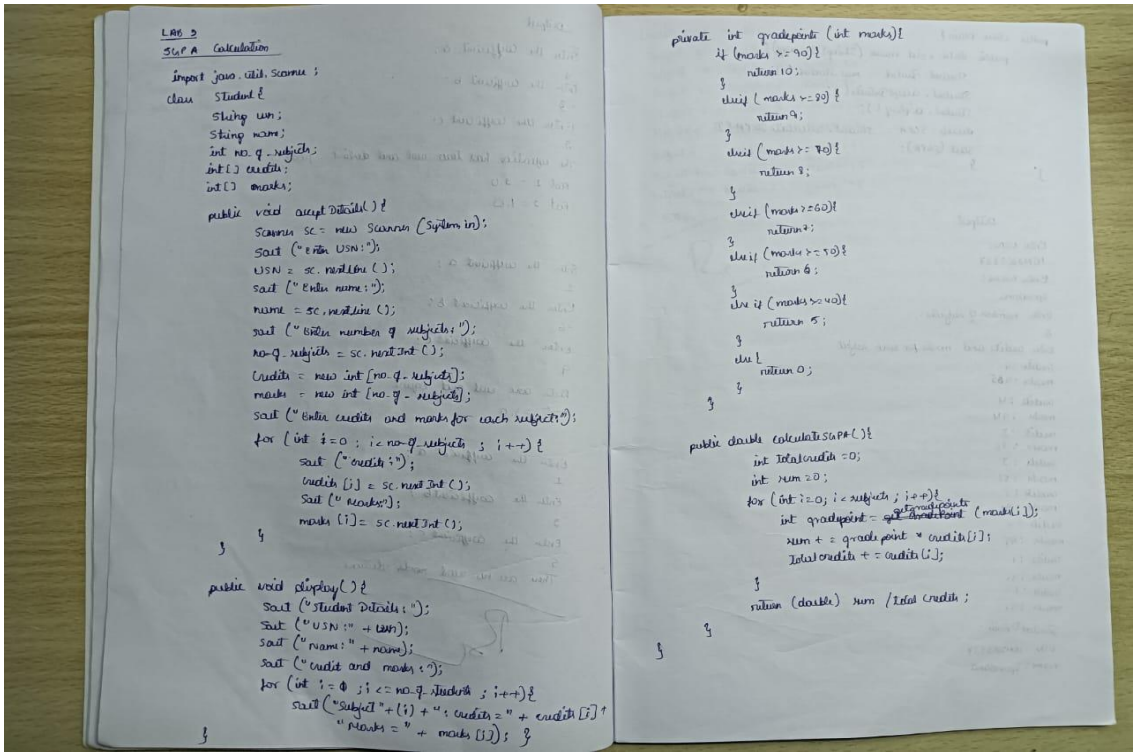
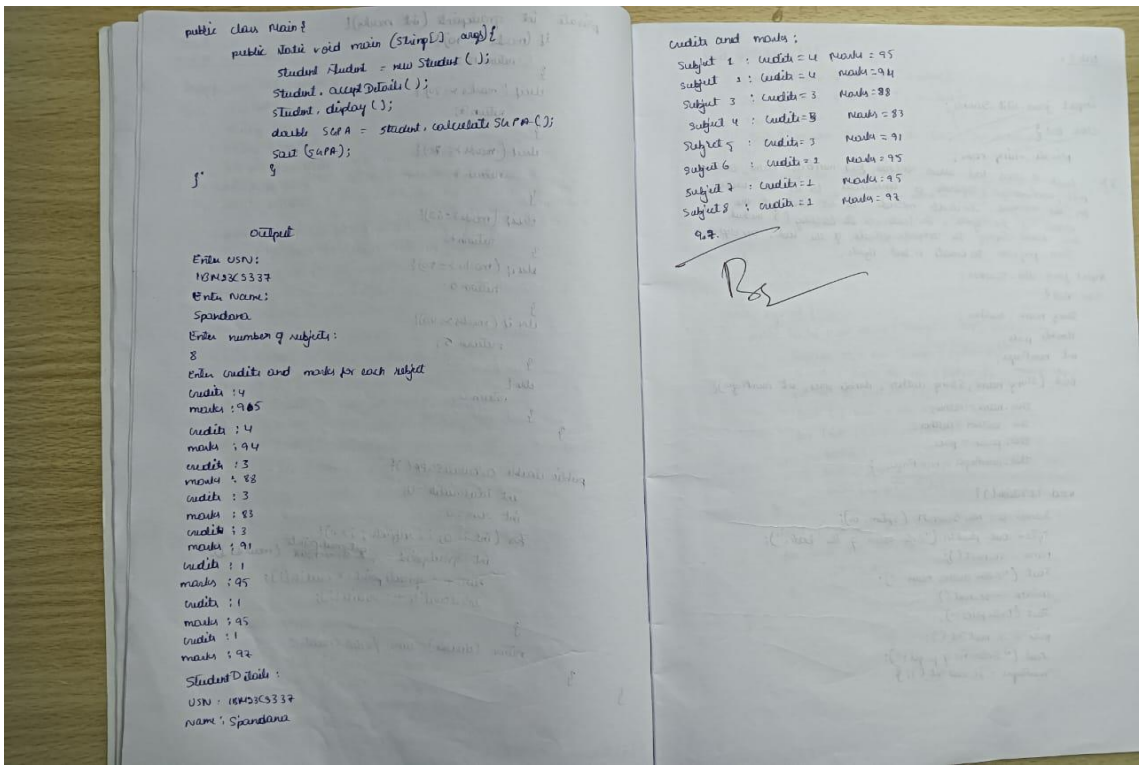
Lab 2:

2. Develop a Java program to create a class Student with members usn, name, an array credits and an array marks. Include methods to accept and display details and a method to calculate SGPA of a student.



```
LAB 3
SGPA Calculation

import java.util.Scanner;
class Student {
    String usn;
    String name;
    int no_of_subjects;
    int[] credits;
    int[] marks;

    public void acceptDetails() {
        Scanner sc = new Scanner(System.in);
        System.out.println("Enter USN:");
        usn = sc.nextLine();
        System.out.println("Enter name:");
        name = sc.nextLine();
        System.out.println("Enter number of subjects:");
        no_of_subjects = sc.nextInt();
        credits = new int[no_of_subjects];
        marks = new int[no_of_subjects];
        System.out.println("Enter credits and marks for each subjects");
        for (int i=0; i<no_of_subjects; i++) {
            System.out.println("credits:");
            credits[i] = sc.nextInt();
            System.out.println("marks:");
            marks[i] = sc.nextInt();
        }
    }

    public void display() {
        System.out.println("Student Details:");
        System.out.println("USN:" + usn);
        System.out.println("Name:" + name);
        System.out.println("Credit and marks:");
        for (int i=0; i<no_of_subjects; i++) {
            System.out.println("Subject" + (i) + ": credits=" + credits[i] +
                "marks=" + marks[i]);
        }
    }

    private int gradepoint(int marks) {
        if (marks >= 90) {
            return 10;
        } else if (marks >= 80) {
            return 9;
        } else if (marks >= 70) {
            return 8;
        } else if (marks >= 60) {
            return 7;
        } else if (marks >= 50) {
            return 6;
        } else if (marks >= 40) {
            return 5;
        } else {
            return 0;
        }
    }

    public double calculateSGPA() {
        int totalcredits = 0;
        int sum = 0;
        for (int i=0; i<subjects; i++) {
            int gradepoint = getgradepoint(marks[i]);
            sum += gradepoint * credits[i];
            totalcredits += credits[i];
        }
        return (double) sum / totalcredits;
    }
}
```



```
public class Main {
    public static void main(String[] args) {
        Student student = new Student();
        student.acceptDetails();
        student.display();
        double SGPA = student.calculateSGPA();
        System.out.println(SGPA);
    }
}
```

Output

```
Enter USN:
1BM23CS337
Enter Name:
Spandana
Enter number of subjects:
8
Enter credits and marks for each subject
credits :4
marks :95
credits :4
marks :94
credits :3
marks :88
credits :3
marks :83
credits :3
marks :91
credits :1
marks :95
credits :1
marks :95
credits :1
marks :97
Student Details:
USN : 1BM23CS337
Name: Spandana
```

```
Credits and marks:
Subject 1 : credits = 4  marks = 95
Subject 2 : credits = 4  marks = 94
Subject 3 : credits = 3  marks = 88
Subject 4 : credits = 3  marks = 83
Subject 5 : credits = 3  marks = 91
Subject 6 : credits = 1  marks = 95
Subject 7 : credits = 1  marks = 95
Subject 8 : credits = 1  marks = 97
9.7
```

Code:

```
// SGPA calculation
import java.util.Scanner;

class Student_SGPA {
    String usn;
    String name;
    int n;
    int[] credits;
    int[] marks;

    public void acceptDetails() {
        Scanner sc = new Scanner(System.in);
        System.out.println("Enter USN:");
        usn = sc.next();
        System.out.println("Enter Name:");
        name = sc.next();
        System.out.println("Enter number of subjects:");
        n = sc.nextInt();
        credits = new int[n];
        marks = new int[n];
        System.out.println("Enter credits and marks for each subject:");
        for (int i = 0; i < n; i++) {
            System.out.print("Credits for subject " + (i + 1) + ": ");
            credits[i] = sc.nextInt();
            System.out.print("Marks for subject " + (i + 1) + ": ");
            marks[i] = sc.nextInt();
        }
    }
```

```
    public void display() {
        System.out.println("Student's details:");
        System.out.println("USN: " + usn);
        System.out.println("Name: " + name);
        System.out.println("Credits and marks of each subject are:");
        for (int i = 0; i < n; i++) {
            System.out.println("Subject " + (i + 1) + ": credits = " + credits[i] + ", marks = " + marks[i]);
        }
    }

    private int getGradePoint(int mark) {
        if (mark >= 90) {
            return 10;
        } else if (mark >= 80) {
            return 9;
        } else if (mark >= 70) {
            return 8;
        } else if (mark >= 60) {
            return 7;
        } else if (mark >= 50) {
            return 6;
        } else if (mark >= 40) {
            return 5;
        } else {
            return 0;
        }
    }
```

```
    public double calculateSGPA() {
        int totalCredits = 0;
        int sum = 0;
        for (int i = 0; i < n; i++) {
            int gradePoint = getGradePoint(marks[i]);
            sum += gradePoint * credits[i];
            totalCredits += credits[i];
        }
        return (double) sum / totalCredits;
    }
}

public class Main {
    public static void main(String[] args) {
        Student_SGPA student = new Student_SGPA();
        student.acceptDetails();
        student.display();
        double SGPA = student.calculateSGPA();
        System.out.printf("SGPA = "+ SGPA);
    }
}
```

Output:

```
D:\Java_Lab_Programs>java Main.java
Enter USN:
1BM23CS337
Enter Name:
Spandana
Enter number of subjects:
8
Enter credits and marks for each subject:
Credits for subject 1: 4
Marks for subject 1: 95
Credits for subject 2: 4
Marks for subject 2: 94
Credits for subject 3: 3
Marks for subject 3: 88
Credits for subject 4: 3
Marks for subject 4: 83
Credits for subject 5: 3
Marks for subject 5: 91
Credits for subject 6: 1
Marks for subject 6: 95
Credits for subject 7: 1
Marks for subject 7: 95
Credits for subject 8: 1
Marks for subject 8: 97
Student's details:
USN: 1BM23CS337
Name: Spandana
Credits and marks of each subject are:
Subject 1: credits = 4, marks = 95
Subject 2: credits = 4, marks = 94
Subject 3: credits = 3, marks = 88
Subject 4: credits = 3, marks = 83
Subject 5: credits = 3, marks = 91
Subject 6: credits = 1, marks = 95
Subject 7: credits = 1, marks = 95
Subject 8: credits = 1, marks = 97
SGPA = 9.7
D:\Java_Lab_Programs>
```