WEEK 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.

Source Code:

```java
import java.util.Scanner;
class Student {
    String usn;
    String name;
    int numSubjects;
    int[] credits;
    int[] marks;
    double sgpa;

    public void acceptDetails() {
        Scanner sc = new Scanner(System.in);

        System.out.print("Enter USN: ");
        usn = sc.nextLine();

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

        System.out.print("Enter the number of subjects: ");
        numSubjects = sc.nextInt();

        credits = new int[numSubjects];
        marks = new int[numSubjects];

        for (int i = 0; i < numSubjects; i++) {
            System.out.print("Enter credits for subject " + (i + 1) + ": ");
            credits[i] = sc.nextInt();

            System.out.print("Enter marks for subject " + (i + 1) + ": ");
            marks[i] = sc.nextInt();
        }
    }

    public void displayDetails() {
        System.out.println("\nStudent Details:");
        System.out.println("USN: " + usn);
        System.out.println("Name: " + name);
        System.out.println("Subjects and Marks:");
```

```java
        for (int i = 0; i < numSubjects; i++) {
            System.out.println("Subject " + (i + 1) + ": Marks = " + marks[i]
+ ", Credits = " + credits[i]);
        }
    }


    public void calculateSGPA() {
        int totalCredits = 0;
        int totalGradePoints = 0;

        for (int i = 0; i < numSubjects; i++) {
            int grade = calculateGrade(marks[i]);
            totalGradePoints += grade * credits[i];
            totalCredits += credits[i];
        }

        sgpa = (double) totalGradePoints / totalCredits;
    }
    private int calculateGrade(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 void displaySGPA() {
        System.out.printf("SGPA:" + sgpa);
    }

    public static void main(String[] args) {
        Student student = new Student();
        student.acceptDetails();
        student.displayDetails();
        student.calculateSGPA();
```

```
        student.displaySGPA();
    }
}
```

Output:

```
C:\1BM23CS306>javac Student.java

C:\1BM23CS306>java Student
Enter USN: 1bm23cs306
Enter Name: sagar
Enter the number of subjects: 6
Enter credits for subject 1: 4
Enter marks for subject 1: 95
Enter credits for subject 2: 3
Enter marks for subject 2: 85
Enter credits for subject 3: 3
Enter marks for subject 3: 75
Enter credits for subject 4: 4
Enter marks for subject 4: 88
Enter credits for subject 5: 2
Enter marks for subject 5: 60
Enter credits for subject 6: 1
Enter marks for subject 6: 97

Student Details:
USN: 1bm23cs306
Name: sagar
Subjects and Marks:
Subject 1: Marks = 95, Credits = 4
Subject 2: Marks = 85, Credits = 3
Subject 3: Marks = 75, Credits = 3
Subject 4: Marks = 88, Credits = 4
Subject 5: Marks = 60, Credits = 2
Subject 6: Marks = 97, Credits = 1
SGPA:8.882352941176471
```

Written Code & Output :

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.

```java
import java.util.Scanner;
class student {
    String usn;
    String name;
    int numsubjects;
    int [] credits;
    int [] marks;
    double sgpa;

    public void acceptDetails() {
        Scanner sc = new Scanner(System.in);
        System.out.println(" Enter name : ");
        name = sc.nextLine();
        System.out.println(" Enter usn : ");
        usn = sc.nextLine();
        System.out.println(" Enter no. of subjects : ");
        numsubjects = sc.nextInt();

        credits = new credits [numsubjects];
        marks = new marks [numsubjects];

        for (int i = 0; i < numsubjects; i++) {
            System.out.print(" Enter credits for subject" + (i+1) + ":");
            credits[i] = sc.nextInt();
            System.out.print(" Enter marks for subject" + (i+1) + ":");
            marks[i] = sc.nextInt(); }
    }
```

```java
public void displayDetails (){
    System. out. println (" Student details:");
    System. out. println (" USN:" + usn);
    System. out. println (" Name:" + name);
    System. out. println (" subjects and Marks:");

    for (int l=0; i < numsubjects; i++){
        System. out. println (" Subject" + (i+1)+ ": Marks="
        + marks [i] + ", Credits =" + credits [i]);
    }
}

public void calculate SGPA () {
    int totalCredits = 0;
    int totalGradePoints = 0;

    for (int i=0; i< numsubjects; i++){
        int grade = calculateGrade (marks [i]);
        totalGradePoints += grade * credits [i];
        totar Credits += credits [i];
    }
    sgpa = (double) totalGradePoints / totalCredits;
}

private int calculateGrade (int marks){
    if (marks >=90){
        return 10;
    } elseif (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 void displaySGPA () {
        system. out. println ("SGPA of the student is:"
            + sgpa);
    }
}

public stat

class Main {
    public static void main (String[] args) {
        student student = new student ();
        student. acceptDetails ();
        student. displayDetails ();
        student. calculateSGPA ();
        student. displaySGPA ();
    }
}
```

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Output:
Enter USN: 4bm23cs306
Enter Name: sagar
Enter the number of subjects 6
Enter credits for subject 1: 4
Enter marks for subject 1) 95
Enter credits for subjects 2: 3
Enter marks for subject 2: 85
Enter credits for subject 3: 3
Enter marks for subject 3: 75
Enter credits for subject 4: 4
Enter marks for subject 4: 88
~~Enter marks for~~ 8
Enter credits for subject 5: 2
Enter marks for subject 5: 60
Enter credits for subject 6: 1
Enter marks for subject 6: 97

Student Details:
USN: 4bm23cs306
Name: sagar
Subjects and Marks:
Subject 1: Marks = 95, Credits = 4
Subject 2: Marks = 85, Credits = 3
Subject 3: Marks = 75, Credits = 3
Subject 4: Marks = 88, Credits = 4
Subject 5: Marks = 60, Credits = 2
Subject 6: Marks = 97, Credits = 1

SGPA: 8.88235294117647