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| Student Name | : TAN ZHI LIN |
| Matric | : 206730 |
| Total Points (20 pts) | : |
| **Due date: 7th Nov, 2023 before 9pm** | |

**Assignment 1**

**ECC4802**

**Calculating CGPA**

**Analysis of Problem**

To record multiple students results, the Java program should read multiple CSV files that contain information about students' results. All the CSV files had been stored at the directory named as ./*csv*. The category of the CSV files can be classified as shown at the table below.

*Table 1 CSV Files Classification*

|  |  |
| --- | --- |
| **File name** | **Description** |
| course\_code.csv | This file including the course code taken by student for each semester. Each row of the course code representing the course taken in a semester |
| course\_credit\_hour.csv | This file including the course code credit hour taken by student for each semester. Each row of the course code credit hour representing the course taken in a semester |
| student\_name.csv | This file including the name of the student whose results had been prepared in this assignment. It is expected to have only a column of name of student only. |
| <student\_name>\_result.csv | This file including the result of each course taken by student for each semester. Each row of the grade value representing the result of courses taken in a semester.  The test cases prepared for the program is listed below:   * zhilin\_result.csv * yewy\_result.csv * tabina\_result.csv * hasif\_result.csv * shisilia\_result.csv |

Once the CSV files had been parsed, the student’s Grade Point Average (GPA) for each semester will be calculated using the formula below as stated by the School of Graduate Studies Universiti Putra Malaysia.

*Figure 1 Formula to calculate student’s GPA for a semester.*

To determine a student's Cumulative Grade Point Average (CGPA), it can obtain by dividing the total sum of grade values for all eight semesters by the combined credit hours completed during those semesters as shown in Figure 2.

*Figure 2 Formula to calculate student’s CGPA throughout 8 semesters.*

While the GPA and CGPA for a student had been calculated, their result had been printed on console and saved as a text file in the meantime. The name of text file is in the format of *<student\_name>\_semester\_detail\_output.txt* under the directory of ./*csv/output*.

The pseudo code for the program had been shown in Figure 3.

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Description automatically generated

*Figure 3 Pseudo code for CalculateCGPA*

**Flowchart**

*In function* ***main***

*Initialize student\_index as 0*

***If*** *the file paths provided are type of CSV*

*Parse the course code and course credit hour information*

*Parse the student name information*

***For*** *each of the student result file paths*

***If*** *successfully parsed the student result*

*Calculate the student GPA*

*Calculate the student CGPA*

*Display the student’s result for each semester and save as a text file*

*Display the student’s summarized result and save as a text file*

***Else*** *assign error code and**exit the loop*

***Else*** *assign error code*

***If*** *the error code is not null*

*Display the error code on console*

Using the following formula in <http://www.sgs.upm.edu.my/dokumen/SKPSI1_Tips_Kes_GB_trans_flyer_02.pdf>:

1. Analysis: Describe the problem including input and output in your own words.
2. Design: Draw flowchart.
3. Screenshot
4. Coding

Task:

1. Write pseudo code (for analysis purpose).
2. Draw flowchart (make sure the shape is correct).
3. Coding.
4. Screenshot for the output of program.

Coding: (Copy and Paste Source Code here. Format your code using Courier 10pts)

[Copy and Paste Your program here]

Testing: (Describe how you test this program)

Project for Advance Programming: Propose a project that involve the engineering faculty.