JAVA PROJECT REPORT
(Project Term January-May 2023)

(THE ULTIMATE GRADE CALCULATOR WITH PERSONALISED FEEDBACK FOR SCHOLASTICS ELEVATION)

Submitted by

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Course Code : CSE310

Under the Guidance of
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DECLARATION

We hereby declare that the project work entitled ("THE ULTIMATE GRADE CALCULATOR WITH PERSONALISED FEEDBACK FOR SCHOLASTICS ELEVATION") is an authentic record of our own work carried out as requirements of Capstone Project for the award of B.Tech degree in (CSE) from Lovely Professional University, Phagwara, under the guidance of (Dr. Ranjith Kumar), during January to May 2023. All the information furnished in this capstone project report is based on our own intensive work and is genuine.

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INTRODUCTION

Most of the students are unaware about CGPA due to which they face difficulty in calculating their percentage. To help them, we created this project that will help them to know about CGPA and how CGPA calculator works and how to calculate CGPA. So, let's first start by understanding what is a CGPA? CGPA is defined as the Cumulative Grade Points Average. CGPA is the average of grade points obtained by a student in all the subjects. If a student wants to know how much percentage they have obtained in the semester exam then they have to convert their CGPA into Percentage. Here, we have made a smart project using which one can calculate the CGPA and percentage from the CGPA Grades by just entering his/her marks with the credit hours. The CGPA Calculator will help students in calculating their marks percentage from CGPA. To calculate your grade point average, first multiply the number of credits each class is worth by the point value for the letter grade that you earned in that class. Next, total the grade points of all of your classes for that semester and divide it by the number of credit hours that you attempted.

SCOPE OF THE PROJECT

The scope of a CGPA calculator project would typically involve developing a software tool that can calculate a student's cumulative grade point average (CGPA) based on their grades and credit hours for each course. The project would typically involve the following components: User interface: The project would require the development of a user interface that allows students to input their grades and credit hours for each course. Data storage: The project would require a database or file system to store the user input data. Calculation engine: The project would require an algorithm or formula to calculate the CGPA based on the user input data. Output: The project would need to display the calculated CGPA to the user.

In the future, the scope of a CGPA calculator project may expand to include additional features and functionality to better serve the needs of users. Here are some potential areas of expansion. Integrated with academic systems: The CGPA calculator may be integrated with existing academic systems such as learning management systems or student information systems to automatically retrieve grades and credit hours for each course, eliminating the need for manual data entry. Customization: Users may be able to customize the CGPA calculator based on their credit hours grading system or program requirements. Graphical representation: The CGPA calculator includes the very basic graphical representations of a student's subjects with icons using NetBeans and cumulative GPA. Comparison and benchmarking: The CGPA calculator may include features that allow students to compare their academic performance with that of their peers or to see how their performance stacks up against historical data or institutional benchmarks. Recommendations and feedback: The CGPA calculator may provide personalized recommendations and feedback to students based on their academic performance and progress, such as suggestions for improvement or areas where they are excelling.

PROJECT DESCRIPTION

Computation of Grade Point Average (GPA): Grade Point average (GPA)

$= \sum G \times C / \sum G$. Where, G = Grade point, C = Credit hour.

The core of a CGPA calculator project would involve developing the algorithm or formula to calculate the CGPA based on the input data. The formula typically involves summing the products of each grade and its corresponding credit hours, then dividing by the total number of credit hours. The resulting number represents the student's CGPA. The project would also involve developing a user interface to input the grades and credit hours for each course, and a database or file system to store the input data. The user interface may include features such as dropdown menus for selecting courses and grades, and input fields for credit hours. Once the user has input all of their grades and credit hours, the CGPA calculator would perform the calculations and display the resulting CGPA to the user. A systematic arrangement in the educational stream to get average of grade points. And the CGPA percentage is 9.5 times the CGPA.CGPA = (Grades in all Subjects) / (Total Number of Subjects).

So, CGPA= 9.5 × CGPA

PROPOSED TECHNIQUE

Used JFrame and Java Swing components:, alos used JFrame and Java Swing components to design the user interface of the CGPA calculator. This will make the UI visually appealing and user-friendly. Used JTextFields for user input: You can used JTextFields to allow the user to input grades and credit hours. You can also add input validation to ensure that the user enters valid input. Use JButtons for user actions: used JButtons to allow the user to perform actions such as calculating the CGPA and resetting the input fields. Use JLabels for displaying output: used JLabels to display the CGPA and feedback messages to the user. Used if-else statements for input validation: You can use if-else statements to check if the user has entered valid input. For example, if the user enters a grade that is not valid, you can display an error message. Use arrays to store data: used arrays to store the grades and credit hours entered by the user. This will make it easier to perform calculations. Used a feedback system: You can use a feedback system to provide the user with feedback on their input. For example, you can display a message to the user if their CGPA falls below a certain threshold.
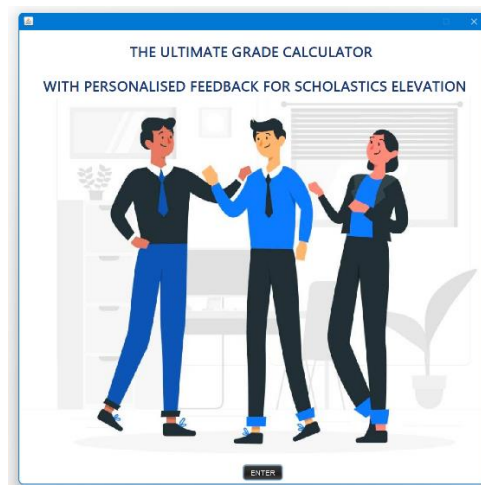
Used Regex for validating the email, name & registration number in the module1. Implemented and pasted images as icons and backgrounds. Use JFrame and Swing components: NetBeans provides built-in support for creating user interfaces using Swing components. You can use JFrame to create the main window of your CGPA calculator and add text fields, labels, and buttons to it using Swing components. Used object-oriented programming: To make code more organized and maintainable, you can use object-oriented programming concepts such as classes and objects. Implement a feedback system: To provide feedback to the user, you can use JOptionPane to display error messages or success messages depending on the input entered by the user.

MODULES

This whole project is divided into 4 modules:

1. <mark>Student Details</mark>.
2. <mark>Marks Input</mark>.
3. <mark>Feedback</mark>.
4. <mark>INFO</mark>.

Student Details is the window which will be appeared after entering the welcoming page which is also the part of this module where one need to enter his/her name, email, registration number. And choose the semester which he/she wants to enter the marks of. After clicking Enter button he/she redirects to another window where he'll be entering marks.

Now comes the second module : **Marks Input**, Where one will be entering his marks and credit hours and directly getting his/her GPA calculated and this module is comprised of 4 windows of each semester.

Semester1

Subject Name		Subject Code	Marks	Credit	Grade
Computer Programming		CSE101	55	3 ▾	B
Basic Electrical And Electronic Engineering		ECE131	67	3 ▾	B+
Basic Electrical And Electronic Engineering Laborator.		ECE132	78	1 ▾	A
Engineering Graphics		MEC103	88	2 ▾	A+
Mathematics For Engineers		MTH165	89	1 ▾	A+
Soft Skills-1		PES318	97	4 ▾	O
Engineering Physics		PHY109	100	1 ▾	O
Engineering Physics Laborato...		PHY119	45	3 ▾	C+

Calculate GPA   GPA *8.00*   Next

...

Semester4

Subject Name		Subject code	Marks	Credit	Grade
Computer Organization And Desi...		CSE211	67	2 ▾	B+
Programming in Java		CSE310	89	3 ▾	A+
Operating Systems		CSE316	89	1 ▾	A+
Operating Systems Laboratory		CSE325	68	3 ▾	B+
Design And Analysis Of Algorith...		CSE408	89	1 ▾	A+
Artificial Intelligance		INT404	90	4 ▾	O
Probability And Statistics		MTH302	67	1 ▾	B+
Analytical Skills-I		PEA305	45	1 ▾	C+

Calculate GPA   GPA *7.88*   Next

[9]

Now, here comes the last module : **Feedback** module, where one will be getting his CGPA calculated with the feedback based on his performance with his details.
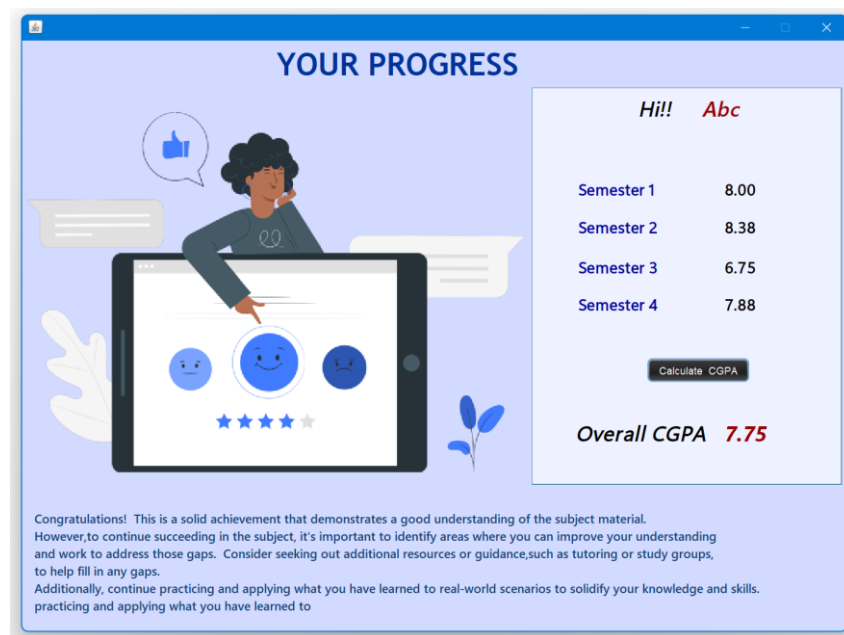
At last the **INFO** module, in it one can click on the info icon and able to access the formulae how the work is actually being done or how the grades are being calculated and this button will be present on each and every page.

SAMPLE CODE

```java
jPanel3.setBackground(new java.awt.Color(r:238, g:241, b:255));
jPanel3.setBorder(javax.swing.BorderFactory.createMatteBorder(top:2, left:1, bottom:2, right:1, new java.awt.Color(r:102, g:102, b:102)));
jPanel3.setMaximumSize(new java.awt.Dimension(width:375, height:406));
jPanel3.setMinimumSize(new java.awt.Dimension(width:375, height:406));

jLabel1.setFont(new java.awt.Font(name:"Trebuchet MS", style:1, size:24)); // NOI18N
jLabel1.setText(text:"Student Details");

jLabel2.setFont(new java.awt.Font(name:"Segoe UI", style:1, size:14)); // NOI18N
jLabel2.setForeground(new java.awt.Color(r:0, g:51, b:153));
jLabel2.setText(text:"Name");

jTextField3.setBackground(new java.awt.Color(r:238, g:241, b:255));
jTextField3.setFont(new java.awt.Font(name:"Segoe UI Variable", style:3, size:12)); // NOI18N
jTextField3.setBorder(javax.swing.BorderFactory.createMatteBorder(top:0, left:0, bottom:1, right:0, new java.awt.Color(r:153, g:153, b:153)));

jLabel3.setFont(new java.awt.Font(name:"Segoe UI", style:1, size:14)); // NOI18N
jLabel3.setForeground(new java.awt.Color(r:0, g:51, b:153));
jLabel3.setText(text:"Reg_No");

jTextField2.setBackground(new java.awt.Color(r:238, g:241, b:255));
jTextField2.setFont(new java.awt.Font(name:"Segoe UI Variable", style:3, size:12)); // NOI18N
jTextField2.setBorder(javax.swing.BorderFactory.createMatteBorder(top:0, left:0, bottom:1, right:0, new java.awt.Color(r:153, g:153, b:153)));
jTextField2.addActionListener(new java.awt.event.ActionListener() {
    public void actionPerformed(java.awt.event.ActionEvent evt) {
        jTextField2ActionPerformed(evt);
    }
});

jLabel4.setFont(new java.awt.Font(name:"Segoe UI", style:1, size:14)); // NOI18N
jLabel4.setForeground(new java.awt.Color(r:0, g:51, b:153));
jLabel4.setText(text:"Email");

tname.setBackground(new java.awt.Color(r:238, g:241, b:255));
tname.setFont(new java.awt.Font(name:"Segoe UI Variable", style:3, size:12)); // NOI18N
tname.setBorder(javax.swing.BorderFactory.createMatteBorder(top:0, left:0, bottom:1, right:0, new java.awt.Color(r:153, g:153, b:153)));
tname.addActionListener(new java.awt.event.ActionListener() {
    public void actionPerformed(java.awt.event.ActionEvent evt) {
        tnameActionPerformed(evt);
    }
});

jLabel5.setFont(new java.awt.Font(name:"Segoe UI", style:1, size:14)); // NOI18N
jLabel5.setForeground(new java.awt.Color(r:0, g:51, b:153));
jLabel5.setText(text:"Semester");
```
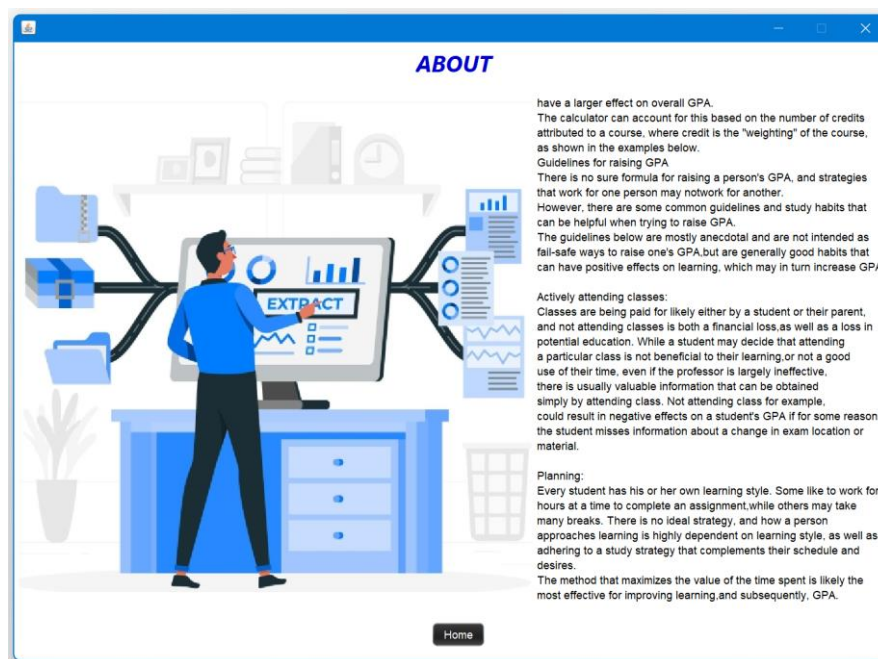
```java
setDefaultCloseOperation(javax.swing.WindowConstants.EXIT_ON_CLOSE);

jPanel1.setBackground(new java.awt.Color(r:238, g:241, b:255));

jLabel1.setFont(new java.awt.Font(name:"Trebuchet MS", style:1, size:24)); // NOI18N
jLabel1.setForeground(new java.awt.Color(r:10, g:38, b:71));
jLabel1.setText(text:"Semester4");

jTextField4.addActionListener(new java.awt.event.ActionListener() {
    public void actionPerformed(jav  ActionEvent evt - Main4.initComponents().new ActionListener() {...}.actionPerformed(ActionEvent)
        jTextField4ActionPerformed(evt);
    }
});

jTextField1.addActionListener(new java.awt.event.ActionListener() {
    public void actionPerformed(java.awt.event.ActionEvent evt) {
        jTextField1ActionPerformed(evt);
    }
});

jLabel2.setFont(new java.awt.Font(name:"Segoe UI Semibold", style:1, size:18)); // NOI18N
jLabel2.setForeground(new java.awt.Color(r:20, g:66, b:114));
jLabel2.setText(text:"Subject Name");

jLabel3.setFont(new java.awt.Font(name:"Segoe UI Semibold", style:1, size:18)); // NOI18N
jLabel3.setForeground(new java.awt.Color(r:20, g:66, b:114));
jLabel3.setText(text:"Subject code");

jLabel4.setFont(new java.awt.Font(name:"Segoe UI Semibold", style:1, size:18)); // NOI18N
jLabel4.setForeground(new java.awt.Color(r:20, g:66, b:114));
jLabel4.setText(text:"Marks");

jLabel5.setFont(new java.awt.Font(name:"Segoe UI Semibold", style:1, size:18)); // NOI18N
jLabel5.setForeground(new java.awt.Color(r:20, g:66, b:114));
jLabel5.setText(text:"Credit");

jLabel6.setFont(new java.awt.Font(name:"Segoe UI Semibold", style:1, size:18)); // NOI18N
jLabel6.setForeground(new java.awt.Color(r:20, g:66, b:114));
jLabel6.setText(text:"Grade");

jLabel7.setFont(new java.awt.Font(name:"Segoe UI Variable", style:1, size:12)); // NOI18N
jLabel7.setForeground(new java.awt.Color(r:32, g:82, b:149));
jLabel7.setText(text:"Computer Organization And Design");

jLabel8.setFont(new java.awt.Font(name:"Segoe UI Variable", style:1, size:12)); // NOI18N
jLabel8.setForeground(new java.awt.Color(r:32, g:82, b:149));
jLabel8.setText(text:"Programming in Java");
```

```java
// <editor-fold defaultstate="collapsed" desc="Generated Code">//GEN-BE
private void initComponents() {

    jButton1 = new javax.swing.JButton();
    jPanel1 = new javax.swing.JPanel();
    jTextField2 = new javax.swing.JTextField();
    jt21 = new javax.swing.JTextField();
    jt4 = new javax.swing.JTextField();
    jt7 = new javax.swing.JTextField();
    jt26 = new javax.swing.JTextField();
    jt8 = new javax.swing.JTextField();
    jLabel11 = new javax.swing.JLabel();
    jt24 = new javax.swing.JTextField();
    jLabel18 = new javax.swing.JLabel();
    jLabel23 = new javax.swing.JLabel();
    jLabel20 = new javax.swing.JLabel();
    jLabel19 = new javax.swing.JLabel();
    jLabel21 = new javax.swing.JLabel();
    jButton2 = new javax.swing.JButton();
    jLabel24 = new javax.swing.JLabel();
    jComboBox3 = new javax.swing.JComboBox<>();
    jComboBox5 = new javax.swing.JComboBox<>();
    jButton5 = new javax.swing.JButton();
    jComboBox6 = new javax.swing.JComboBox<>();
    jComboBox7 = new javax.swing.JComboBox<>();
    jTextField1 = new javax.swing.JTextField();
    jLabel4 = new javax.swing.JLabel();
    jLabel2 = new javax.swing.JLabel();
    jLabel5 = new javax.swing.JLabel();
    jLabel3 = new javax.swing.JLabel();
    jLabel9 = new javax.swing.JLabel();
    jLabel1 = new javax.swing.JLabel();
    jLabel6 = new javax.swing.JLabel();
    jLabel25 = new javax.swing.JLabel();
    jLabel7 = new javax.swing.JLabel();
    jLabel26 = new javax.swing.JLabel();
    jLabel8 = new javax.swing.JLabel();
    jLabel28 = new javax.swing.JLabel();
    jLabel13 = new javax.swing.JLabel();
    jLabel27 = new javax.swing.JLabel();
    jLabel14 = new javax.swing.JLabel();
    jLabel29 = new javax.swing.JLabel();
    jLabel15 = new javax.swing.JLabel();
    jLabel30 = new javax.swing.JLabel();
    jLabel16 = new javax.swing.JLabel();
    jLabel31 = new javax.swing.JLabel();
    jt1 = new javax.swing.JTextField();
```

```java
jPanel1 = new javax.swing.JPanel();
jButton1 = new javax.swing.JButton();
jLabel2 = new javax.swing.JLabel();
jLabel1 = new javax.swing.JLabel();
jLabel3 = new javax.swing.JLabel();

setDefaultCloseOperation(javax.swing.WindowConstants.EXIT_ON_CLOSE);

jPanel1.setBackground(new java.awt.Color(r:255, g:255, b:255));

jButton1.setBackground(new java.awt.Color(r:0, g:0, b:0));
jButton1.setForeground(new java.awt.Color(r:242, g:242, b:242));
jButton1.setText(text:"ENTER");
jButton1.setCursor(new java.awt.Cursor(java.awt.Cursor.HAND_CURSOR));
jButton1.addActionListener(new java.awt.event.ActionListener() {
    public void actionPerformed(java.awt.event.ActionEvent evt) {
        jButton1ActionPerformed(evt);
    }
});

jLabel2.setIcon(new javax.swing.ImageIcon(getClass().getResource(name:"/3881949.jpg"))); // NOI18N

jLabel1.setFont(new java.awt.Font(name:"Segoe UI Variable", style:1, size:24)); // NOI18N
jLabel1.setForeground(new java.awt.Color(r:25, g:55, b:109));
jLabel1.setText(text:"THE ULTIMATE GRADE CALCULATOR");
jLabel1.setAlignmentX(alignmentX:0.5F);

jLabel3.setFont(new java.awt.Font(name:"Segoe UI Variable", style:1, size:24)); // NOI18N
jLabel3.setForeground(new java.awt.Color(r:25, g:55, b:109));
jLabel3.setText(text:"      WITH PERSONALISED FEEDBACK FOR SCHOLASTICS ELEVATION");

javax.swing.GroupLayout jPanel1Layout = new javax.swing.GroupLayout(jPanel1);
jPanel1.setLayout(jPanel1Layout);
jPanel1Layout.setHorizontalGroup(
    jPanel1Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)
    .addComponent(jLabel2, javax.swing.GroupLayout.PREFERRED_SIZE, pref:0, Short.MAX_VALUE)
    .addGroup(jPanel1Layout.createSequentialGroup()
        .addComponent(jLabel3)
        .addGap(min:0, pref:36, Short.MAX_VALUE))
    .addGroup(javax.swing.GroupLayout.Alignment.TRAILING, jPanel1Layout.createSequentialGroup()
        .addContainerGap(javax.swing.GroupLayout.DEFAULT_SIZE, Short.MAX_VALUE)
        .addComponent(jLabel1, javax.swing.GroupLayout.PREFERRED_SIZE, pref:445, javax.swing.GroupLayout.PREFERRED_SIZE)
        .addGap(min:160, pref:160, max:160))
    .addGroup(jPanel1Layout.createSequentialGroup()
        .addGap(min:377, pref:377, max:377)
        .addComponent(jButton1)
        .addContainerGap(javax.swing.GroupLayout.DEFAULT_SIZE, Short.MAX_VALUE))
```

CONCLUSION

A CGPA (Cumulative Grade Point Average) calculator is a tool used to calculate the average grade points earned by a student over the course of their academic career. The outcome of a project focused on creating a CGPA calculator would typically be a functional and user-friendly calculator application that can accurately calculate a student's CGPA based on their grades. The success of a CGPA calculator project would depend on various factors such as the accuracy of the formula used to calculate the CGPA, the ease of use of the interface, and the ability of the calculator to handle different grading systems used in different institutions. In general, the expected outcome of a CGPA calculator project would be a tool that allows students to quickly and easily calculate their CGPA, which can be used for various academic purposes such as applying for scholarships or graduate programs. In conclusion, a CGPA calculator project is a useful tool for students to calculate their average grade points earned throughout their academic career. The success of the project is measured by the accuracy of the CGPA formula used, the user-friendliness of the interface, and the ability to handle different grading systems.

A well-designed CGPA calculator can help students save time and effort in calculating their CGPA manually and can provide a quick and accurate representation of their academic performance. It can also help students make informed decisions about their academic future, such as applying for scholarships or graduate programs that require a certain minimum CGPA. Overall, the conclusion of a CGPA calculator project would be the successful creation of a tool that is accurate, user-friendly, and serves the needs of students in calculating their CGPA.