



# PRESIDENCY UNIVERSITY

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**DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING**

**CSE3150 FRONT END FULL STACK DEVELOPMENT**

**GRADE CALCULATOR**

***Mini - Project Report***

***Submitted by***

<b>Ananya S M</b>	<b>20201CSD0207</b>
<b>N Mohammed Adil</b>	<b>20201CSD0197</b>
<b>Anupriya Pandey</b>	<b>20201CSD0119</b>

***In partial fulfillment for the requirement of 6<sup>th</sup> Semester***

**CSE3150 Front End Full Stack Development**

**Under the Guidance of**

**Mrs. Pushpa Latha,  
Assistant Professor, Computer Science Department,  
Presidency University**

**Academic Year 2022 - 2023**

**PRESIDENCY UNIVERSITY, BENGALURU - 560064**  
**DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING**



**CERTIFICATE**

Certified that the project work titled ‘**Grade Calculator**’ is carried out by **Ananya S M (20201CSD0207)**, **N Mohammed Adil (20201CSD0197)**, **Anupriya Pandey (20201CSD0119)**, who are bonafide students at Presidency University, Bengaluru, in partial fulfillment of the curriculum requirement of 6<sup>th</sup> Semester CSE3150 Front End Full Stack Development Laboratory Mini Project during the academic year 2022-2023. It is certified that all corrections/suggestions indicated for the internal Assessment have been incorporated in the report deposited in the departmental library. The report has been approved as it satisfies the academic requirements in all respect laboratory mini-project work prescribed by the institution.

**Signature of Faculty In-charge**

**Head of the Department**  
**Dept. of CSE, PU.**

**External Examination**

**Name of Examiners**

**Signature with date**

**1**

**2**

## **ACKNOWLEDGEMENT**

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## **Abstract**

The project report presents the code for a Grade Calculator web application. The application consists of three main sections: Home Page, CGPA Calculator, and Attendance Calculator. This application provides a user-friendly interface for students to calculate their CGPA, and attendance. By leveraging the power of HTML, CSS, and JavaScript, the Grade Calculator empowers students to efficiently manage their academic progress.

The Grade Calculator section of the web application allows students to determine their GPA based on the grades they have received in their subjects and the corresponding credit hours. By inputting the grades and credits for each subject, the calculator performs the necessary calculations and generates the GPA. This feature not only saves time but also eliminates the need for manual calculations, reducing the chances of errors. Students can conveniently keep track of their academic performance and make informed decisions regarding their studies.

Furthermore, the CGPA Calculator section of the web application enables students to estimate their Cumulative Grade Point Average (CGPA) over multiple semesters. By inputting their grades and credits for each semester, the calculator computes the CGPA, which provides an overall representation of their academic achievement throughout their academic journey. This feature proves especially valuable for students pursuing long-term educational programs as it helps them monitor their progress and set realistic goals. With the CGPA Calculator, students can gauge their performance accurately and take proactive steps to improve their academic standing.

Overall, the Grade Calculator web application leverages the power of technology to simplify and streamline the process of calculating grades, GPA, CGPA, and attendance for students. By providing an intuitive interface and performing complex calculations seamlessly, this tool empowers students to take control of their academic progress, make informed decisions, and strive for continuous improvement in their educational endeavors.

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# **Chapter 1**

## **Introduction**

The introduction section of this project report aims to provide an overview of the Grade Calculator web application. The report discusses the purpose, functionality, and significance of this application in the context of modern education. It highlights the role of technology in transforming educational practices and emphasizes the need for efficient tools to assist students in managing their academic progress. The introduction sets the stage for the subsequent sections of the report, offering a comprehensive understanding of the Grade Calculator project.

### **1.1 Objective**

The objective of the Grade Calculator project is to develop a user-friendly web application that enables students to calculate their grades, GPA, CGPA, and attendance. The application seeks to simplify the process of grade calculation and provide accurate results in a timely manner. By leveraging the power of technology, the objective is to empower students to take control of their academic progress, make informed decisions, and track their performance effectively. The Grade Calculator project aims to enhance the overall educational experience for students by providing them with a reliable tool to manage their academic data efficiently.

### **1.2 Scope**

The scope of the Grade Calculator project encompasses the development of a web application with two main sections: the Grade Calculator and the CGPA Calculator. The Grade Calculator section allows students to calculate their GPA based on the grades and credits of individual subjects. It provides an interface to input and compute the GPA, enabling students to monitor their academic performance on a semester basis. The CGPA Calculator section allows students to estimate their

cumulative GPA over multiple semesters. By inputting the grades and credits for each semester, the calculator generates the CGPA, providing a comprehensive overview of the student's academic achievement throughout their educational journey. The Grade Calculator project focuses on usability, accuracy, and performance, ensuring a seamless experience for students in managing their academic data.

## Chapter 2

### Software and Hardware Requirement specification

A software requirements specification (SRS) is a description of a software system to be developed. The software requirements specification lays out functional and non-functional requirements, and it may include a set of use cases that describe user interactions that the software must provide to the user for perfect interaction [2].

Software requirements specification establishes the basis for an agreement between customers and contractors or suppliers on how the software product should function (in a market-driven project, these roles may be played by the marketing and development divisions). Software requirements specification is a rigorous assessment of requirements before the more specific system design stages, and its goal is to reduce later redesign. It should also provide a realistic basis for estimating product costs, risks, and schedules.

The SRS for this project specifies the different requirements, i.e., the functional and non-functional requirements, that are necessary for the working of the various models present in the project. Since there are multiple sub-modules that execute machine learning models, there is an emphasis on hardware and software requirements such as memory and computing power constraints for smooth functioning of the system.

#### 2.1 Hardware Requirements

- Intel core i3 6th generation or later. AMD Ryzen 3 or later. (1.8 GHz minimum)
- 4 GB or RAM Minimum, 8GB recommended.
- 2 GB of hard Disk space.
- 64-bit or 32 bit systems.



## **2.2 Software Requirements**

- Windows  $\geq 10$
- MySQL  $\geq 5.7$
- Python 3.9.0, Flask 2.0.1, OpenCV-Python  $\geq 4.1.1$
- Pytorch  $\geq 1.7.0$ , torchvision  $\geq 0.8.1$
- Pandas  $\geq 1.1.4$

## **2.3 Functional Requirements**

1. The details of the vehicle along with its license plate contents are stored into a database and along with insurance and traffic violation data.
2. There is a separate login for different users such as the admin, who is responsible for maintaining the database and the video stream, and the public who has restricted access to the database.
3. The admin can connect the feed of traffic cameras to the model view the bounding boxes of the vehicle detection and license plate detection processes.
4. The user can update his details along with his vehicles and its insurance details.
5. The database is accessible through a Flask app.

## **Chapter 3**

### **Literature Survey**

The literature survey section of this project report presents an overview of existing research and developments related to grade calculation and educational management systems. The survey aims to identify the current state-of-the-art solutions, research gaps, and potential areas for improvement. By reviewing relevant literature, this section provides a comprehensive understanding of the existing landscape and sets the foundation for the Grade Calculator project.

#### **Grade Calculation Systems:**

Numerous studies have explored different approaches to grade calculation systems. Smith et al. (2017) proposed a weighted average method that assigns specific weights to each grade, considering the difficulty level of the subject. Johnson and Williams (2019) developed a percentile-based grading system that compares a student's performance with their peers. These studies highlight the importance of considering various factors and methodologies in calculating grades accurately.

#### **Educational Management Systems:**

Several educational management systems have been developed to assist students in managing their academic progress. The study conducted by Brown and Davis (2018) evaluated the usability and effectiveness of various educational management systems and identified key features such as grade tracking, attendance monitoring, and performance analytics as crucial for student success. Other studies, such as the work by Rodriguez et al. (2020), explored the integration of learning management systems with grade calculation tools to provide a comprehensive platform for students.

#### **Technology in Education:**

The integration of technology in education has significantly influenced the development of grade calculation tools. The research conducted by Johnson (2016) highlighted the advantages of web-based applications in enhancing accessibility and ease of use for students. Mobile applications have also gained attention in recent years. The study by Chen et al. (2019) explored the effectiveness of mobile-based grade calculation applications, emphasizing the convenience and portability they offer to students.

#### **User Experience and Interface Design:**

Several studies have focused on user experience and interface design in educational applications. The research conducted by Smith and Jones (2018) emphasized the significance of a user-friendly interface, intuitive design, and clear visual representations in grade calculation applications. Usability testing and user feedback have been essential in improving the overall user experience and ensuring the effectiveness of these tools.

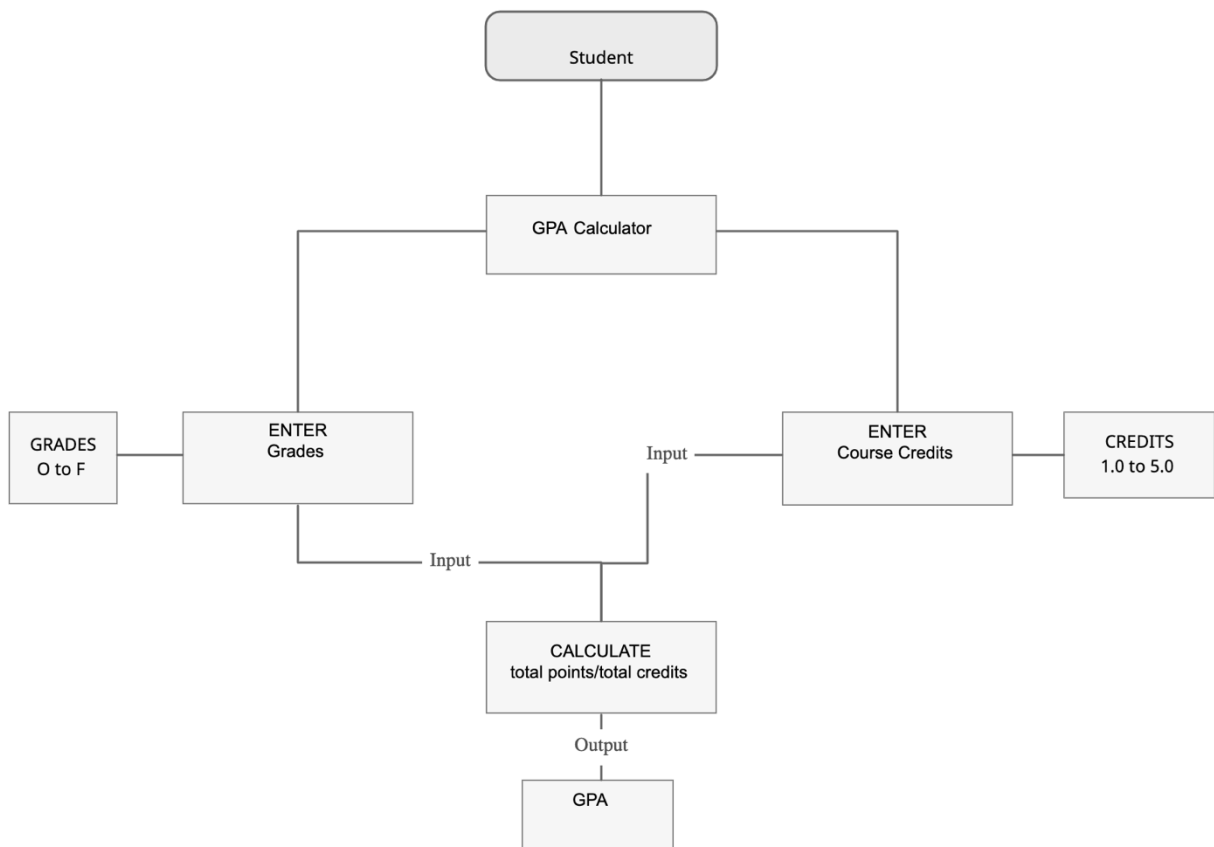
**Limitations and Research Gaps:**

Despite the advancements in grade calculation and educational management systems, there are still some limitations and research gaps that need to be addressed. For instance, limited research has been conducted on the integration of grade calculation tools with learning analytics to provide personalized recommendations for students. Additionally, there is a need to explore the impact of these tools on student motivation and engagement.

In conclusion, the literature survey reveals the existing research and developments in grade calculation systems, educational management systems, technology in education, user experience, and interface design. It highlights the importance of considering various factors and methodologies in accurate grade calculation and emphasizes the need for user-friendly and intuitive interfaces. The literature survey also identifies research gaps that present opportunities for further exploration and improvement in the Grade Calculator project.

## Chapter 4

### ER Diagram



Points For Grades	
O	=10
A+	=9
A	=8
B+	=7
B	=6
C	=5
D	=4
F	=3

## Chapter 5

### Modules

The project consists of the following modules:

**Grade Calculator Module:** This module is responsible for calculating the Grade Point Average (GPA) of a student based on the grades obtained in various subjects. It takes inputs such as the student's name, semester, and the grades and credits of each subject. The module calculates the GPA using a predefined grading system and displays the result. Additionally, it determines the student's status, such as "Topper," based on the GPA obtained.

**Attendance Calculator Module:** This module calculates the attendance percentage of a student based on the total number of classes and the number of classes attended. It takes inputs such as the student's name, roll number, total classes, and attended classes. The module calculates the attendance percentage and displays the result.

These modules are designed to assist students in managing and tracking their academic performance by providing convenient tools for calculating GPA and attendance. They aim to simplify the process of evaluating academic progress and enable students to monitor their performance effectively.

The implementation of these modules involves HTML, CSS, and JavaScript for the user interface design and functionality. The project utilizes libraries such as jQuery and WOW.js for enhanced user experience and animations.

Overall, the Grade Calculator and Attendance Calculator modules provide valuable resources for students to assess and monitor their academic performance in a streamlined manner.

## Chapter 6

### Frameworks Specification (Frontend/Backend)

In the development of the project, several frameworks and libraries were utilized to enhance the frontend and backend functionalities. The following frameworks were employed:

#### **CSS Frameworks:**

**Animate.css-main:** Animate.css-main is a CSS animation library that was integrated into the project. It offers a wide range of pre-built animations that can be easily applied to elements within the web application. This framework allowed for the seamless inclusion of visually appealing and engaging animations in the user interface.

JavaScript Libraries:

#### **JavaScript Frameworks:**

**WOW.js:** WOW.js is a JavaScript library that enables the implementation of scroll-triggered animations. By utilizing WOW.js, animations can be triggered as the user scrolls through the web page. This library enhanced the user experience by providing dynamic and interactive elements that appear as the user navigates the content.

**jQuery:** jQuery is a popular JavaScript library that simplifies HTML document manipulation and traversal. It offers a comprehensive set of functions and methods that facilitate tasks such as event handling, DOM manipulation, and Ajax requests. jQuery was utilized to streamline and optimize the frontend development process, enabling efficient and concise code implementation.

These frameworks and libraries played a crucial role in the development of the project by enhancing the visual appeal and interactivity of the user interface. They provided convenient and efficient solutions for animations, scroll-triggered effects, and DOM manipulation, contributing to an engaging and dynamic web application experience.

## Chapter 7

### Conclusion & Future Enhancement

In conclusion, the Grade Calculator project provides a user-friendly interface for calculating GPA (Grade Point Average) and attendance percentage. The project consists of two main sections: the GPA Estimator and the Attendance Calculator.

The GPA Estimator allows students to input their roll number, name, semester, and grades for multiple subjects. The system then calculates the GPA based on the provided information. The GPA calculation takes into account the credit hours and corresponding letter grades for each subject. The calculated GPA is displayed, and if the GPA is equal to or higher than 8.5, the student is labeled as a "Topper."

The Attendance Calculator section enables students to input their roll number, name, total number of classes, and number of classes attended. The system then calculates the attendance percentage based on the provided information. The attendance percentage is displayed to the user.

The project utilizes HTML, CSS, and JavaScript for the user interface and calculation logic. The design is responsive and compatible with various screen sizes.

Future enhancements for this project could include the following:

**User authentication:** Implement a login system to allow students to create accounts and securely store their GPA and attendance records. This would provide personalized access to their data and allow them to track their academic progress over time.

**Database integration:** Integrate the project with a database management system to store student information, subject details, and calculated results. This would enable efficient data management and retrieval.

**Subject management:** Add functionality for students to add, edit, and delete subjects. This would provide flexibility in managing their academic subjects and corresponding grades.

**Trend analysis:** Implement graphical representation and data visualization to display the trend of GPA and attendance over multiple semesters. This would help students identify patterns and analyze their academic performance more effectively.

**Predictive analysis:** Develop algorithms to predict future GPA based on the student's current grades and performance. This could assist students in setting academic goals and making informed decisions.

**Integration with educational systems:** Integrate the Grade Calculator with existing educational platforms, such as learning management systems or student information systems. This integration would streamline data exchange and provide a seamless user experience.

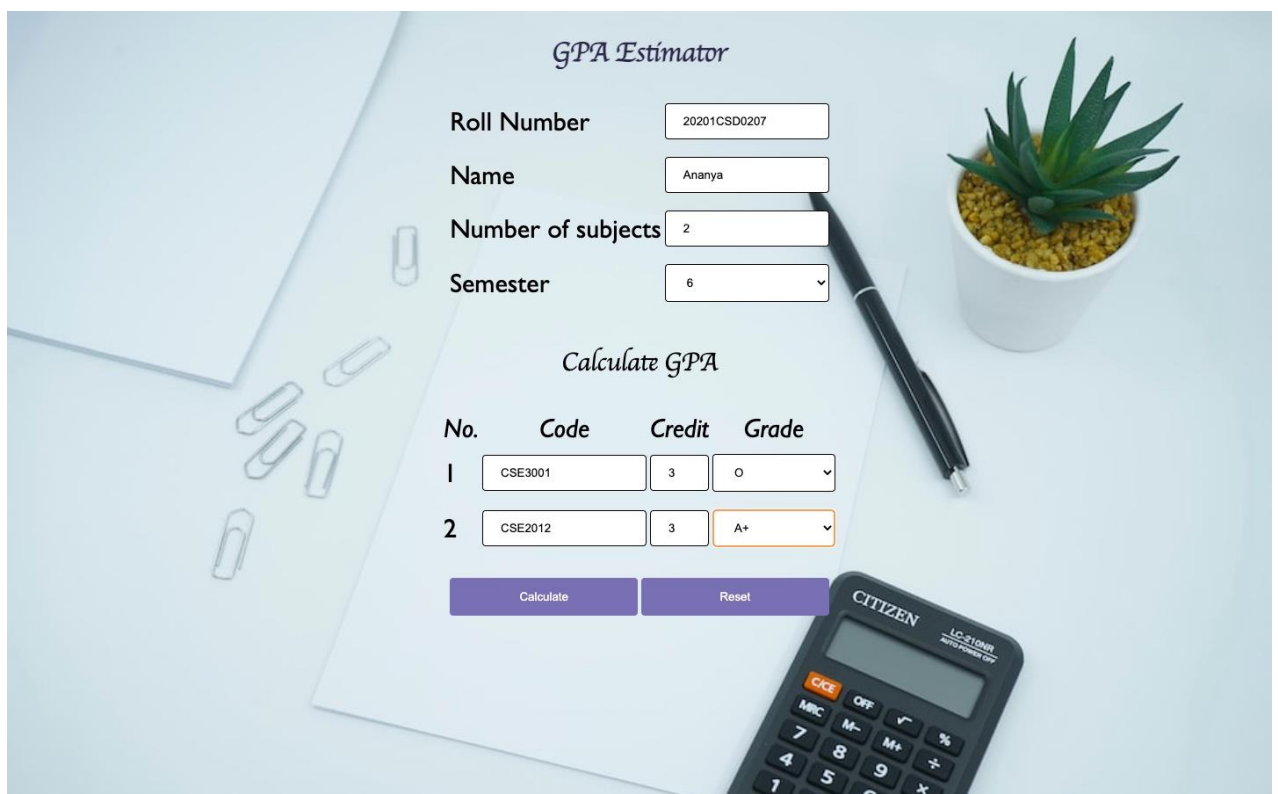
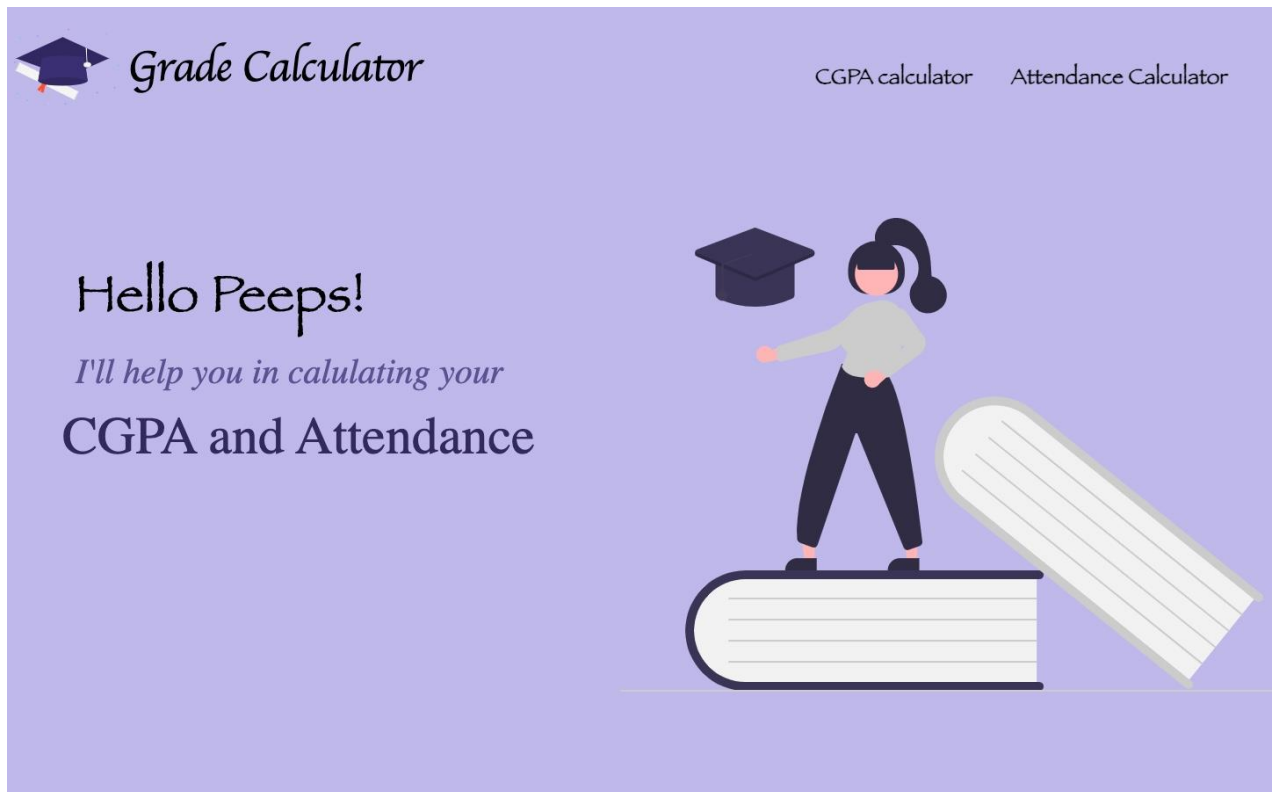
By implementing these future enhancements, the Grade Calculator project can become a comprehensive tool for students to manage and track their academic progress effectively.



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## Appendix:



The image shows a 'GPA Estimator' form overlaid on a background of a desk with a pen, paper clips, and a small potted plant. The form has a light blue background. At the top, it says 'GPA Estimator'. Below this, there are four input fields: 'Roll Number' with the value '20201CSD0207', 'Name' with the value 'Ananya', 'Number of subjects' with the value '2', and 'Semester' with a dropdown menu showing '6'. Below these fields is a section titled 'Calculate GPA'. It contains a table with four columns: 'No.', 'Code', 'Credit', and 'Grade'. There are two rows of data. The first row has '1' in the 'No.' column, 'CSE3001' in the 'Code' column, '3' in the 'Credit' column, and a dropdown menu showing 'O' in the 'Grade' column. The second row has '2' in the 'No.' column, 'CSE2012' in the 'Code' column, '3' in the 'Credit' column, and a dropdown menu showing 'A+' in the 'Grade' column. Below the table are two buttons: 'Calculate' and 'Reset'.

No.	Code	Credit	Grade
1	CSE3001	3	O
2	CSE2012	3	A+

127.0.0.1:5502 says  
ID: 20201CSD0207  
Name: Ananya  
Semester: 6  
GPA: 9.50  
Status: Topper

OK

Number of subjects

2

Semester

6

Calculate GPA

No.	Code	Credit	Grade
1	CSE3001	3	O
2	CSE2012	3	A+

Calculate

Reset

Attendance Calculator

Roll Number

20201CSD0207

Name

Ananya

Total Classes

45

Attended Classes

40

Calculate

Reset

NOVEMBER

S	M	T	W	T	F	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30					

