

Reflection Log

```
package mastery;

import java.util.Scanner;

public class CourseGrades {

    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);
```

The third block initializes the main program within the CourseGrades class. A Scanner object is created to capture user input for the grades. This setup ensures smooth interaction between the user and the program.

```
        // Number of students and tests
        int students = 12;
        int tests = 5;

        // Create a GradeBook object
        GradeBook gradeBook = new GradeBook(students, tests);
```

This part of the code initializes two integer variables, students and tests, to represent the number of students and tests, respectively, with values of 12 and 5. It then creates an instance of the GradeBook class, passing the students and tests variables as arguments to its constructor. This allows the GradeBook object to use these values to manage and process data related to 12 students and their scores across 5 tests.

```
        // Input grades for all students and tests
        for (int student = 0; student < students; student++) {
            System.out.println("Enter grades for Student " + (student + 1) + ":");
            for (int test = 0; test < tests; test++) {
                System.out.print("Test " + (test + 1) + ": ");
                int grade = scanner.nextInt();
                gradeBook.setGrade(student, test, grade);
            }
        }
```

This section inputs grades for multiple students and their tests using nested loops. The outer loop iterates through students, prompting for their grades, while the inner loop collects grades for each test. The grades are stored in a gradeBook object using the setGrade method, which organizes the data systematically.

```

17     // Display all grades
18     gradeBook.showGrades();
19
20     // Calculate and display average grades for each student
21     for (int student = 0; student < students; student++) {
22         System.out.println("Average grade for Student " + (student + 1) + ": " +
23             gradeBook.studentAvg(student));
24     }
25
26     // Calculate and display average grades for each test
27     for (int test = 0; test < tests; test++) {
28         System.out.println("Average grade for Test " + (test + 1) + ": " +
29             gradeBook.testAvg(test));
30     }
31
32     scanner.close();
33 }
34 }
35

```

This part of the program processes and displays grades and averages. It uses methods from the `gradeBook` object to display all grades, calculate the average for each student, and compute the average for each test. The output provides a clear summary of grades and their statistics.