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```
import java.util.Scanner;

// Custom Exception
class InvalidMarksException extends Exception {
    public InvalidMarksException(String message) {
        super(message);
    }
}
// Student class
class Student {
    private int rollNumber;
    private String studentName;
    private int[] marks = ~~marks~~ new int[3];

    public Student(int rollNumber, String studentName, int[] marks){
        this.rollNumber = rollNumber;
        this.studentName = studentName;
        this.marks = marks;
    }

    // Validate marks
    public void validateMarks() throws InvalidMarksException {
        for (int i=0; i<marks.length; i++) {
            if (marks[i]<0 || marks[i] >100) {
                throw new InvalidMarksException("Invalid marks for subject"
                        +(i+1)+":"+marks[i]);
            }
        }
    }
    // Calculate average
    public double calculateAverage() {
        int sum=0;
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        for (int m:marks) sum+=m;
        return sum/3.0;
    }
    //Display result
    public void displayResult(){
        System.out.println("Roll Number:"+rollNumber);
        System.out.println("Student Name:"+studentName);

        System.out.println(s:"Marks:");
        for (int m:marks) System.out.print(m+" ");
        System.out.println();

        double avg=calculateAverage();
        System.out.println("Average"+avg);

        if (avg>=40)
            System.out.println(x:"Result:Pass");
        else
            System.out.println(x:"Result:fail");
    }
    public int getRollNumber(){
        return rollNumber;
    }
}
//Main Manager class
public class ExceptionHandling{
    Student[] students=new Student[50];
    int count=0;
    Scanner sc=new Scanner(System.in);

    // Add Student
    public void addStudent(){
```

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try {
    System.out.print(s: "Enter Roll Number :");
    int roll = sc.nextInt();
    sc.nextLine();

    System.out.print (s: "Enter Student Name :");
    String name = sc.nextLine();

    int[] marks = new int[3];
    for (int i=0; i<3; i++) {
        System.out.print ("Enter marks for subject "+(i+1)+":");
        marks[i] = sc.nextInt();
    }
    Student st = new Student (roll, name, marks);
    st.validateMarks();

    students[count++] = st;
    System.out.println(x: "Student added succesfully.");
}
catch (InvalidMarksException e) {
    System.out.println("Error :"+e.getMessage());
}
catch (Exception e) {
    System.out.println("Input Error:"+e.getMessage());
}
finally {
    System.out.println(x: "Returning to main menu ...");
}
}
// Show specific student details
public void showStudentDetails() {
    try {
```

```
System.out.print("Enter Roll Number to search :");
int roll = sc.nextInt();

boolean found = false;
for (int i=0; i<count; i++){
    if(students[i].getRollNumber() == roll){
        students[i].displayResult();
        found = true;
        break;
    }
}
if (!found)
    System.out.println("Student not found.");
}
catch (Exception e) {
    System.out.println("Error:" + e.getMessage());
}
finally {
    System.out.println("Search completed.");
}
}
// Menu
public void mainMenu() {
    int choice;
    try {
        while (true) {
            System.out.println("\n=== Student Result Management
                                System ===");
            System.out.println("1. Add Student");
            System.out.println("2. Show Student Details");
            System.out.println("3. exit");
            System.out.println("Enter your choice:");
            choice = sc.nextInt();
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```
            switch (choice) {
                case 1: addStudent(); break;
                case 2: showStudentDetails(); break;
                case 3:
                    System.out.println(x: "Exiting program. Thank you");
                    return;
                default:
                    System.out.println(x: "Invalid choice. Try again");
            }
        }
    }
    finally {
        sc.close();
        System.out.println(x: "Scanner closed.");
    }
}
public static void main(String[] args) {
    Exception_handling obj = new Exception_handling();
    obj.mainMenu();
}
}
```