PROJECT REPORT

CGPA CALCULATOR USING PYTHON

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1. INTRODUCTION

This project is a simple Python-based CGPA (Cumulative Grade Point Average) Calculator. The program helps students calculate their overall CGPA by taking grade points and credits for each subject as input. It also provides an approximate percentage conversion based on a standard formula.

The calculator is designed to be user-friendly and runs in a terminal or command prompt environment. It is suitable for students in schools, colleges, or universities who need a quick way to compute their CGPA.

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2. OBJECTIVE

The main objectives of this project are:

- To create a simple and easy-to-use CGPA calculator.
- To help students quickly calculate their CGPA without manual calculations.
- To provide an approximate percentage conversion from CGPA.
- To demonstrate basic Python programming concepts like loops, functions, input handling, and arithmetic operations.

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3. METHODOLOGY

3.1 Programming Language

The project is developed using Python 3, which is known for its simplicity and readability.

3.2 Approach

The program follows these steps:

1. Ask the user for the number of subjects.
2. For each subject, collect two pieces of information:
    - Grade point (for example, 10, 9, 8, etc.)
    - Credit (for example, 2, 3, 4, etc.)
3. Calculate the weighted grade points by multiplying each grade point with its corresponding credit.
4. Sum all weighted grade points and sum all credits.
5. Calculate CGPA using the formula:
   CGPA = (Sum of grade point × credit) / (Sum of credits)

6. Convert CGPA to an approximate percentage using: Percentage = CGPA × 9.5
7. Display the results to the user.

3.3 Formula Used
CGPA = Σ(Grade Point × Credit) / Σ(Credits)
Approximate Percentage = CGPA × 9.5

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4. PROGRAM STRUCTURE

The program consists of a single function called calculate_cgpa() which performs all the calculations.

Key Components:

- **Input Section**: Takes the number of subjects and details for each subject (grade point and credit).
- **Calculation Section**: Computes total weighted grade points, total credits, and CGPA.
- **Validation**: Checks if total credits are zero to avoid division errors.
- **Output Section**: Displays total subjects, total credits, CGPA, and approximate percentage.

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5. FEATURES

- Simple and interactive command-line interface.
- Accepts any number of subjects.
- Calculates CGPA based on standard formula.
- Provides percentage conversion.
- Error handling for invalid inputs like zero credits.
- Easy to modify and customize for different grading systems.

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6. SYSTEM REQUIREMENTS

Software Requirements:

- Python 3.x installed on the system.
- Any text editor (Notepad, VS Code, PyCharm, etc.) to view or edit the code.
- Terminal or Command Prompt to run the program.

Hardware Requirements:

- Any basic computer with Python installed.
- Minimum 512 MB RAM.

- Any operating system (Windows, Mac, Linux).

HOW TO USE THE PROGRAM

Step 1: Save the Python code in a file named `cgpa_calculator.py`.

Step 2: Open a terminal or command prompt in the folder containing the file.

Step 3: Run the command: python

cgpa_calculator.py

Step 4: Follow the on-screen instructions:

- Enter the number of subjects.
- For each subject, enter the grade point and credit.

Step 5: View the calculated CGPA and percentage on the screen.

7. EXAMPLE WITH RESULT:-