CGPA CALCULATOR

PROJECT REPORT

Submitted by

VIVAAN ANAND [Reg. No: RA2211003010791]
RITHU NANDANA [Reg. No: RA2211003010766]
AMITHRAJITH PREMESH [Reg. No: RA2211003010811]
JAPASH MOHAN [Reg. No: RA2211003010788]

Under the Guidance of

Dr.S.RAMESH

Assistant Professor, Department of Computing Technologies

In partial satisfaction of the requirements for the degree of

BACHELOR OF TECHNOLOGY
in
COMPUTER SCIENCE AND ENGINEERING

SCHOOL OF COMPUTING

COLLEGE OF ENGINEERING AND TECHNOLOGY

SRM INSTITUTE OF SCIENCE AND TECHNOLOGY

KATTANKULATHUR - 603203

MAY 2023

SRM INSTITUTION OF SCIENCE AND TECHNOLOGY
KATTANKULATHUR-603203

BONAFIDE CERTIFICATE

Certified that this Project Report titled **"CGPA CALCULATOR"** is the bonafide work done by Vivaan Anand[RA2211003010791], Rithu Nandana [RA2211003010766] , Amithrajith Premesh[RA221103010811] and Japash Mohan[RA2211003010788] who completed the project under my supervision. Certified further, that to the best of my knowledge the work reported herein does not form part of any other work.

SIGNATURE
Dr.S.Ramesh
OODP – Course Faculty
Assistant Professor
Department of Computing Technologies
SRMIST

SIGNATURE
Dr.M.Pushpalatha
Professor & Head
Department of Computing Technologies
School of Computing
SRMIST

TABLE OF CONTENTS

PROBLEM STATEMENT

For this project we have decided to make a CGPA calculator using C++, that can be very useful for college students. Students can easily find their CGPA by entering the credit for each subject along with grade they scored for that subject. The calculator is time efficient.

Generally, people struggle and make mistakes while calculating their CGPA, thus our team have sought to produce an efficient calculator for the same. This will cut down on the confusion and mistakes repeated during the process, thus being more time efficient. For user-based input one can enter ‘n’ number of courses their college offers, and their respective credits and grade procured. The program will multiply the overall grade points by the credit of each subject by the total credit scores. This will give out user’s CGPA score. This program is designed to evaluate your CGPA score and give you standardised remark.

MODULES OF PROJECT

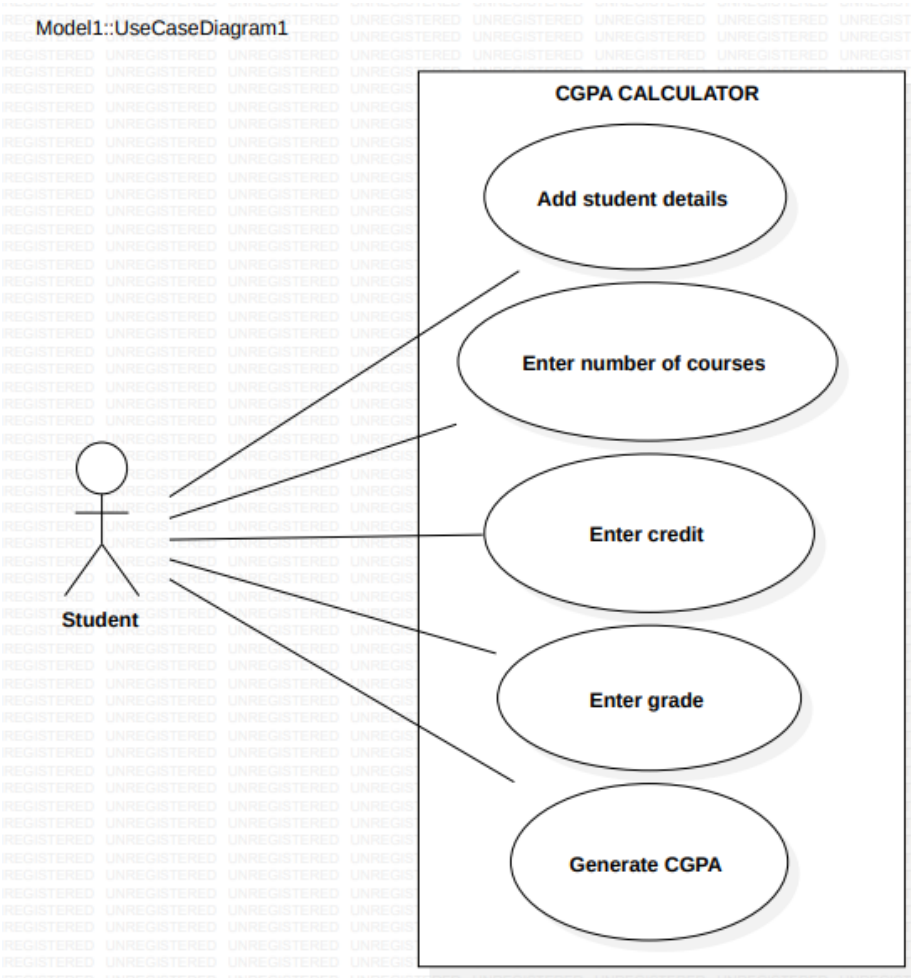
<***iostream***>**:** iostream stands for standard input-output stream. This header file contains definitions of objects like cin, cout, cerr, etc.You use operators or iostream member functions to insert data into a stream (output) or extract data from a stream (input), and to control the format of data that you insert or extract.

<***iomanip***>:The iomanip is a library in C++ which helps us in manipulating the output of any C++ program. There are many functions in this library that help in manipulating the output. To name a few we have functions to reset flags, set fill characters, set precision, get date and time, etc. It is a part of input-output library of the C++ standard library.

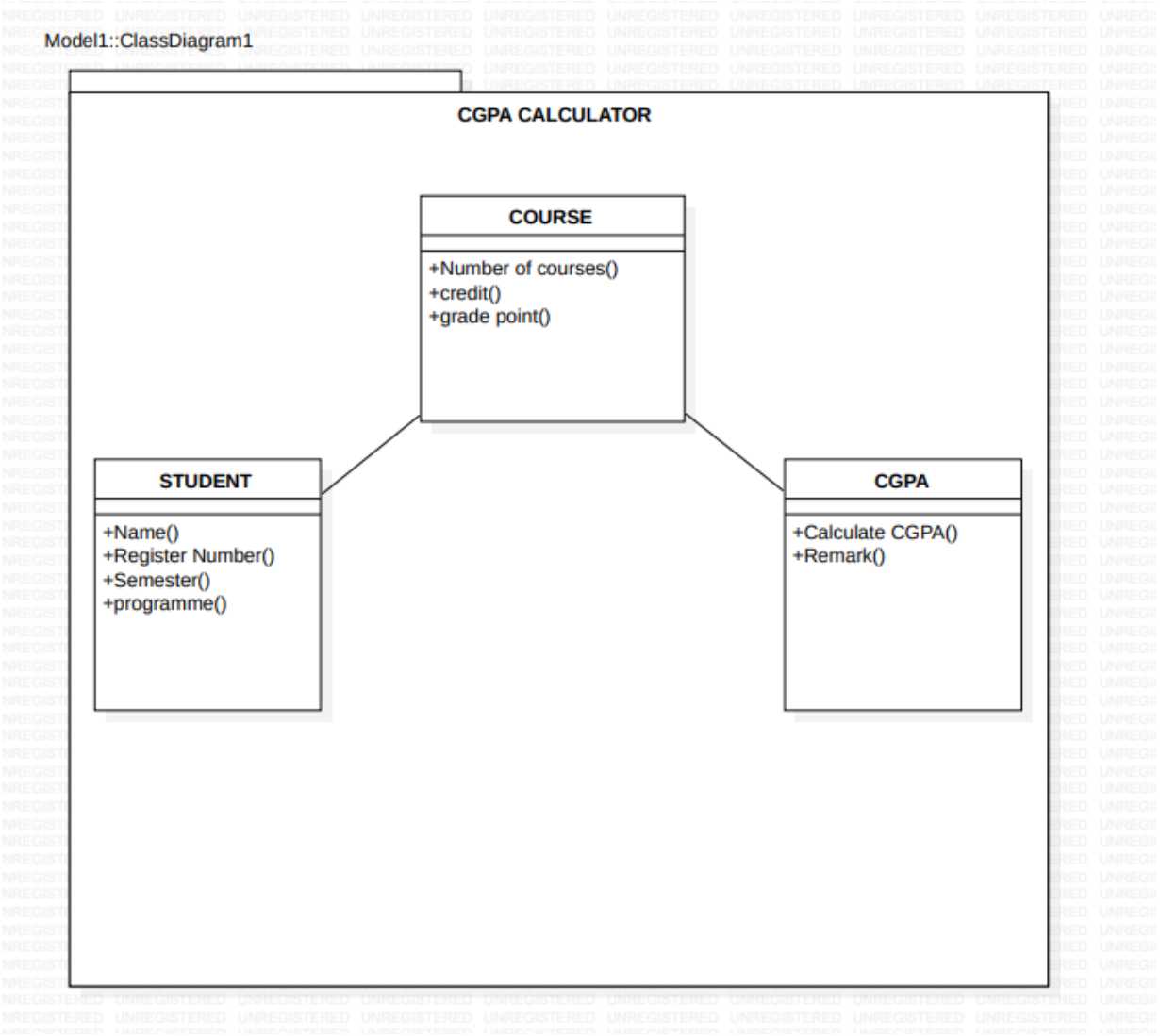
For Loop: A **for loop** is a control flow statement for specifying iteration, which allows code to be executed repeatedly. A for loop has two parts: a header specifying the iteration, and a body which is executed once per iteration. The header often declares an explicit loop counter or loop variable, which allows the body to know which iteration is being executed. For loops are typically used when the number of iterations is known before entering the loop. For loops can be thought of as shorthands for while loops which increment and test a loop variable.

Switch…case: It is the statement that allows a variable to be tested against a list of values for equality. The value in the switch is termed as a case, and hence the variable being switched on is checked against the case .The switch statement in C++ is the best alternative to the lengthy if statements that are used to compare a variable to different integral values. It is a multi-way branch statement. The switch statement is the control statement that allows any value to change the control of the execution

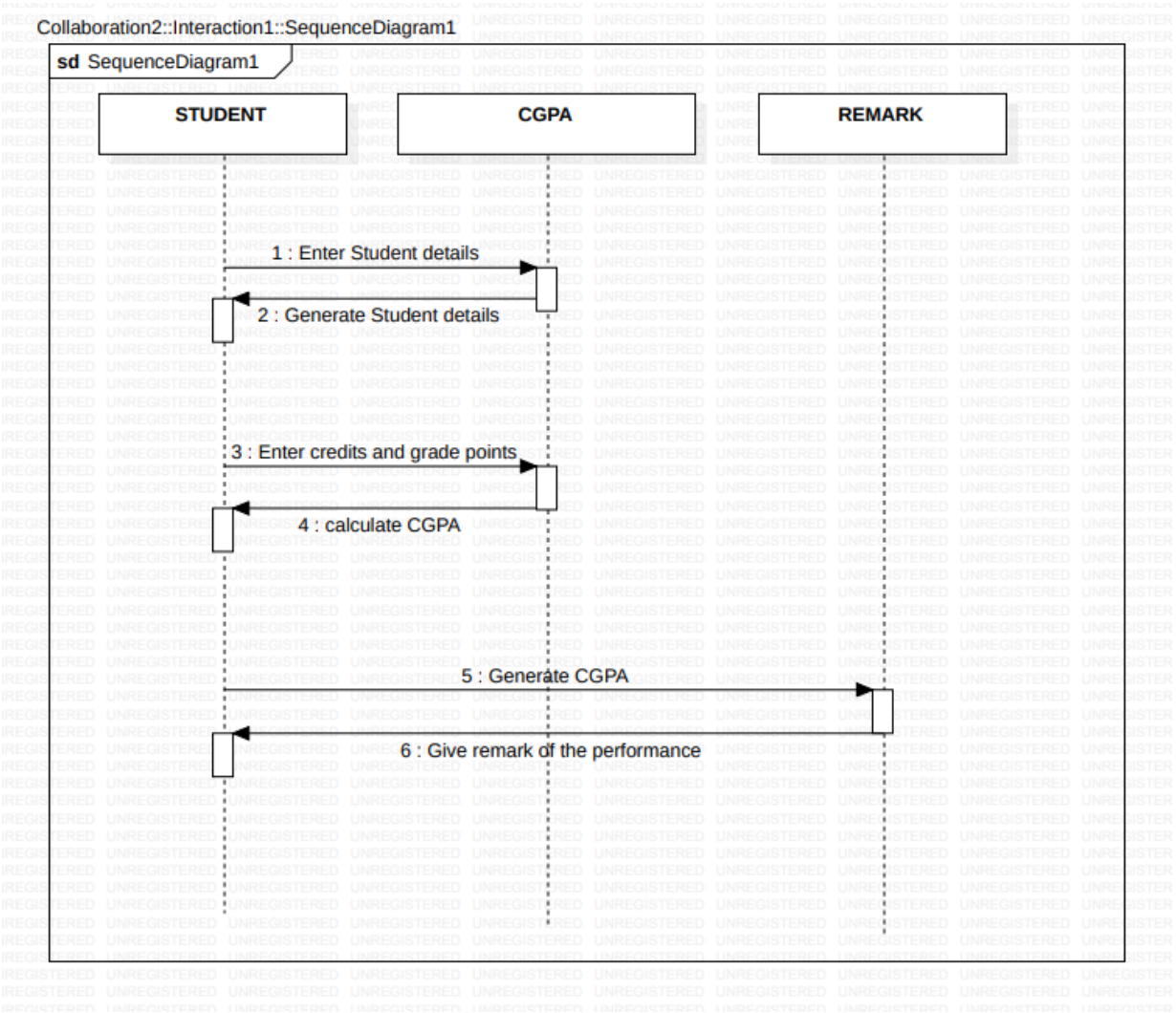
USE CASE DIAGRAM



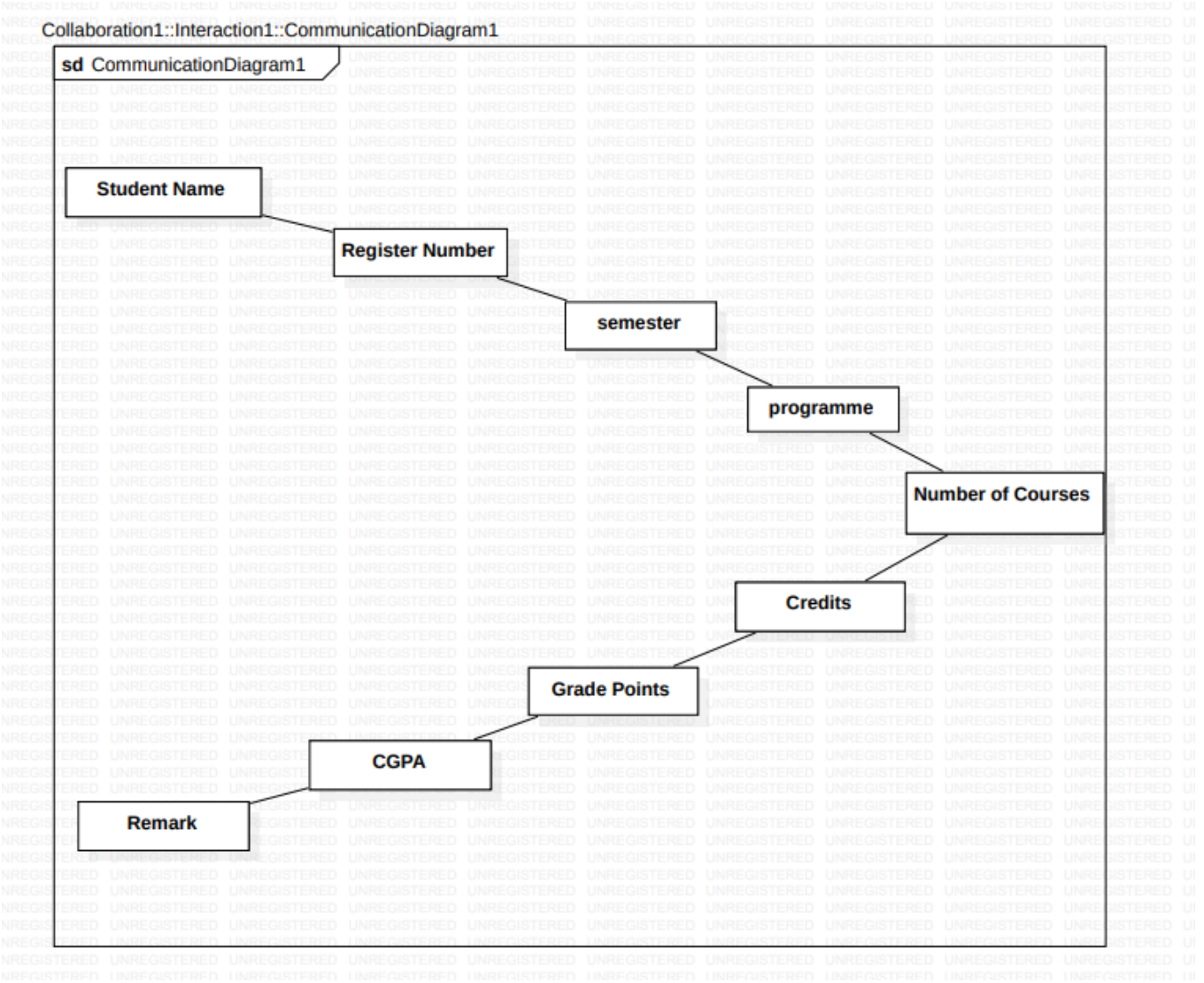
CLASS DIAGRAM



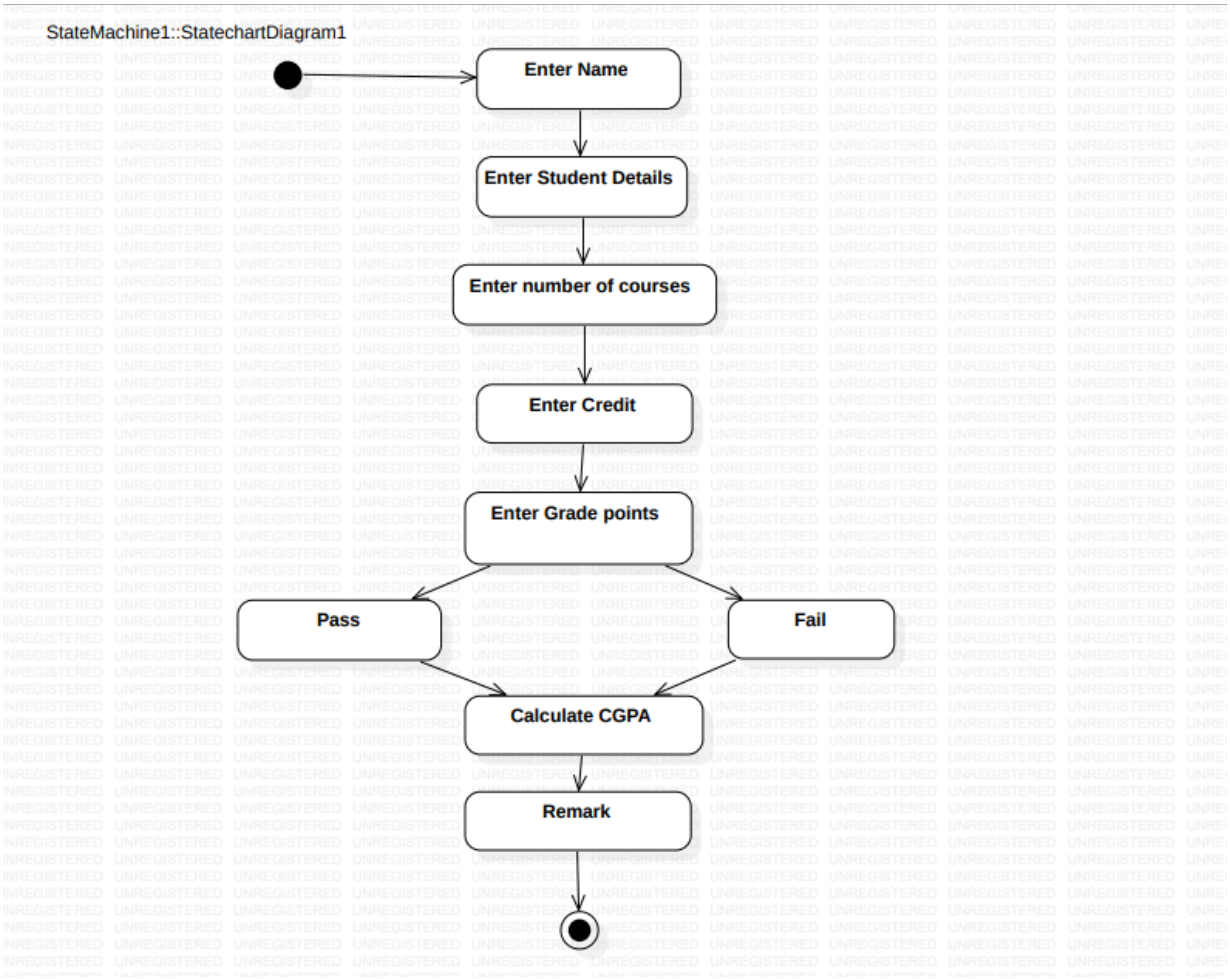
SEQUENCE DIAGRAM



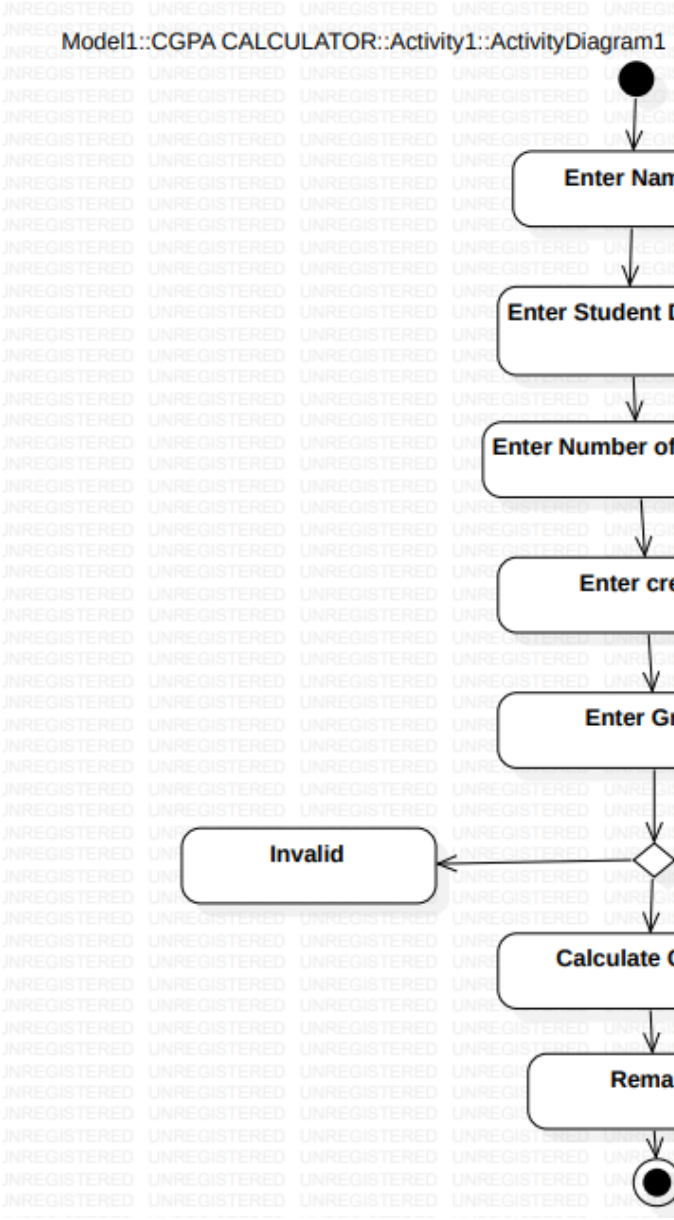
COLLABORATION DIAGRAM



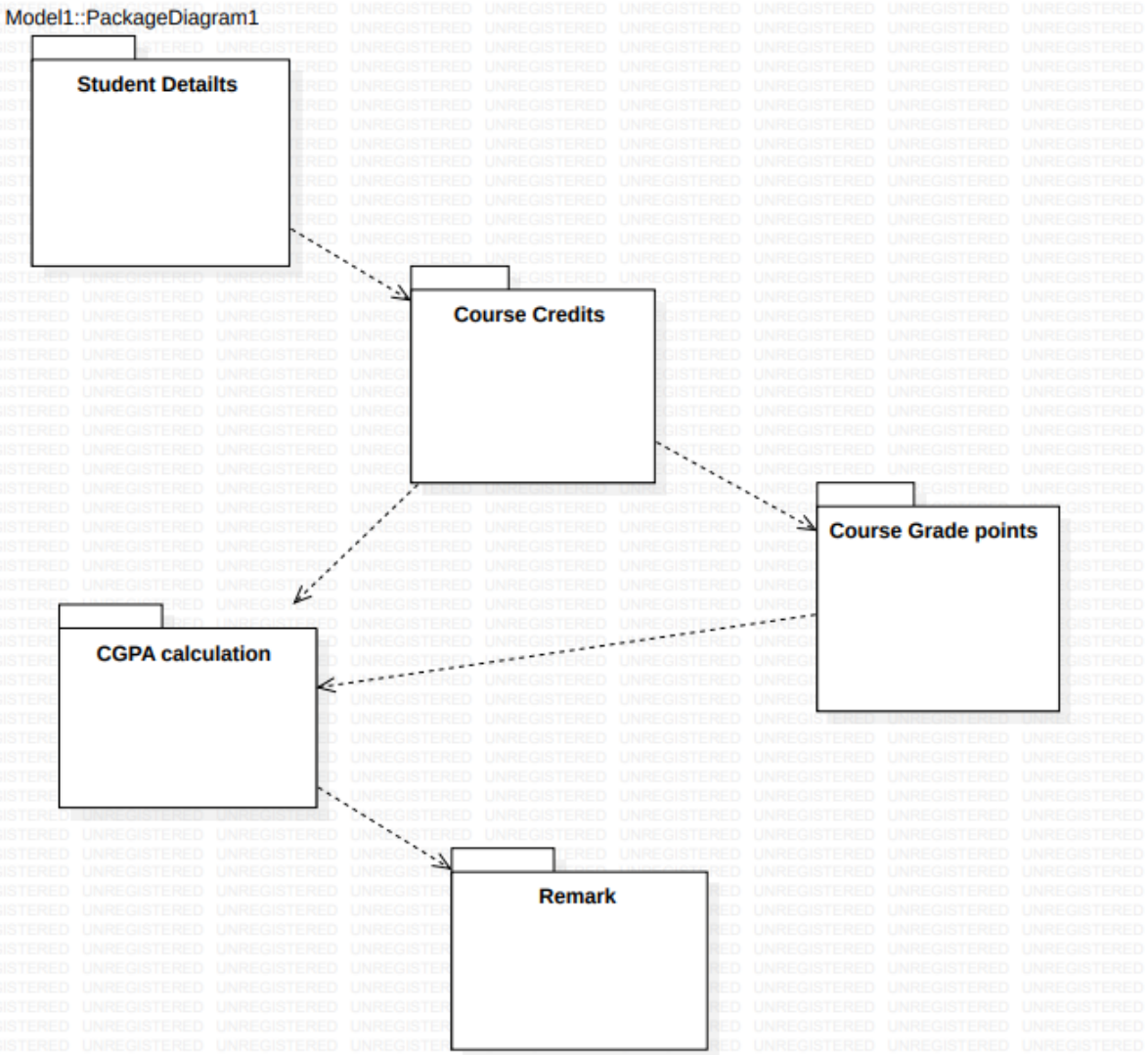
STATE CHART DIAGRAM



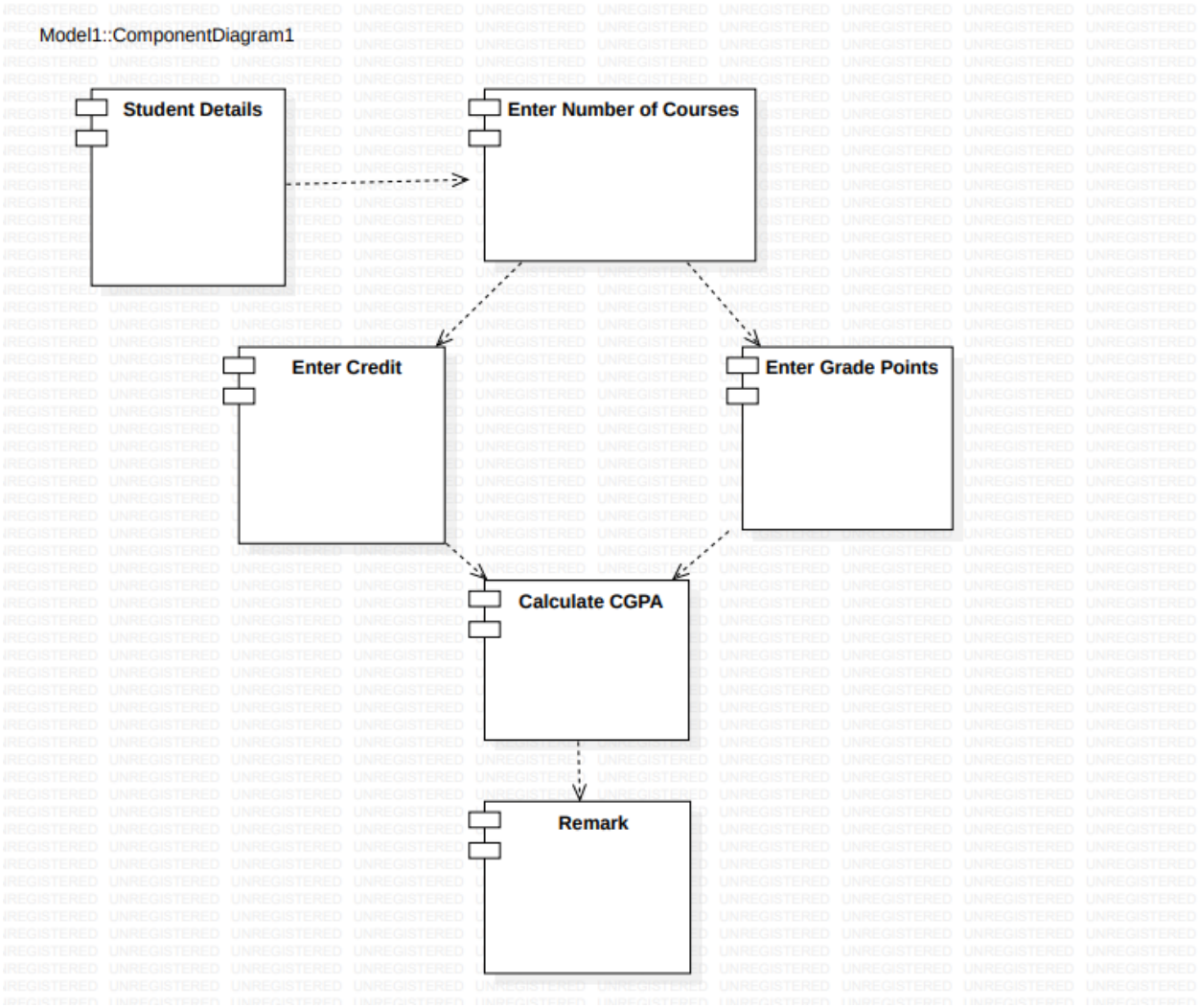
ACTIVITY DIAGRAM



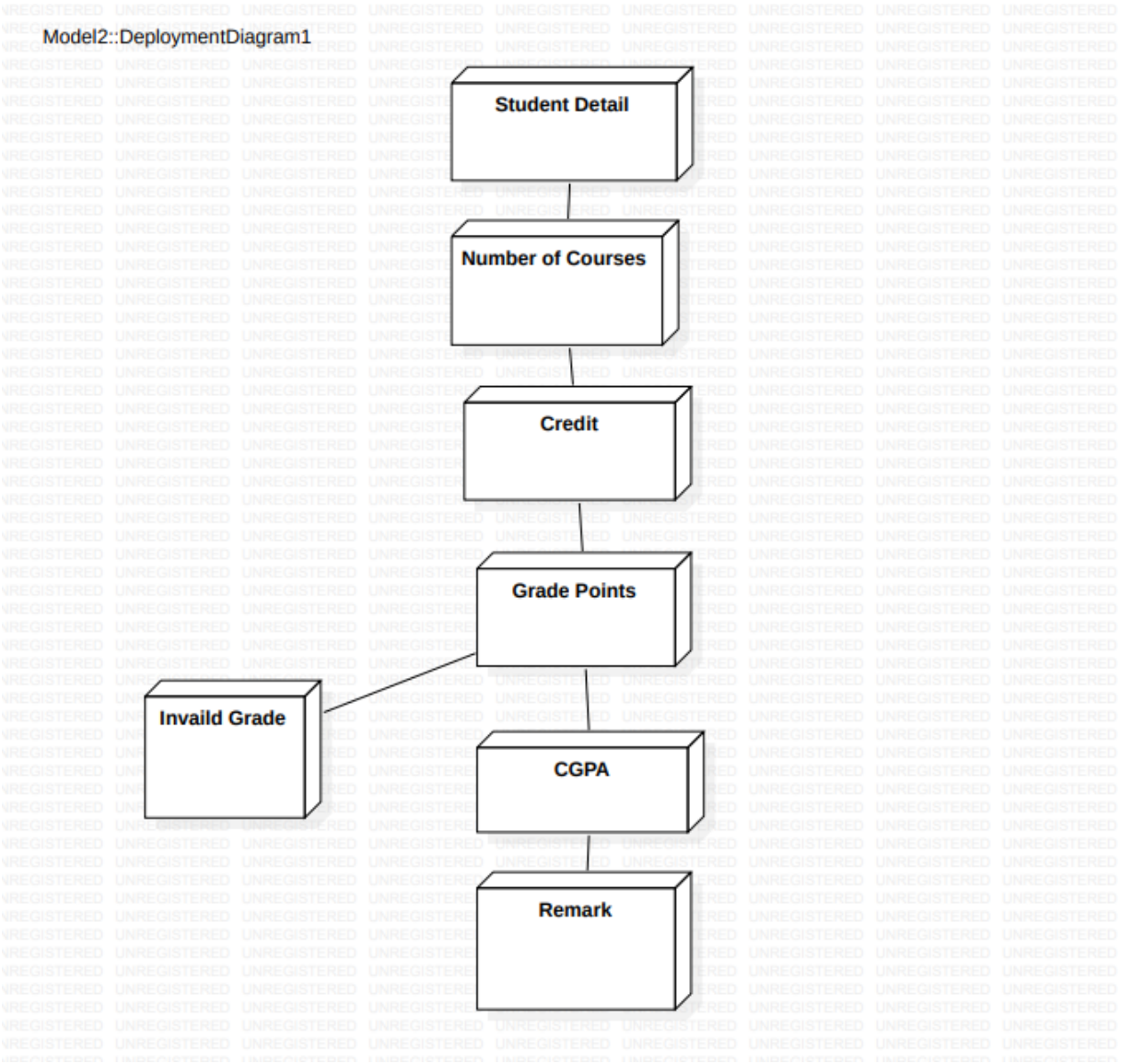
PACKAGE DIAGRAM



COMPONENT DIAGRAM



DEPLOYMENT DIAGRAM



CODE

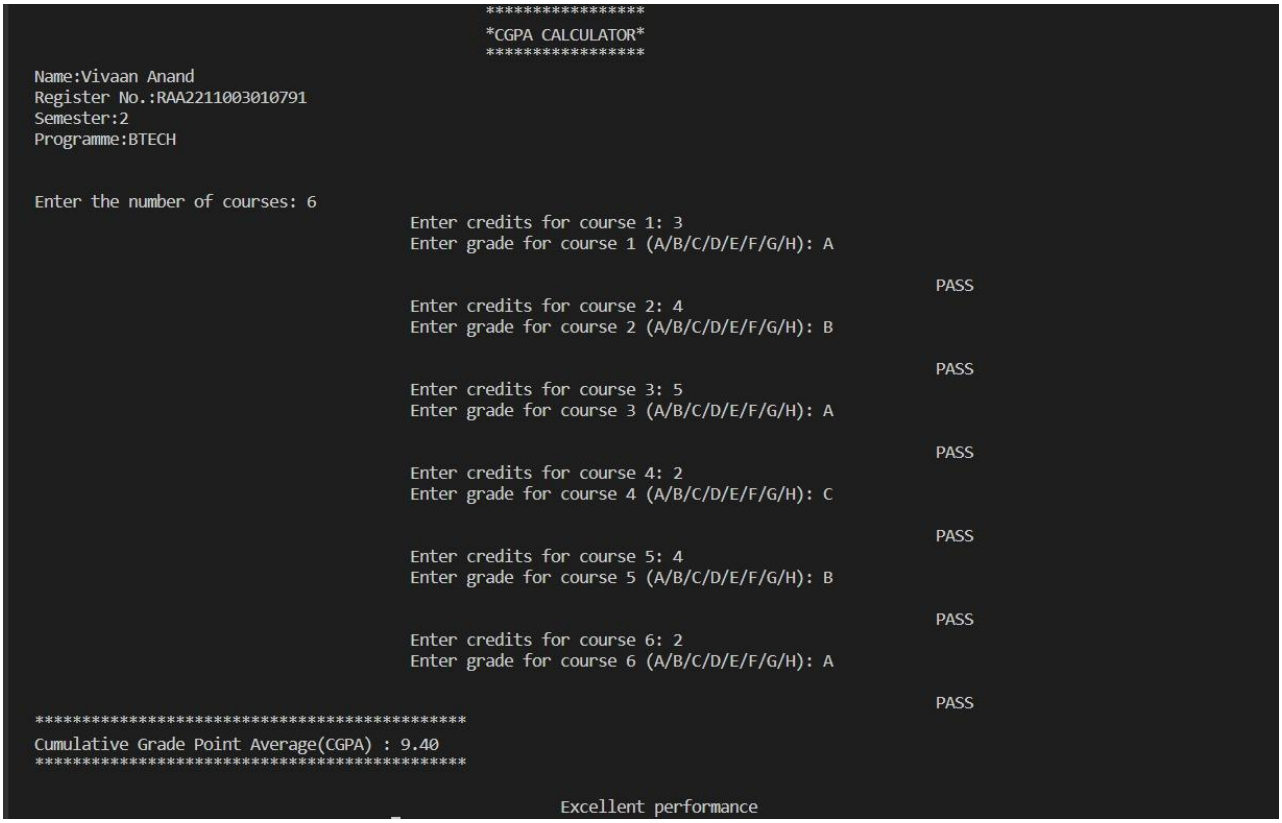
```
#include <iostream>
#include <iomanip>

using namespace std;

int main()
{    int width = 46; // Width of the box

  string f_name,s_name;
string regno;
cout<<"\t\t\t\t\t\t*******"<<endl;
cout<<"\t\t\t\t\t\t*CGPA CALCULATOR*"<<endl;
cout<<"\t\t\t\t\t\t*******"<<endl;
cout<<"Name:";
cin>>f_name>>s_name;
cout<<"Register No.:"<<regno;
cin>>regno;
    string sem;
    cout<<"Semester:";
    cin>>sem;
    string pro;
    cout<<"Programme:";
    cin>>pro;
    int num_courses;
    cout << "\t\t\t\t\t\n\nEnter the number of courses: ";
    cin >> num_courses;

    int total_credits = 0;
    float total_grade_points = 0;
```

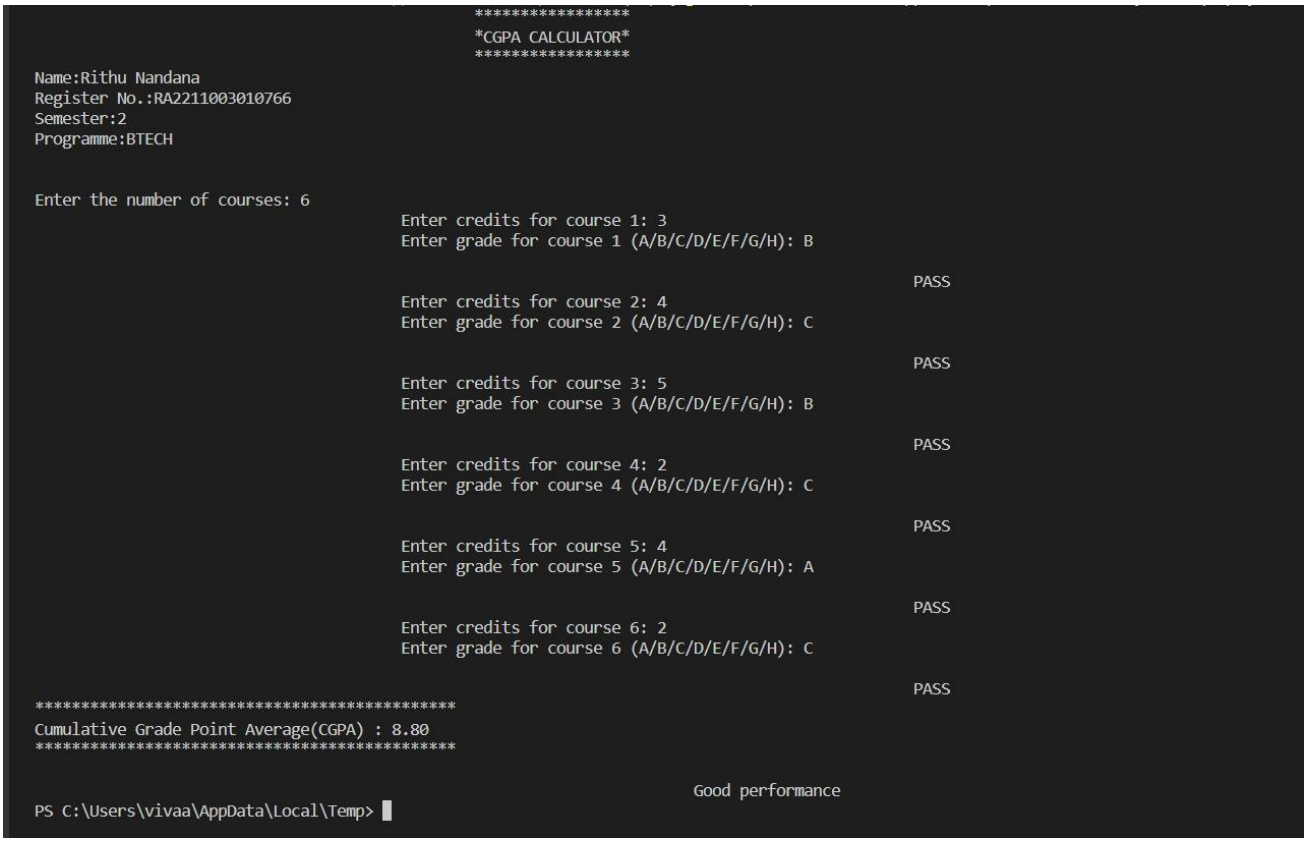
```
for (int i = 1; i <= num_courses; i++)
{
   int credits;
   cout << "\t\t\t\tEnter credits for course " << i << ": ";
   cin >> credits;
   total_credits += credits;

   char grade;
   cout << "\t\t\t\tEnter grade for course " << i << " (A/B/C/D/E/F/G/H): ";
   cin >> grade;

   float grade_points;
   switch (grade)
   {
      case 'A':
         grade_points = 10;
         cout<<"\n\t\t\t\t\t\t\t\t\t\tPASS"<<endl;
         break;
      case 'B':
         grade_points = 9;
         cout<<"\n\t\t\t\t\t\t\t\t\t\tPASS"<<endl;
         break;
      case 'C':
         grade_points = 8;
         cout<<"\n\t\t\t\t\t\t\t\t\t\tPASS"<<endl;
         break;
      case 'D':
         grade_points = 7;
         cout<<"\n\t\t\t\t\t\t\t\t\t\tPASS"<<endl;
         break;
         case 'E':
         grade_points = 6;
         cout<<"\n\t\t\t\t\t\t\t\t\t\tPASS"<<endl;
         break;
```

```
            case 'F':
            grade_points = 5;
            cout<<"\n\t\t\t\t\t\t\t\t\t\t\tPASS"<<endl;
            break;
            case 'G':
            grade_points = 4;
            cout<<"\n\t\t\t\t\t\t\t\t\t\t\tPASS"<<endl;
            break;
             case 'H':
            grade_points = 0;
            cout<<"\n\t\t\t\t\t\t\t\t\t\t\tFAIL"<<endl;
            break;

         default:
            cout << "Invalid grade entered!" << endl;
            i--; // to repeat this iteration
            continue;
      }
      total_grade_points += grade_points * credits;
   }

   cout << "*";
   for (int i = 0; i < width - 2; i++) {
      cout << "*";
   }
   cout << "*" << endl;
   float cgpa = total_grade_points / total_credits;
   cout << fixed << setprecision(2) << "Cumulative Grade Point Average(CGPA)
: " << cgpa <<""<< endl;
     cout << "*";
   for (int i = 0; i < width - 2; i++) {
      cout << "*";
   }
   cout << "*" << endl;
   if(cgpa>=9.5){
      cout<<"\n\t\t\t\t\t\t\t\tOutstanding performance";
```

```
    }
else if(cgpa>=9.0){
    cout<<"\n\t\t\t\t\t\t\tExcellent performance";
}
else if(cgpa>=8.5){
    cout<<"\n\t\t\t\t\t\t\t\tGood performance";
}
else if(cgpa>=8){
    cout<<"\n\t\t\t\t\t\t\t\tCan be better";
}
else{
    cout<<"\n\t\t\t\t\t\t\t\tPoor Performance";
}
    return 0;
}
```

OUTPUT SCREENSHOT




****
CGPA CALCULATOR
****
Name:Rithu Nandana
Register No.:RA2211003010766
Semester:2
Programme:BTECH
Enter the number of courses: 6
Enter credits for course 1: 3
Enter grade for course 1 (A/B/C/D/E/F/G/H): B
PASS
Enter credits for course 2: 4
Enter grade for course 2 (A/B/C/D/E/F/G/H): C
PASS
Enter credits for course 3: 5
Enter grade for course 3 (A/B/C/D/E/F/G/H): B
PASS
Enter credits for course 4: 2
Enter grade for course 4 (A/B/C/D/E/F/G/H): C
PASS
Enter credits for course 5: 4
Enter grade for course 5 (A/B/C/D/E/F/G/H): A
PASS
Enter credits for course 6: 2
Enter grade for course 6 (A/B/C/D/E/F/G/H): C
PASS
****
Cumulative Grade Point Average(CGPA) : 8.80
****
Good performance
PS C:\Users\vivaa\AppData\Local\Temp>

CONCLUSION

The CGPA calculator C++ project is a great example of how programming can simplify tedious tasks for students and solve real-world problems. It demonstrates various programming concepts and offers an opportunity for beginners to gain hands-on experience and develop their problem-solving skills. With some modifications and enhancements, the project can be a valuable addition to any student's portfolio, acting as proof of the power of programming in solving practical problems. Overall, the CGPA calculator project is an excellent way to showcase the potential of programming and its ability to make life easier for students.

REFERENCES

- ✓ https://www.programiz.com/
- ✓ https://www.geeksforgeeks.org/
- ✓ https://www.javatpoint.com/
- ✓ https://www.w3schools.com
- ✓ https://www.geeksforgeeks.org
- ✓ Lucid chart Online UML diagram tool
- ✓ The C++ Programming Language (4th Edition) By Bjarne Stroustrup
- ✓ C++ Primer 5th Edition
- ✓ C++ Pocket Reference 1st Edition Accelerated C++: