TASK: 1

Input student names and grades

Store data using ArrayLists

Calculate and display:

Average grade

Highest grade

Lowest grade

Show a summary report of all students and their grades

✅ Java Code: StudentGradeTracker.java

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

public class
StudentGradeTracker {

    static class Student {
        String name;
        double grade;

        Student(String name,
double grade) {
            this.name = name;
```

```
        this.grade = grade;
    }
}

public static void main(String[] args) {
    ArrayList<Student> students = new ArrayList<>();
    Scanner scanner = new Scanner(System.in);

    System.out.println("===
```

```
Student Grade Tracker
===");

        boolean running = true;

        while (running) {

System.out.println("\n1.
Add student");
            System.out.println("2.
Show summary report");
            System.out.println("3.
Exit");
```

```
System.out.print("Choose
an option (1-3): ");
            int choice =
scanner.nextInt();
            scanner.nextLine(); //
consume newline

            switch (choice) {
                case 1:

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

```
                String name =
scanner.nextLine();

System.out.print("Enter
student grade (0-100): ");
                double grade =
scanner.nextDouble();
                if (grade < 0 ||
grade > 100) {

System.out.println("Invalid
grade. Please enter a value
between 0 and 100.");
```

```
                } else {

students.add(new
Student(name, grade));

System.out.println("Student
 added.");
                }
                break;

            case 2:
                if
(students.isEmpty()) {
```

```
System.out.println("No
student data available.");
                } else {

printSummaryReport(stude
nts);
                }
                break;

            case 3:
                running = false;
```

```
System.out.println("Exiting
the program.");
                    break;

                default:

System.out.println("Invalid
choice. Please select from
1-3.");
            }
        }

        scanner.close();
```

```
    }

    private static void
printSummaryReport(Array
List<Student> students) {

System.out.println("\n===
Summary Report ===");
        double total = 0;
        double highest =
Double.MIN_VALUE;
        double lowest =
Double.MAX_VALUE;
```

```
        String topStudent = "";
        String lowStudent = "";

        for (Student s :
students) {

System.out.printf("%-20s :
%.2f\n", s.name, s.grade);
            total += s.grade;

            if (s.grade > highest) {
                highest = s.grade;
                topStudent =
```

```
s.name;
            }

            if (s.grade < lowest) {
                lowest = s.grade;
                lowStudent =
s.name;
            }
        }

        double average = total /
students.size();
```

```
System.out.printf("\nAverag
e Grade: %.2f\n", average);

System.out.printf("Highest
Grade: %.2f (%s)\n",
highest, topStudent);

System.out.printf("Lowest
Grade : %.2f (%s)\n",
lowest, lowStudent);
    }
}
```

🧪 How to Run the Program:

1. Save the code in a file named StudentGradeTracker.java

2. Compile it:

javac StudentGradeTracker.java

3. Run it:

java StudentGradeTracker

📌 Sample Console Output

=== Student Grade Tracker ===

1. Add student
2. Show summary report
3. Exit
Choose an option (1-3): 1
Enter student name: Alice
Enter student grade (0-100): 85
Student added.

1. Add student
2. Show summary report
3. Exit
Choose an option (1-3): 1
Enter student name: Bob
Enter student grade
(0-100): 92
Student added.

1. Add student
2. Show summary report
3. Exit

```
Choose an option (1-3): 2

=== Summary Report ===
Alice                : 85.00
Bob                  : 92.00

Average Grade: 88.50
Highest Grade: 92.00 (Bob)
Lowest Grade : 85.00 (Alice)
```