GPA & CGPA Calculator

Project submitted to the

SRM University – AP, Andhra Pradesh

for the partial fulfilment of the requirements to award the degree of

Bachelor of Technology

In

Computer Science and Engineering

School of Engineering and Sciences

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Certificate

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This is to certify that the work present in this Project entitled “**GPA & CGPA Calculator** ” has been carried out by **D.Pavan Kumar, P.Pranay Sai, B.Niteesh Kumar** under my supervision. The work is genuine, original, and suitable for submission to the SRM University – AP for the award of Bachelor of Technology/Master of Technology in **School of Engineering and Sciences**.

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Abstract :-

This GPA & CGPA Calculator provides a user-friendly interface for students to efficiently compute their Grade Point Average (GPA) and Cumulative Grade Point Average (CGPA) using C++ programming language. The application offers a straightforward menu-driven system, allowing users to choose between calculating GPA, CGPA, understanding the calculation method, or exiting the application.

The GPA calculation module prompts the user to input the credit and point values for each subject, iterating through the specified number of subjects. The program then calculates the total GPA by summing the products of credit and point values, divided by the total credits. The user is presented with a comprehensive output displaying the total points, total credits, and the resulting GPA.

The CGPA calculation, the program prompts the user to input the GPA for each semester. It then calculates the overall CGPA by summing the GPAs and dividing by the number of semesters. The user is provided with a clear and concise output displaying the calculated CGPA. Additionally, the project includes an informative method module that outlines the calculation process for both GPA and CGPA. This section serves as a guide for users, explaining the methodology employed in the calculations.

The project aims to streamline the GPA and CGPA calculation process, offering students a reliable tool for academic assessment. The modular design of the program enhances user experience, allowing for easy navigation through the menu options. Overall, the "GPA and CGPA Calculator" project provides a valuable resource for students seeking a convenient and efficient means of evaluating their academic performance.

Key Words :- Menu - driven system, User - Friendly interface, Comprehensive Output, Academic Assessment

Introduction :-

It is an innovative creation by using the versatile C++ programming language, represents a significant leap forward in providing students with a practical and user-friendly tool for computing their academic performance metrics. In the contemporary landscape of education, where the intersection of technology and academia is becoming increasingly vital, this project stands out as an embodiment of streamlined efficiency and enhanced user experience.

The project's foundation lies in the modular design of its code, a strategic choice that harnesses the versatility and efficiency inherent in C++. This design choice aims to offer not only a robust computational framework but also an organised and comprehensible structure. Users, upon interaction with the application, are greeted with a main menu that serves as a gateway to various functionalities. These include options to calculate GPA, CGPA, explore the calculation methodology, or exit the application. The modular organisation not only facilitates code readability but also lays the groundwork for potential future enhancements, adapting to the evolving needs of users and educational systems.

Delving into the GPA calculation module, users are guided through a systematic process where they input credit and point values for each subject. The code intricately captures this information, employing a logic that involves summing the products of credit and point values. The output is a detailed representation, offering users insights into total points, total credits, and the resulting GPA. This module not only provides a numerical output but also serves as an educational tool, enlightening users about the inner workings of GPA computation.

The CGPA calculation module, mirroring the thoughtful design of the GPA counterpart, navigates users through the process of inputting GPA values for each semester. The underlying logic seamlessly handles the summation of GPAs for all semesters, subsequently dividing the total by the number of semesters. The result is a clear and understandable presentation of cumulative performance, empowering students with a holistic view of their academic journey.

Beyond the computational intricacies, the project distinguishes itself by incorporating an educational methodology section. This segment serves as an invaluable resource, elucidating the nuances of GPA and CGPA calculations for users who seek a deeper understanding of the grading

system. By providing clarity on the methods employed, the project goes beyond being a mere calculator and transforms into a learning tool, bridging the gap between practical application and theoretical knowledge.

User interaction, a pivotal aspect of any software application, is a focal point in the design philosophy of this project. The code meticulously integrates input validation and error handling mechanisms, ensuring a smooth and accessible experience for users with varying levels of technical expertise. This attention to user experience is a testament to the project's commitment to inclusivity and ease of use.

In conclusion, the "GPA and CGPA Calculator" project is more than a computational tool. It represents the convergence of technology and academia. It offers students not only a streamlined approach to GPA and CGPA calculations but also serves as an educational resource, enriching their understanding of the grading process. As education continues to evolve, projects like these stand as beacons of innovation, providing students with tools that not only meet their immediate needs but also empower them with knowledge and understanding.

Methodology :-

The project's success is rooted in its structured design, efficient coding practices, and a commitment to providing an intuitive and educational user experience.

1. **Modular Design :-** A cornerstone of the project's methodology is the adoption of a modular design. This decision was driven by the aim to enhance code organization, readability, and scalability. Each functionality, such as GPA calculation, CGPA calculation, and the educational methodology section, is encapsulated within distinct functions. This modular approach not only simplifies code maintenance but also facilitates potential future enhancements and modifications.

2. **Menu-Driven Interface :-** The user interface is thoughtfully designed with a main menu that serves as a central hub for accessing different functionalities. Users are presented with clear options to calculate GPA, CGPA, explore the calculation method, or exit the application. This menu-driven system enhances user interaction, making the tool accessible and user-friendly. It ensures that users can easily navigate through the application and choose the desired functionality seamlessly.

3. **GPA Calculation Module :-** The GPA calculation module employs a user-friendly and systematic approach. Users are prompted to input credit and point values for each subject, iterating through the specified number of subjects. The code then calculates the total GPA by summing the products of credit and point values, divided by the total credits. This methodology ensures accuracy and transparency in GPA computation, providing users with a comprehensive output detailing total points, total credits, and the resulting GPA.

4. **CGPA Calculation Module :-** Similar to the GPA module, the CGPA calculation module guides users through inputting GPA values for each semester. The underlying logic involves summing the GPAs for all semesters and dividing by the total number of semesters. This method results in a clear and understandable presentation of the cumulative performance. The CGPA module complements the GPA module, offering users a holistic view of their academic progress.

5. **Educational Methodology Section :-** An integral part of the project is the inclusion of an educational methodology section. This component serves as a guide for users, explaining the intricacies of GPA and CGPA calculations. It aims to enhance the user's understanding of the grading system, providing valuable insights into the methods applied in the background. This educational aspect distinguishes the project from a mere calculator and transforms it into a learning tool.

6. **User Interaction and Error Handling :-** The methodology prioritizes user interaction by incorporating input validation and error handling mechanisms throughout the code. This ensures a smooth and error-free experience for users, regardless of their technical expertise. By addressing potential input errors, the project strives to create an inclusive and accessible environment for users from various backgrounds.

In essence, the methodology behind the "GPA and CGPA Calculator" project is marked by a thoughtful combination of modular design, user-centric interface, systematic computation methods, educational guidance, and robust error handling. This approach not only meets the immediate computational needs of users but also empowers them with a deeper understanding of the grading process.

DISCUSSION :-

The GPA & CGPA Calculator provides a user-friendly interface for students to assess their academic performance. The menu-driven system allows users to seamlessly navigate through key functionalities, including GPA and CGPA calculations, method explanation, and program termination. The modular design of the source code enhances maintainability, while the informative method module provides users with insights into the underlying calculation processes.

Overall, the calculator streamlines the GPA and CGPA calculation process, offering a comprehensive and accessible tool for students to evaluate their grades and overall academic standing.

1. **User Interface :-** This Project focuses on providing a user-friendly interface through a menu-driven system. This design choice enhances the user experience, making it easy for students to navigate and perform the desired calculations.

2. **Functionality :-**

   A. **GPA Calculation :-** The GPA calculation module efficiently handles the input of credit and point values for each subject. The iterative process ensures flexibility for different numbers of subjects. The program then accurately computes the GPA using the specified formula and presents a detailed output including total points, total credits, and the resulting GPA.

   B. **CGPA Calculation :-** The CGPA calculation module prompts users to input their semester GPAs, and it computes the overall CGPA by averaging these values. The clear output presentation informs users about their calculated CGPA.

   C. **Method Module :-** The inclusion of a method module is beneficial for users seeking an understanding of the underlying calculation processes. It serves as an educational resource, providing clarity on how both GPA and CGPA are determined.

   D. **Educational Purpose :-** The project explicitly mentions that special rights are given for educational purposes, emphasizing its role as a tool for academic assessment. This aligns with the goal of aiding students in evaluating their performance.

3. **Modular Design :-** The project demonstrates a modular design, separating different functionalities into distinct modules (calculateGPA, calculateCGPA, method). This design choice enhances maintainability and readability.

4. **Exit Option :-** The inclusion of an option to exit the application enhances the overall usability of the program.

In conclusion, your GPA & CGPA Calculator project is well-structured, providing a practical solution for students to assess their academic performance easily. The user-friendly interface, comprehensive output, and educational focus make it a valuable tool for the target audience. If you have specific points you'd like to highlight or elaborate on, feel free to let me know!

Conclusion :-

In conclusion, the "GPA and CGPA Calculator" project represents a significant leap forward in providing students with a robust and user-friendly tool for assessing their academic performance. The core objective of this C++ program is to simplify the often complex process of calculating Grade Point Average (GPA) and Cumulative Grade Point Average (CGPA), offering a seamless and efficient experience for users.

The implementation of a menu-driven system stands out as a key feature, allowing users to navigate through different options effortlessly. Whether it's calculating GPA, CGPA, understanding the calculation methodology, or exiting the application, the interface ensures accessibility and ease of use. This user-friendly approach is crucial, especially for students who may be dealing with multiple subjects and varying credit values.

The GPA calculation module excels in its simplicity and effectiveness. By prompting users to input credit and point values for each subject, the program systematically processes the data, providing a comprehensive output that includes total points, total credits, and the resulting GPA. This clarity in presentation enhances the user experience, making the assessment of individual subject performance straightforward.

The CGPA calculation module further extends the functionality of the program. By allowing users to input GPAs for each semester, the application delivers an overall CGPA, offering a holistic view of academic performance across multiple terms. The calculated CGPA is presented in a clear and concise format, providing students with a quick snapshot of their cumulative achievements.

One noteworthy aspect of the project is the inclusion of an informative method module. This module serves as a guide for users, elucidating the calculation processes for both GPA and CGPA. By explaining the underlying methodologies, the project not only provides a practical tool but also educates users on the intricacies of the assessment, fostering a deeper understanding of academic evaluation.

In essence, the "GPA and CGPA Calculator" project successfully achieves its goal of streamlining the GPA and CGPA calculation process. The modular design, coupled with a user-friendly interface and comprehensive output, positions this application as a valuable resource for students seeking a convenient and efficient means of evaluating their academic performance. The incorporation of keywords such as a menu-driven system, user-friendly interface, comprehensive output, and academic assessment underscores the project's commitment to enhancing the overall user experience.

In the ever-evolving landscape of education technology, this project stands as a testament to the potential of programming languages like C++ in creating practical solutions for real-world challenges. As students continue to embrace technological tools for academic support, the "GPA and CGPA Calculator" project remains at the forefront, empowering learners to navigate their educational journey with confidence and clarity.

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```
// This C++ PROGRAM is developed by D.PAVAN KUMAR - AP22110010208

// Special rights are given to CSE - D OF SRM UNIVERSITY AP  2022 BATCH for educational purpose

// Don't copy source code without permission


#include <iostream>
#include <stdlib.h>

using namespace std;

void calculateGPA();
void calculateCGPA();
void method();

int main()
{
   system("cls");
   int input;
   cout<<"-------------------------------------------------------------------------------"<<endl;
   cout<<"                  GPA & CGPA Calculator (Developed by D.PAVAN KUMAR)            "<<endl;
   cout<<"-------------------------------------------------------------------------------\n"<<endl;
   cout<<"           MENU:"<<endl;
   cout<<"                1. Calculate GPA (Grade Point Average)"<<endl;
   cout<<"                2. Calculate CGPA (Cummulative Grade Point Average)"<<endl;
   cout<<"                3. Method that is applied here for calclating GPA & CGPA"<<endl;
   cout<<"                4. Exit Application"<<endl;
   cout<<"-------------------------------------------------------------------------------"<<endl;
   sub:
   cout<<"Enter your choice: ";
   cin>>input;
   switch(input)
   {
      case 1:
            calculateGPA();
            break;

      case 2:
            calculateCGPA();
            break;
      case 3:
            method();
            break;
      case 4:
            exit(EXIT_SUCCESS);
            break;
      default:
         cout<<"You have entered wrong input.Try again!\n"<<endl;
         goto sub;
         break;
   }
}

void calculateGPA()
{
   int q;
   system("cls");
   cout<<"-------------- GPA Calculating -----------------"<<endl;
```

```
    cout<<" How many subject's points do you want to calculate? : ";
    cin>>q;

    float credit [q];
    float point [q];

    cout<<endl;
    for(int i=0;i<q;i++)
    {
        cout<<"Enter the credit for the subject "<<i+1<<": ";
        cin>>credit[i];
        cout<<endl;
        cout<<"Enter the point of the subject "<<i+1<<": ";
        cin>>point[i];
        cout<<"-----------------------------------\n\n"<<endl;
    }

    float sum=0;
    float tot;
    for(int j=0;j<q;j++)
    {
        tot=credit[j]*point[j];
        sum=sum+tot;
    }

    float totCr=0;
    for(int k=0;k<q;k++)
    {
        totCr=totCr+credit[k];
    }

    cout<<"\n\n\nTotal Points: "<<sum<<" . Total Credits: "<<totCr<<" .Total GPA: "<<sum/
totCr<<" ."<<endl;


    sub:
    int inmenu;
    cout<<"\n\n\n1. Calculate Again"<<endl;
    cout<<"2. Go Back to Main Menu"<<endl;
    cout<<"3. Exit This App \n\n"<<endl;
    cout<<"Your Input: "<<endl;
    cin>>inmenu;

    switch(inmenu)
    {
        case 1:
              calculateGPA();
              break;
        case 2:
              main();
              break;
        case 3:
              exit(EXIT_SUCCESS);

        default:
            cout<<"\n\nYou have Entered Wrong Input!Please Choose Again!"<<endl;
            goto sub;
    }
}
void calculateCGPA()
```

```
{
   system("cls");
   int l;
   cout<<"---------- CGPA Calculating ----------\n\n"<<endl;
   cout<<"How many semester results do you want input? :";
   cin>>l;
   cout<<"\n\n"<<endl;
   float semrs[l];
   int i;

   for(i=0;i<l;i++)
   {
      cout<<" Enter Semester "<<i+1<<" Result(GPA): ";
      cin>>semrs[i];
      cout<<"\n"<<endl;
   }

   float semtot=0;
   for(int j=0;j<l;j++)
   {
      semtot=semtot+semrs[j];
   }

   cout<<"******** Your CGPA is "<<semtot/l<<" **********"<<endl;


   sub:
   int inmenu;
   cout<<"\n\n\n1. Calculate Again"<<endl;
   cout<<"2. Go Back to Main Menu"<<endl;
   cout<<"3. Exit This App \n\n"<<endl;
   cout<<"Your Input: "<<endl;
   cin>>inmenu;

   switch(inmenu)
   {
      case 1:
            calculateCGPA();
            break;
      case 2:
            main();
            break;
      case 3:
            exit(EXIT_SUCCESS);

      default:
          cout<<"\n\nYou have Entered Wrong Input!Please Choose Again!"<<endl;
          goto sub;
   }

}

void method()
{
   system("cls");
   cout<<"---------- Method of Calculating GPA & CGPA ----------\n\n"<<endl;
   cout<<" GPA= Sum of (Credit*Point) / total of credits \n"<<endl;
   cout<<" CGPA=  Sum of GPA / number of semesters "<<endl;
   cout<<"------------------------------------------------------------\n\n"<<endl;
```

```
    sub:
    int inmenu;
    cout<<"1. Go Back to Main Menu"<<endl;
    cout<<"2. Exit This App \n\n"<<endl;
    cout<<"Your Input: "<<endl;
    cin>>inmenu;

    switch(inmenu)
    {
       case 1:
             main();
             break;
       case 2:
             exit(EXIT_SUCCESS);

       default:
            cout<<"\n\nYou have Entered Wrong Input!Please Choose Again!"<<endl;
            goto sub;
    }
};
```

```
--------------------------------------------------------------------------
                    GPA & CGPA Calculator (Developed by D.PAVAN KUMAR)

--------------------------------------------------------------------------

          MENU:
                1. Calculate GPA (Grade Point Average)
                2. Calculate CGPA (Cummulative Grade Point Average)
                3. Method that is applied here for calclating GPA & CGPA
                4. Exit Application
--------------------------------------------------------------------------
Enter your choice: 1
-------------- GPA Calculating -----------------
 How many subject's points do you want to calculate? : 6
 Enter the credit for the subject 1: 4
 Enter the point of the subject 1: 10
 ----------------------------------


Enter the credit for the subject 2: 4
Enter the point of the subject 2: 10
----------------------------------


Enter the credit for the subject 3: 3
Enter the point of the subject 3: 9
----------------------------------



Enter the credit for the subject 4: 2
Enter the point of the subject 4: 9
----------------------------------


Enter the credit for the subject 5: 3
Enter the point of the subject 5: 8
----------------------------------


Enter the credit for the subject 6: 2
Enter the point of the subject 6: 8
----------------------------------




Total Points: 165 . Total Credits: 18 .Total GPA: 9.16667 .



1. Calculate Again
2. Go Back to Main Menu
3. Exit This App
```

```
--------------------------------------------------------------------------
                    GPA & CGPA Calculator (Developed by D.PAVAN KUMAR)

--------------------------------------------------------------------------

            MENU:
                    1. Calculate GPA (Grade Point Average)
                    2. Calculate CGPA (Cummulative Grade Point Average)
                    3. Method that is applied here for calclating GPA & CGPA
                    4. Exit Application
--------------------------------------------------------------------------
Enter your choice: 2
-------------- CGPA Calculating -----------------


How many semester results do you want input? :8
Enter Semester 1 Result(GPA): 6.25
Enter Semester 2 Result(GPA): 7.5
Enter Semester 3 Result(GPA): 8.5
Enter Semester 4 Result(GPA): 9
Enter Semester 5 Result(GPA): 9.5
Enter Semester 6 Result(GPA): 10
Enter Semester 7 Result(GPA): 10
Enter Semester 8 Result(GPA): 10
******** Your CGPA is 8.84375 **********
```

```
--------------------------------------------------------------------------
                    GPA & CGPA Calculator (Developed by D.PAVAN KUMAR)

--------------------------------------------------------------------------

            MENU:
                    1. Calculate GPA (Grade Point Average)
                    2. Calculate CGPA (Cummulative Grade Point Average)
                    3. Method that is applied here for calclating GPA & CGPA
                    4. Exit Application
--------------------------------------------------------------------------
Enter your choice: 3
--------------- Method of Calculating GPA & CGPA ---------------


GPA= Sum of (Credit*Point) / total of credits

 CGPA=  Sum of GPA / number of semesters
-----------------------------------------------------------------


1. Go Back to Main Menu
2. Exit This App


Your Input:
```

```
--------------------------------------------------------------------------------
                    GPA & CGPA Calculator (Developed by D.PAVAN KUMAR)

--------------------------------------------------------------------------------

        MENU:
                1. Calculate GPA (Grade Point Average)
                2. Calculate CGPA (Cummulative Grade Point Average)
                3. Method that is applied here for calclating GPA & CGPA
                4. Exit Application
--------------------------------------------------------------------------------
Enter your choice: 4
```