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//gradingreport.cpp, run under MS Visual C++ 2010 Express
//Programming Assignment - A Very Grading Report
//using strings, functions, static variables,
// input data file, output report file
//Target Type: win32 application; Target Model: console
//author: Linda Weiser Friedman
//date compiled: October 2014
#include <iostream>
#include <fstream>
#include <iomanip>
#include <string>
using namespace std;

//function prototypes
void PrintSummaryInfo(int, float, float, float);
void PrintReportHeadings(string, string, float, float, float, float);
void PrintColumnHeadings();
void PrintStudentLine(string, string, string, int, int, int, int, float);
void PrintaLine(int, char);
void SkipLines (int);
void indent (int);
float FindMax(float);
float FindMin(float);

//input data file
ifstream infile ("C:\\Users\\lwfriedman\\Documents\\cplusplus\\grading\\students.dat");
//output text file - Report
ofstream outReport ("C:\\Users\\lwfriedman\\Documents\\cplusplus\\grading\\wReportFunctions\\report.txt");

int main (){ //variable declarations
string id, course, semester, LastName, FirstName;
float weight1, weight2, weight3, weight4;
int n = 0, grade1, grade2, grade3, grade4;
float FinalGrade, SumGrades = 0, HiGrade, LoGrade;

if (!infile) //testing files
    cerr << "Error: could not open input file\n";
else if (!outReport)
    cerr << "Error: could not open output file\n";
else { //files OK - //do rest of program
    infile >> course >> semester >> weight1 >> weight2 >> weight3 >> weight4;

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PrintReportHeadings(course, semester, weight1, weight2, weight3, weight4);
while (infile >> id >> LastName >> FirstName >> grade1 >> grade2 >> grade3 >> grade4){
    FinalGrade = weight1*grade1 + weight2*grade2 + weight3*grade3 + weight4*grade4;
    PrintStudentLine(id, LastName, FirstName, grade1, grade2, grade3, grade4, FinalGrade);
    SumGrades += FinalGrade;
    n++;
    HiGrade = FindMax(FinalGrade);
    LoGrade = FindMin(FinalGrade);
} //end while
PrintSummaryInfo(n, SumGrades, HiGrade, LoGrade);
//cout << "Close console window? "; char c; cin>>c;
return 0;
} //end if/else from testing files
} //end main

float FindMax(float FinalGrade){
    static float MaxSoFar = -1;
    if (FinalGrade > MaxSoFar)
        MaxSoFar = FinalGrade;
    return MaxSoFar;
}

float FindMin(float FinalGrade){
    static float MinSoFar = 150;
    if (FinalGrade < MinSoFar)
        MinSoFar = FinalGrade;
    return MinSoFar;
}

//functions for printing the report
void PrintStudentLine (string id, string lName, string fName, int g1, int g2, int g3, int g4, float FinalGrade){
    outReport << setiosflags (ios::fixed) << setprecision(2)
        << setw (11) << setiosflags (ios::left) << id << setw(10) << fName << setw(10) << lName
        << setiosflags(ios::right)
        << setw (5) << g1 << setw (5)<< g2 << setw (5)<< g3
        << setw (5)<< g4 << setw (10) << FinalGrade
        << resetiosflags(ios::right) << endl;
}

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void PrintReportHeadings(string course, string semester, float w1, float w2, float w3, float w4){
    PrintaLine (65, ':');
    indent(19);
    outReport << "Little School of Soft Knocks\n";
    indent (23);
    outReport << "Student Grade Report" << endl;
    PrintaLine (65, ':');
    outReport << "\nSemester: " << semester << "\nCourse: " << course <<endl;
    PrintaLine (65, '.');
    outReport << "\nIn computing the Final Grade for each student, the following\n"
        <<"weights were used:\n"
        << setw(10) << "Grade 1" << setw(6) << w1*100 << "%\t"
        << setw(10) << "Grade 2" << setw(6) << w2*100 << "%\n"
        << setw(10) << "Grade 3" << setw(6) << w3*100 << "%\t"
        << setw(10) << "Grade 4" << setw(6) << w4*100 << "%\n";
    Skiplines(1);
    PrintaLine (65, '.');
    PrintColumnHeadings();
    PrintaLine (65, '.');
}

void PrintColumnHeadings(){
outReport << setiosflags(ios::right) << setw (10) << "Student ID"
    << setw(10) <<"Name" << setw(10) << ' '
    << setw(20) << "Grades 1 - 4" << setw(14) <<"Final Grade"
    << resetiosflags(ios::right) << endl;
}

void PrintSummaryInfo(int n, float sum, float max, float min){
    Skiplines (2);
    PrintaLine (65, ':');
    Skiplines (1);
    outReport << setiosflags(ios::showpoint | ios::fixed | ios::left)
        << setw(25) << "number of students = " << n << endl
        << setw(25) << "Class Average is " << sum/n << endl
        << setw(25) << "Maximum Grade is " << max << endl
        << setw(25) << "Minimum Grade is " << min << endl;
    PrintaLine (65, ':');
}

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void PrintaLine(int n, char c){
    for (int i=1; i<=n; i++)
        outReport << c;
    outReport << endl;
}

void Skiplines (int n){
    for (int i=1; i<=n; i++)
        outReport << endl;
}

void indent (int n){
    for (int i=1; i<=n; i++)
        outReport << ' ';
}

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The Input file:

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Object-Oriented_Programming
Fall2014
0.15 0.25 0.25 0.35
123456789 Archer Lew 99 62 101 89
111111111 Bond James 100 98 99 89
101010101 Burke Amos 65 77 88 98
222222222 Chambers Pat 44 84 88 101
999999999 Chambers Diane 70 32 90 95
333333333 Clousseau Inspector 42 65 85 54
444444444 Ed Mister 88 99 77 99
666666666 Hammer Mike 88 87 98 78
111222333 Hope Matthew 89 90 80 87
777777777 Kent Clark 99 99 98 99
555555555 Kramer Cosmo 98 87 76 65
000111222 Marlowe Philip 78 76 65 67
888888888 Rockford James 89 78 87 89
444555666 Sunnydale Buffy 87 32 78 92
777888999 Wolfe Nero 100 100 99 100

```

The Report:

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Little School of Soft Knocks  
Student Grade Report  
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Semester: Fall2014  
Course: Object-Oriented\_Programming  
.....

In computing the Final Grade for each student, the following weights were used:

Grade 1    15%            Grade 2    25%  
Grade 3    25%            Grade 4    35%

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Student ID	Name	Grades 1 - 4	Final Grade
123456789	Lew Archer	99 62 101 89	86.75
111111111	James Bond	100 98 99 89	95.40
101010101	Amos Burke	65 77 88 98	85.30
222222222	Pat Chambers	44 84 88 101	84.95
999999999	Diane Chambers	70 32 90 95	74.25
333333333	Inspector Clousseau	42 65 85 54	62.70
444444444	Mister Ed	88 99 77 99	91.85
666666666	Mike Hammer	88 87 98 78	86.75
111222333	Matthew Hope	89 90 80 87	86.30
777777777	Clark Kent	99 99 98 99	98.75
555555555	Cosmo Kramer	98 87 76 65	78.20
000111222	Philip Marlowe	78 76 65 67	70.40
888888888	James Rockford	89 78 87 89	85.75
444555666	Buffy Sunnydale	87 32 78 92	72.75
777888999	Nero Wolfe	100 100 99 100	99.75

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