Project Proposal

Project Title:
GPA & CGPA Calculator Using C++

Course Information:
Course Name: Programming Fundamentals
Semester: First
Department: Artificial Intelligence

Student Information:
Student Name: Khizar Hayat
Session: Morning
Project Type: Single Student

Problem Statement:
Students often struggle to calculate their GPA (Grade Point Average) and CGPA (Cumulative Grade Point Average) accurately. Manual calculation is time■consuming and prone to mistakes, especially when different subjects have different marks and grade points. Many online calculators require internet access and do not clearly show the calculation logic. Students need a simple, offline, and reliable tool that helps them understand their academic performance easily.

This project solves this problem by providing a console■based GPA & CGPA calculator written in C++. It takes marks as input, converts them into grade points, performs calculations automatically, validates user input, and displays clean, accurate results.

Project Objectives:
● Build a working GPA & CGPA calculator using basic C++ concepts.
● Use input/output, conditions, switch statements, and functions.
● Convert marks into grade points based on a grading scale.
● Calculate GPA using grade point average.
● Calculate CGPA using semester GPA average.
● Add input validation for reliable results.
● Provide a simple and user■friendly console interface.

Scope of Work:
The completed program will:
● Take subject marks as input and compute GPA.
● Take semester GPAs and compute CGPA.
● Validate incorrect or out■of■range input.
● Use a menu■driven interface with switch statements.
● Display results with formatting up to two decimals.
● Operate fully offline as a console application.

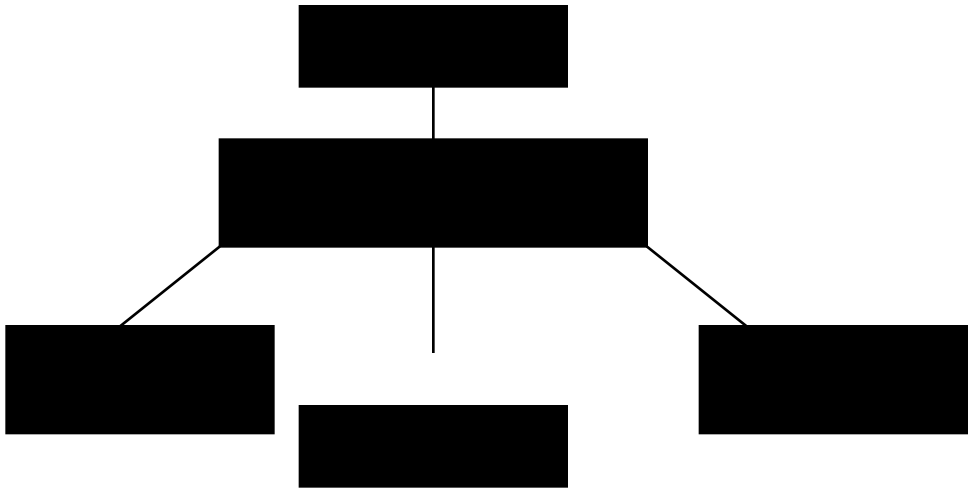
Proposed System Design

Algorithm (Step■by■Step):

GPA Calculation:
1. Ask user for number of subjects.
2. Take marks of each subject.
3. Convert marks to grade points using conditions.
4. Sum grade points and divide by number of subjects.
5. Display final GPA.

CGPA Calculation:
1. Ask user for number of semesters.
2. Take GPA of each semester.
3. Add all semester GPAs.
4. Divide by number of semesters.
5. Display final CGPA.

System Flowchart



Technologies / Tools:

- Programming Language: C++
- IDE: Visual Studio Code / CodeBlocks / Dev C++
- Compiler: g++
- Version Control: GitHub