, int id, int age, double grade) {
            students.add(new Student(name, id, age, grade));
            totalStudents++;
        }

        public static Student getStudentById(int id)
    {
        for (Student student : students) {
            if (student.getId() == id) {
                return student;
            }
        }
    }
}
```

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        return

    null;
    }

    public

    static void updateStudent(int id, String name, int age, double grade) {
        Student student = getStudentById(id);
        if (student != null) {
            student.setName(name);
            student.setAge(age);
            student.setGrade(grade);
        } else {
            System.out.println("Student with ID " + id + " not found.");
        }
    }

    public static void displayStudents() {
        System.out.println("----- Student Details -----");
        for (Student student : students) {
            System.out.println("ID: " + student.getId() + " | Name: " +
student.getName() + " | Age: " + student.getAge() + " | Grade: " + student.getGrade());
        }
        System.out.println("Total Students: " + totalStudents);
    }
}

// Main method
public static void main(String[] args) {
    Scanner scanner = new Scanner(System.in);

    System.out.println("Student Record Management System");

    while (true) {
        System.out.println("-----");
        System.out.println("1. Add new student");
        System.out.println("2. Update student information");
        System.out.println("3. View all students");
        System.out.println("4. Exit");
        System.out.print("Enter your choice: ");

        int choice = Integer.parseInt(scanner.nextLine());

        switch (choice) {
            case
1:
                System.out.print("Enter student name: ");
                String name = scanner.nextLine();
                System.out.print("Enter student ID: ");
                int id = Integer.parseInt(scanner.nextLine());
                System.out.print("Enter student age: ");
                int age = Integer.parseInt(scanner.nextLine());
                System.out.print("Enter student grade: ");
                double grade = Double.parseDouble(scanner.nextLine());
                StudentManagement.addStudent(name, id, age, grade);
                System.out.println("Student added successfully.");
                break;

```

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        case 2:
            System.out.print("Enter student ID to update: ");
            id = Integer.parseInt(scanner.nextLine());
            System.out.print("Enter new name (optional): ");
            String newName = scanner.nextLine();
            System.out.print("Enter new age (optional): ");
            String newAge = scanner.nextLine();
            System.out.print("Enter new grade (optional): ");
            String newGrade = scanner.nextLine();

            if (!newName.isEmpty()) {
                StudentManagement.updateStudent(id, newName,
Integer.parseInt(newAge), Double.parseDouble(newGrade));
            } else {
                StudentManagement.updateStudent(id, null,
Integer.parseInt(newAge), Double.parseDouble(newGrade));
            }
            break;
        case 3:
            StudentManagement.displayStudents();
            break;
        case 4:
            System.out.println("Exiting...");
            scanner.close();
            return;
        default:
            System.out.println("Invalid choice.");
    }
}
}
```

Console

```
StudentRecordManagement [Java Application] [pid: 10824]
Student Record Management System
-----
1. Add new student
2. Update student information
3. View all students
4. Exit
Enter your choice: 2
Enter student ID to update: 2530
Enter new name (optional): Godfrey Ouma
Enter new age (optional): 33
Enter new grade (optional): A
```