

## Code

```

GradeCalculator.cpp M X  scores.txt U  randomlyGenerated.txt M
Lab5 - Nat > GradeCalculator.cpp > main
1  /*
2  * This program calculates your grades
3  * @author: Natasha Kho
4  * @author: Emily Hsu
5  * Created on: 2025-09-11
6  * Last Modified: 2025-09-15
7  * Reference:
8  */
9  #include <iostream>
10 #include <iomanip>
11 #include <fstream>
12 #include <ostream>
13 #include <string>
14
15 using namespace std;
16
17 // Grade weights
18 const double TEN_PERCENT = 0.10,
19             FIFTEEN_PERCENT = 0.15,
20             TWENTY_PERCENT = 0.20,
21             FORTY_PERCENT = 0.40;
22
23 // Converts fractional value to percentage
24 const int TO_PERCENT = 100;
25 const double GradeA = 0.90,
26             GradeB = 0.80,
27             GradeC = 0.70,
28             GradeD = 0.60;
29
30 int main(){
31     // User input variables
32     string username, password, filename;
33
34     // Variables for reading file
35     int score;
36     fstream file;
37
38     // Amount of assignments in each category
39     int labAmount, quizAmount, midtermAmount,
40     * projectAmount, finalExamAmount;
41
42     // Points earned in each category
43     double projectGrade = 0, labGrade = 0, quizGrade = 0,
44     examGrade = 0, finalExamGrade = 0;
45
46     // Points possible in each category
47     double totalGrade = 0, labTotal = 0, quizTotal = 0,
48
GradeCalculator.cpp M X
Lab5 - Nat > GradeCalculator.cpp > main
30 int main(){
48     examTotal = 0, projectTotal = 0, finalExamTotal = 0;
49
50     char letterGrade;
51
52     // Prompt user for username, password, and grade file
53     cout << "Enter username: ";
54     cin >> username;
55     cout << "Enter password: ";
56     cin >> password;
57     cout << "Enter grade file: ";
58     cin >> filename;
59
60     file.open(Str: filename);
61     // If user doesn't input valid file, keep prompting until they do
62     while(file.fail()){
63         cout << "Error opening file. Please enter a valid grade file: ";
64         cin >> filename;
65         file.open(Str: filename);
66     }
67
68     // =====
69     // First line of file
70     // Contains amount of assignments in each category
71     file >> labAmount >> quizAmount >> midtermAmount
72     >> projectAmount >> finalExamAmount;
73
74     // =====
75     // Second line of file
76     // 20
77     for(int i = 0; i < labAmount; i++){
78         file >> score;
79         labTotal += score;
80     }
81
82     // 7
83     for(int i = 0; i < quizAmount; i++){
84         file >> score;
85         quizTotal += score;
86     }
87
88     // 2
89     for(int i = 0; i < midtermAmount; i++){
90         file >> score;
91         examTotal += score;
92     }
93     // 1
94     for(int i = 0; i < projectAmount; i++){
95
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Lab5 - Nat > GradeCalculator.cpp > main
93 int main(){
94     for(int i = 0; i < projectAmount; i++){
95         file >> score;
96         projectTotal += score;
97     }
98
99     // 1
100    file >> score;
101    finalExamTotal += score;
102
103    // =====
104    // Second line of file
105    // Adds numbers together for actual score
106
107    cout << "=====n"
108    << fixed << setprecision(2) << "Hello " << username << "!n";
109
110    score = 0;
111    for(int i = 0; i < labAmount; i++){
112        file >> score;
113        labGrade += score;
114    }
115    cout << "Labs: " << (labGrade/labTotal)
116    * FIFTEEN_PERCENT * TO_PERCENT << "% << endl;
117
118    score = 0;
119    for(int i = 0; i < quizAmount; i++){
120        file >> score;
121        quizGrade += score;
122    }
123    cout << "Quizzes: " << (quizGrade/quizTotal)
124    * FIFTEEN_PERCENT * TO_PERCENT << "% << endl;
125
126    score = 0;
127    for(int i = 0; i < midtermAmount; i++){
128        file >> score;
129        examGrade += score;
130    }
131    cout << "Exams: " << (examGrade/examTotal)
132    * FORTY_PERCENT * TO_PERCENT << "% << endl;
133
134    score = 0;
135    for(int i = 0; i < projectAmount; i++){
136        file >> score;
137        projectGrade += score;
138    }
139    cout << "Projects: " << (projectGrade/projectTotal)
140
GradeCalculator.cpp M X
Lab5 - Nat > GradeCalculator.cpp > main
30 int main(){
140     * TEN_PERCENT * TO_PERCENT << "% << endl;
141
142     score = 0;
143     file >> score;
144     finalExamGrade += score;
145     cout << "Final Exam: " << (finalExamGrade/finalExamTotal)
146     * TWENTY_PERCENT * TO_PERCENT << "% << endl;
147
148     // =====
149
150     // Calculate total grade based on weights
151     labGrade = (labGrade/labTotal) * FIFTEEN_PERCENT;
152     quizGrade = (quizGrade/quizTotal) * FIFTEEN_PERCENT;
153     examGrade = (examGrade/examTotal) * FORTY_PERCENT;
154     projectGrade = (projectGrade/projectTotal) * TEN_PERCENT;
155     finalExamGrade = (finalExamGrade/finalExamTotal) * TWENTY_PERCENT;
156     totalGrade = labGrade + quizGrade + examGrade
157     + projectGrade + finalExamGrade;
158
159     cout << "Total: " << totalGrade * TO_PERCENT << "% << endl;
160
161     // Determine letter grade
162     if (totalGrade >= GradeA) {
163         letterGrade = 'A';
164     } else if (totalGrade >= GradeB) {
165         letterGrade = 'B';
166     } else if (totalGrade >= GradeC) {
167         letterGrade = 'C';
168     } else if (totalGrade >= GradeD) {
169         letterGrade = 'D';
170     } else {
171         letterGrade = 'F';
172     }
173     cout << "Final Letter Grade: " << letterGrade << endl;
174

```

## Case 1

```
PS C:\Users\mavri\Documents\GitHub\CECS275\Lab5 - Nat> .\a.exe
Enter username: Fred
Enter password: helpme
Enter grade file: scores.txt
=====
Hello Fred!
Labs: 9.43%
Quizzes: 7.88%
Exams: 0.00%
Projects: 7.30%
Final Exam: 18.60%
Total: 43.20%
Final Letter Grade: F
```

## Case 2

```
PS C:\Users\mavri\Documents\GitHub\CECS275\Lab5 - Nat> .\a.exe
Enter username: Nat
Enter password: Kho2004
Enter grade file: a
Error opening file. Please enter a valid grade file: randomlyGenerated.txt
=====
Hello Nat!
Labs: 8.85%
Quizzes: 10.71%
Exams: 37.20%
Projects: 4.90%
Final Exam: 19.60%
Total: 81.26%
Final Letter Grade: B
```

### Case 3

```
Enter username: Philip  
Enter password: WordsTopassWord  
Enter grade file: randomlyGenerated.txt
```

```
=====
```

```
Hello Philip!  
Project: 5.00%  
Labs: 59.00%  
Quiz: 75.71%  
Exam 1: 100.00%  
Exam 2: 64.00%  
Final Exam: 94.00%  
Total: 72.31%  
Final Letter Grade: C
```

### Case 4

```
PS C:\Users\mavri\Documents\GitHub\CECS275\Lab5 - Nat> .\CalculateGrades.exe
```

```
Enter username: Eric  
Enter password: Kho2001  
Enter grade file: randomlyGenerated.txt
```

```
=====
```

```
Hello Eric!  
Project: 44.00%  
Labs: 8.00%  
Quiz: 37.14%  
Exam 1: 94.00%  
Exam 2: 98.00%  
Final Exam: 99.00%  
Total: 69.37%  
Final Letter Grade: D
```

## Case 5

```
Enter username: Yi_Lin
Enter password: Jong1969
Enter grade file: randomlyGenerated.txt
=====
Hello Yi_Lin!
Project: 89.00%
Labs: 97.00%
Quiz: 91.43%
Exam 1: 90.00%
Exam 2: 90.00%
Final Exam: 92.00%
Total: 91.56%
Final Letter Grade: A
```

## Case 6

```
PS C:\Users\mavri\Documents\GitHub\CECS275\Lab5 - Nat> .\a.exe
Enter username: Fred
Enter password: helpme
Enter grade file: scores.txt
=====
Hello Fred!
Labs: 9.43%
Quizzes: 7.88%
Exam 1: 14.60%
Projects: 7.47%
Final Exam: 18.60%
Total: 57.97%
Final Letter Grade: F
```