

CPSC1012 – Advanced File I/O Worksheet

Overview

This worksheet will demonstrate your ability to read and write data from/to files.

Instructions

Complete the following on your own. If you would like to work with a partner, that is fine as both of you are responsible for your own work. Remember this is for learning, not a challenge simply to be completed.

Purpose

The purpose of this worksheet is to ensure that you are familiar with how to work with simple text-based files in your programs, a `List<T>`, and a coded data class.

Class Diagram

Mark
- studentID : String - quiz : Integer - midterm : Integer - lab : Integer - final : Integer + StudentID : String + Quiz : Integer + Midterm : Integer + Lab : Integer + Final : Integer
+ Mark (StudentID : String, Quiz : Integer, Midterm : Integer, Lab : Integer, Final : Integer) + CalculateGrade() : Double + ToString() : String

Questions

Write a program to compute course grades based on exam scores and lab marks. The weighting for exams and labs is shown below:

Course Component	Weight
Quiz	10% (0.10)
Midterm	25% (0.25)
Labs	30% (0.30)
Final Exam	35% (0.35)

The calculation for course grade is

$$\text{CourseGrade} = \left(\frac{\text{QuizScore} \times \text{QuizWeight}}{100} + \frac{\text{MidtermScore} \times \text{MidtermWeight}}{100} + \frac{\text{LabScore} \times \text{LabWeight}}{100} + \frac{\text{FinalExamScore} \times \text{FinalExamWeight}}{100} \right) \times 100$$

Write all data and course grades displayed as a report. Be sure to format the report using properly aligned columns, headers, etc. The columns in the file are: StudentID, Quiz, Midterm, Lab, Final

Sample input data (use this data to create your file):

```
20001234,10,25,30,35
20003443,61,81,43,56
20006783,63,83,49,59
20009123,65,85,55,62
20009585,67,87,61,65
20006432,69,89,67,68
20005732,71,91,73,71
20008412,73,93,79,74
20006433,75,95,85,77
20000985,77,97,91,80
```

Sample program output:

StudentID	Quiz	Midterm	Lab	Final	Grade
20001234	10	25	30	35	29
20003443	61	81	43	56	59
20006783	63	83	49	59	62
20009123	65	85	55	62	66
20009585	67	87	61	65	70
20006432	69	89	67	68	73
20005732	71	91	73	71	77
20008412	73	93	79	74	80
20006433	75	95	85	77	84
20000985	77	97	91	80	87