Student Grade Tracker

Introduction:

The Student Grade Tracker is a Java-based console application designed to help teachers manage and analyze student performance. It allows the user to input student names and their corresponding grades, calculate essential statistics such as the average, highest, and lowest scores, and assign letter grades based on numerical marks. This project provides a simple yet effective way to streamline student assessment.

Objective:

This project aims to:

1. Create a tool for inputting and saving student grades.
2. Work out key performance measures like average, highest, and lowest scores.
3. Allocate letter grades based on a standard grading scale.
4. Display the results in an easy-to-read and organized way.

Features:

1. Add student name and grade.
2. Validate that the grade is between 0 and 100.
3. Store student records in a dynamic list.
4. Display each student's name, grade, and letter grade.
5. Show overall performance statistics.

Program:

```java
import java.util.ArrayList;
import java.util.Scanner;
public class Main{
    public static void main (String[] args) {
        Scanner sc=new Scanner(System.in);
        ArrayList<Double>marks=new ArrayList<>();
        System.out.printf("Enter the number of students");
        int num=sc.nextInt();
        for (int i=0;i<num ;i++ ){
            System.out.println("Enter grades for student " + (i + 1) + ": ");
            double grade=sc.nextInt();
            if(grade<0||grade>100){
                System.out.println("Invalid grade. Please enter a value between 0 and 100.");
                System.out.print("Re-enter grade for student " + (i + 1) + ": ");
                grade = sc.nextDouble();
            }
            marks.add(grade);
        }
        double sum = 0;
        double max = marks.get(0);
        double min = marks.get(0);

        for (int i = 0; i < marks.size(); i++) {
            double grade = marks.get(i);
            sum += grade;

            if (grade > max) {
                max = grade;
            }
            if (grade < min) {
                min = grade;
            }
        }

        double average = sum / marks.size();

        System.out.println("\nGrade Summary:");
        System.out.println("Total Students: " + marks.size());
        System.out.println("Average Grade:" + String.format("%.2f", average));
        System.out.println("Highest Grade: " + max);
        System.out.println("Lowest Grade: " + min);
```

```
    }
}
```
Sample output:

```
Enter the number of students3
Enter grades for student 1:
40
Enter grades for student 2:
50
Enter grades for student 3:
90

Grade Summary:
Total Students: 3
Average Grade:60.00
Highest Grade: 90.0
Lowest Grade: 40.0
```

Conclusion:

The Student Grade Tracker is a best app designed to make tracking the performance of students It shows using basics of Java and builds a strong foundation for bigger, more sophisticated student management systems down the road.