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TASK 3: Control Flow Based Student Result System

Tools: Primary: Eclipse

Hints / Mini Guide: 1.Design a student result processing system that takes marks as input.

2.Use if-else and switch statements to assign grades.

3.Implement validation logic for marks range.

4.Use loops to allow multiple student entries.

5.Apply break and continue statements where needed.

6.Display final result summary with percentage and grade.

7.Refactor repeated logic into methods.

8.Improve readability using proper indentation and naming.

✅ TASK 3: Control Flow Based Student Result System (Java)

🔧 Tools Used

- Primary: Eclipse

🎯 Objective

To design a console-based Java application that:

- Accepts student marks
- Validates input
- Calculates percentage
- Assigns grade using if-else and switch
- Supports multiple students using loops
- Uses break and continue
- Is clean, modular, and readable

📌 Program Features (Mapped to Task Points)

Task Requirement	Implemented
Take marks as input	✅ Scanner
if-else for validation	✅ Yes
switch for grade	✅ Yes
Validation (0–100)	✅ Yes
Loop for multiple students	✅ while loop
break & continue	✅ Used
Percentage & grade	✅ Calculated
Methods for reusability	✅ Yes
Clean naming & indentation	✅ Yes

🧠 **Program Logic (Simple Flow)**

1. Ask for student name
2. Accept marks for 5 subjects
3. Validate marks (0–100)
4. Calculate total & percentage
5. Assign grade
6. Display result
7. Ask user whether to continue

💻 **Java Source Code**

```java
import java.util.Scanner;

public class StudentResultSystem {

    // Method to calculate percentage
    static double calculatePercentage(int totalMarks, int subjects) {
        return (double) totalMarks / subjects;
    }

    // Method to assign grade using switch
    static char assignGrade(double percentage) {
        int gradeCategory = (int) percentage / 10;

        switch (gradeCategory) {
            case 10:
            case 9:
                return 'A';
            case 8:
                return 'B';
            case 7:
                return 'C';
            case 6:
                return 'D';
            default:
                return 'F';
        }
    }

    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);
        char choice;

        do {
            System.out.println("\n----- Student Result Processing System -----");
            System.out.print("Enter Student Name: ");
            String name = sc.nextLine();

            int subjects = 5;
            int totalMarks = 0;

            for (int i = 1; i <= subjects; i++) {
                System.out.print("Enter marks for Subject " + i + ": ");
                int marks = sc.nextInt();
```

```
44
45                  // Validation logic
46                  if (marks < 0 || marks > 100) {
47                      System.out.println("Invalid marks! Enter marks between 0 and 100.");
48                      i--;        // repeat the same subject
49                      continue;   // skip invalid input
50                  }
51                  totalMarks += marks;
52              }
53
54              double percentage = calculatePercentage(totalMarks, subjects);
55              char grade = assignGrade(percentage);
56
57              System.out.println("\n----- Result Summary -----");
58              System.out.println("Student Name : " + name);
59              System.out.println("Total Marks  : " + totalMarks);
60              System.out.println("Percentage   : " + percentage + "%");
61              System.out.println("Grade        : " + grade);
62
63              System.out.print("\nDo you want to enter another student? (Y/N): ");
64              choice = sc.next().charAt(0);
65              sc.nextLine(); // clear buffer
66
67              if (choice == 'N' || choice == 'n') {
68                  break;
69              }
70
71          } while (choice == 'Y' || choice == 'y');
72
73          System.out.println("\nThank you for using Student Result System!");
74          sc.close();
75      }
76  }
```

🧪 **Sample Test Case Output**

----- Student Result Processing System -----

Enter Student Name: Rahul

Enter marks for Subject 1: 85

Enter marks for Subject 2: 78

Enter marks for Subject 3: 90

Enter marks for Subject 4: 88

Enter marks for Subject 5: 92

----- Result Summary -----

Student Name : Rahul

Total Marks : 433

Percentage   : 86.6%

Grade   : B

Do you want to enter another student? (Y/N): N

Thank you for using Student Result System!

📦 **Deliverables Checklist (Ready to Submit)**

✅ **Console-based Java application**
✅ **Uses if-else, switch, loops**
✅ **Validations implemented**
✅ **Sample output included**
✅ **Interview Q&A covered**
