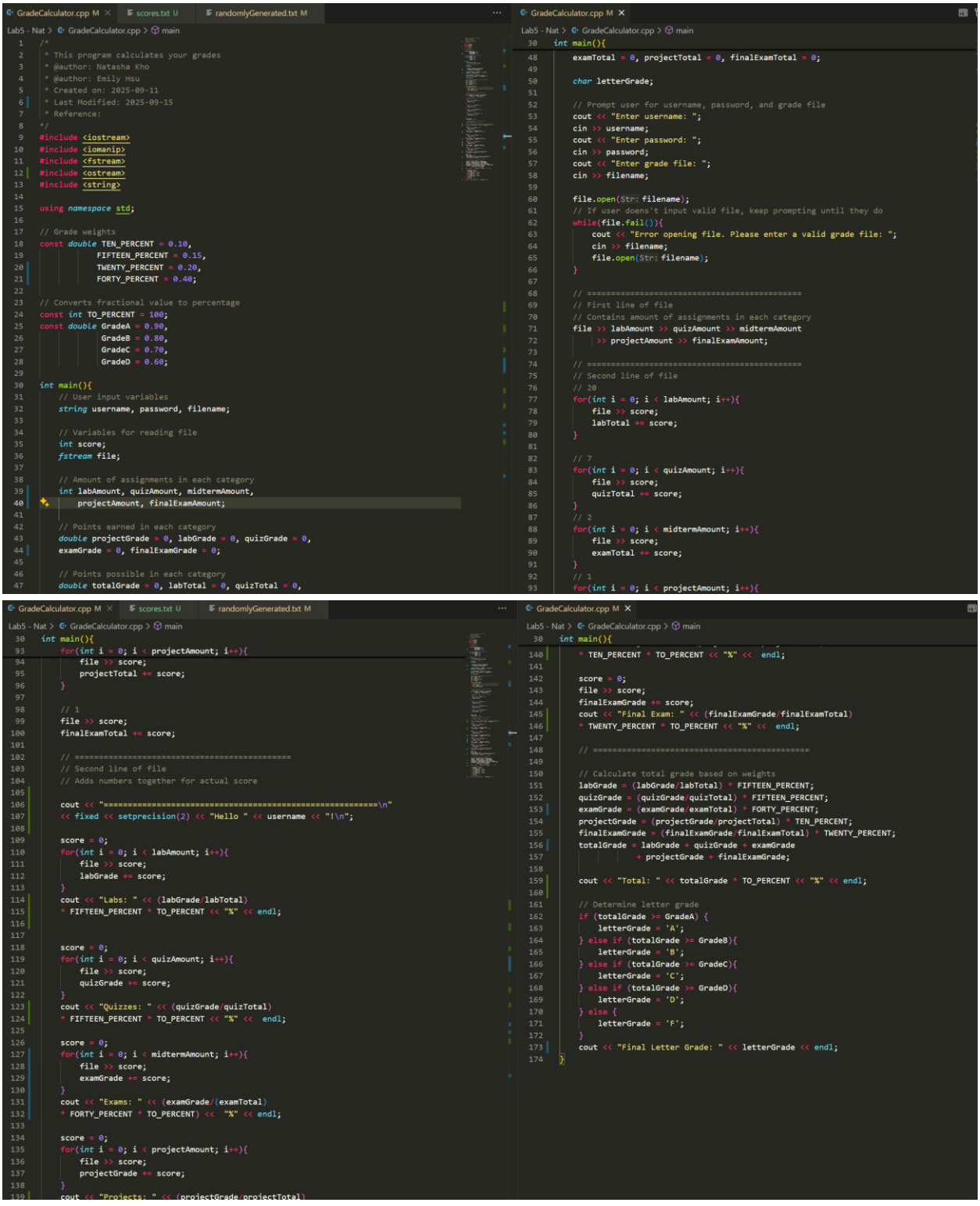
Code



```cpp
/*
 * This program calculates your grades
 * @author: Natasha Kho
 * @author: Emily Hsu
 * Created on: 2025-09-11
 * Last Modified: 2025-09-15
 * Reference:
*/
#include <iostream>
#include <iomanip>
#include <fstream>
#include <ostream>
#include <string>

using namespace std;

// Grade weights
const double TEN_PERCENT = 0.10,
             FIFTEEN_PERCENT = 0.15,
             TWENTY_PERCENT = 0.20,
             FORTY_PERCENT = 0.40;

// Converts fractional value to percentage
const int TO_PERCENT = 100;
const double GradeA = 0.90,
             GradeB = 0.80,
             GradeC = 0.70,
             GradeD = 0.60;

int main(){
    // User input variables
    string username, password, filename;

    // Variables for reading file
    int score;
    fstream file;

    // Amount of assignments in each category
    int labAmount, quizAmount, midtermAmount,
        projectAmount, finalExamAmount;

    // Points earned in each category
    double projectGrade = 0, labGrade = 0, quizGrade = 0,
    examGrade = 0, finalExamGrade = 0;

    // Points possible in each category
    double totalGrade = 0, labTotal = 0, quizTotal = 0,
    examTotal = 0, projectTotal = 0, finalExamTotal = 0;

    char letterGrade;

    // Prompt user for username, password, and grade file
    cout << "Enter username: ";
    cin >> username;
    cout << "Enter password: ";
    cin >> password;
    cout << "Enter grade file: ";
    cin >> filename;

    file.open(Str: filename);
    // If user doens't input valid file, keep prompting until they do
    while(file.fail()){
        cout << "Error opening file. Please enter a valid grade file: ";
        cin >> filename;
        file.open(Str: filename);
    }

    // ========================================
    // First line of file
    // Contains amount of assignments in each category
    file >> labAmount >> quizAmount >> midtermAmount
         >> projectAmount >> finalExamAmount;

    // ========================================
    // Second line of file
    // 20
    for(int i = 0; i < labAmount; i++){
        file >> score;
        labTotal += score;
    }

    // 7
    for(int i = 0; i < quizAmount; i++){
        file >> score;
        quizTotal += score;
    }
    // 2
    for(int i = 0; i < midtermAmount; i++){
        file >> score;
        examTotal += score;
    }
    // 1
    for(int i = 0; i < projectAmount; i++){
        file >> score;
        projectTotal += score;
    }

    // 1
    file >> score;
    finalExamTotal += score;

    // ========================================
    // Second line of file
    // Adds numbers together for actual score

    cout << "========================================================\n"
    << fixed << setprecision(2) << "Hello " << username << "!\n";

    score = 0;
    for(int i = 0; i < labAmount; i++){
        file >> score;
        labGrade += score;
    }
    cout << "Labs: " << (labGrade/labTotal)
    * FIFTEEN_PERCENT * TO_PERCENT << "%" << endl;


    score = 0;
    for(int i = 0; i < quizAmount; i++){
        file >> score;
        quizGrade += score;
    }
    cout << "Quizzes: " << (quizGrade/quizTotal)
    * FIFTEEN_PERCENT * TO_PERCENT << "%" <<  endl;

    score = 0;
    for(int i = 0; i < midtermAmount; i++){
        file >> score;
        examGrade += score;
    }
    cout << "Exams: " << (examGrade/(examTotal)
    * FORTY_PERCENT * TO_PERCENT) <<  "%" << endl;

    score = 0;
    for(int i = 0; i < projectAmount; i++){
        file >> score;
        projectGrade += score;
    }
    cout << "Projects: " << (projectGrade/projectTotal)
    * TEN_PERCENT * TO_PERCENT << "%" <<  endl;

    score = 0;
    file >> score;
    finalExamGrade += score;
    cout << "Final Exam: " << (finalExamGrade/finalExamTotal)
    * TWENTY_PERCENT * TO_PERCENT << "%" <<  endl;

    // ========================================

    // Calculate total grade based on weights
    labGrade = (labGrade/labTotal) * FIFTEEN_PERCENT;
    quizGrade = (quizGrade/quizTotal) * FIFTEEN_PERCENT;
    examGrade = (examGrade/examTotal) * FORTY_PERCENT;
    projectGrade = (projectGrade/projectTotal) * TEN_PERCENT;
    finalExamGrade = (finalExamGrade/finalExamTotal) * TWENTY_PERCENT;
    totalGrade = labGrade + quizGrade + examGrade
               + projectGrade + finalExamGrade;

    cout << "Total: " << totalGrade * TO_PERCENT << "%" << endl;

    // Determine letter grade
    if (totalGrade >= GradeA) {
        letterGrade = 'A';
    } else if (totalGrade >= GradeB){
        letterGrade = 'B';
    } else if (totalGrade >= GradeC){
        letterGrade = 'C';
    } else if (totalGrade >= GradeD){
        letterGrade = 'D';
    } else {
        letterGrade = 'F';
    }
    cout << "Final Letter Grade: " << letterGrade << endl;
}
```

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
```