

Programming Assignment Unit 3

Godfrey Ouma

University of the People

CS 1102: Programming 1

Ruth Alabi

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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
```