

Code

```

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

```

Case 1

```
PS C:\Users\mavri\Documents\GitHub\CECS275\Lab5 - Nat> .\CalculateGrades.exe
Enter username: Natasha
Enter password: password1
Enter grade file: testFile.txt
=====
Hello Natasha!
Project: 89.00%
Labs: 83.00%
Quiz: 81.43%
Exam 1: 90.00%
Exam 2: 70.00%
Final Exam: 90.00%
Total: 83.56%
Final Letter Grade: B
```

Case 2

```
PS C:\Users\mavri\Documents\GitHub\CECS275\Lab5 - Nat> .\CalculateGrades.exe
Enter username: Emily
Enter password: Hsu2312
Enter grade file: randomlyGenerated.txt
=====
Hello Emily!
Project: 36.00%
Labs: 51.00%
Quiz: 47.14%
Exam 1: 80.00%
Exam 2: 10.00%
Final Exam: 33.00%
Total: 42.92%
Final Letter Grade: F
```

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
```