Credit Name: CSE 2120 Data Structure 1
Assignment Name: Course Grades Mastery Project

How has your program changed from planning to coding to now? Please explain?

The CourseGrades project was more complex and required designing a class with multiple methods and a two-dimensional array to store grades. It simulated a real-world grade book for 12 students, each with 5 test scores, which made it feel more practical and structured. I had to create methods to collect data (getGrades), display it (showGrades), and calculate averages for individual students (studentAvg) and specific tests (testAvg). This project helped me see how data can be organized and manipulated in larger structures, which is much closer to how real applications function. While implementing these methods, I realized how important clear logic and validation are—for example, ensuring the program doesn't crash when someone enters an invalid student or test number.

```
    // Method to display all grades
    public void showGrades() {
        System.out.println("\nClass Grades:");
        System.out.println("Student\\Test\tTest 1\tTest 2\tTest 3\tTest 4\tTest 5");
        for (int student = 0; student < grades.length; student++) {
            System.out.print("Student " + (student + 1) + ":\t");
            for (int test = 0; test < grades[student].length; test++) {
                System.out.print(grades[student][test] + "\t");
            }
            System.out.println();
        }
    }

    // Method to calculate the average grade for a specific student
    public double studentAvg(int studentNumber) {
        if (studentNumber < 1 || studentNumber > grades.length) {
            throw new IllegalArgumentException("Invalid student number.");
        }

        int studentIndex = studentNumber - 1;
        int total = 0;

        for (int score : grades[studentIndex]) {
            total += score;
        }

        return (double) total / grades[studentIndex].length;
    }

    // Method to calculate the average grade for a specific test
    public double testAvg(int testNumber) {
        if (testNumber < 1 || testNumber > grades[0].length) {
            throw new IllegalArgumentException("Invalid test number.");
        }

        int testIndex = testNumber - 1;
        int total = 0;

        for (int[] student : grades) {
            total += student[testIndex];
        }

        return (double) total / grades.length;
    }
}
```