#include <iostream>

#include <iomanip>

#include <vector>

using namespace std;

// Function to convert grade (A, B, C, etc.) to grade points

double gradeToPoint(string grade) {

if (grade == "A" || grade == "a") return 10.0;

else if (grade == "B" || grade == "b") return 8.0;

else if (grade == "C" || grade == "c") return 6.0;

else if (grade == "D" || grade == "d") return 4.0;

else if (grade == "E" || grade == "e") return 2.0;

else if (grade == "F" || grade == "f") return 0.0;

else return -1; // invalid

}

int main() {

int numCourses;

cout << "Enter number of courses taken: ";

cin >> numCourses;

vector<string> grades(numCourses);

vector<int> credits(numCourses);

double totalCredits = 0, totalGradePoints = 0;

// Input course details

for (int i = 0; i < numCourses; i++) {

cout << "\nEnter grade for course " << i + 1 << " (A-F): ";

cin >> grades[i];

cout << "Enter credit hours for course " << i + 1 << ": ";

cin >> credits[i];

double gp = gradeToPoint(grades[i]);

if (gp == -1) {

cout << "Invalid grade entered! Try again.\n";

i--;

continue;

}

totalCredits += credits[i];

totalGradePoints += gp \* credits[i];

}

// GPA and CGPA Calculation

double gpa = totalGradePoints / totalCredits;

double cgpa = gpa; // If only one semester, GPA = CGPA

// Display results

cout << "\n--- Semester Results ---\n";

cout << setw(10) << "Course" << setw(10) << "Grade" << setw(15) << "Credit Hours\n";

for (int i = 0; i < numCourses; i++) {

cout << setw(10) << i + 1 << setw(10) << grades[i] << setw(15) << credits[i] << "\n";

}

cout << "\nTotal Credits: " << totalCredits;

cout << "\nGPA for this semester: " << fixed << setprecision(2) << gpa;

cout << "\nOverall CGPA: " << fixed << setprecision(2) << cgpa << endl;

return 0;

}