American International University-Bangladesh

Introduction to Programming Lab [Fall 24-25]

Mid-Term Assignment

Total marks: 30

Submission time: 26 November 2024 (During Class-Hour)

Build a CGPA Calculator where the **number of courses** and their **marks will be taken as user input** initially and based on the information, you will calculate the total CGPA for that student as per AIUB grading policy. You can consider 3 credits per course for all courses to calculate the total CGPA. [Must use Loops and Arrays]

Submission process/instructions:

1. 2. 3. 4. 5. 6. The whole code will be handwritten on A4 size papers.
You will submit the handwritten hardcopy to me on the mentioned submission date during class hour.
Using of any advanced built-in functions is strictly prohibited.
If I notice any code from ChatGPT or any other online resources, you will get a direct ZERO.
If I can identify you have copied codes from your friend, both will get a direct ZERO.
Late submissions will cause you a deduction of 15 marks.

Assignment

```cpp
#include <iostream>
using namespace std;

// Function to calculate grade points based on marks
double calculateGradePoint(double marks) {
    if (marks >= 90) {
        return 4.00;
    } else if (marks >= 85) {
        return 3.75;
    } else if (marks >= 80) {
        return 3.50;
    } else if (marks >= 75) {
        return 3.25;
    } else if (marks >= 70) {
        return 3.00;
    } else if (marks >= 65) {
        return 2.75;
    } else if (marks >= 60) {
        return 2.50;
    } else if (marks >= 50) {
        return 2.25;
    } else {
        return 0.00;
    }
}
```

```cpp
int main() {
    int numCourses;
    const int creditPerCourse = 3;

    // Input the number of courses
    cout << "Enter the number of courses: ";
    cin >> numCourses;

    // Declare arrays to store marks and grade points
    double marks[numCourses];
    double gradePoints[numCourses];

    // Input marks for each course
    for (int i = 0; i < numCourses; i++) {
        cout << "Enter marks for course " << (i + 1) << ": ";
        cin >> marks[i];
    }

    // Calculate grade points for each course
    for (int i = 0; i < numCourses; i++) {
        gradePoints[i] = calculateGradePoint(marks[i]);
    }

    // Calculate total grade points
    double totalGradePoints = 0;
    for (int i = 0; i < numCourses; i++) {
        totalGradePoints += gradePoints[i] * creditPerCourse;
    }

    int totalCredits = numCourses * creditPerCourse;
    double cgpa = totalGradePoints / totalCredits;

    // Output the CGPA
    cout << "Total CGPA: " << cgpa << endl;
    return 0;
}
```