

Answer on Question #44656, Programming, C++

Problem.

Design a solution algorithm and write program that will read a file of student test results and produce a student test grades report. Each test record contains the student number, name and test score (out of 50). The program is to calculate for each student the test score as a percentage and to print the student's number, name, test score (out of 50) and letter grade on the report. The letter grade is determined as follows:

A = 90 - 100%

B = 80 - 89%

C = 70 - 79%

D = 60 - 69%

F = 0 - 59%

Task need to do:

Create report for 10 students.

1. Design algorithm [Note: Pseudocode and Flowchart]

2. Write program and use control structures required

- A DOWHILE loop to control the repetition

- Decision symbols to calculate the grade

Solution.

File (data.txt)

```
1 Oles 34
2 Andrew 22
3 Jack 44
4 Sam 21
5 Lina 32
6 Lima 37
7 Jemmy 43
8 Barack 17
9 Bred 38
10 Liam 30
```

Code

```
#include <iostream>
#include <iomanip> // for formatted output
#include <fstream>
#include <string>

using namespace std;

struct student {
    int number;      // student number
    string name;     // student name
    int score;       // student score
};

int main() {
    student students[50]; // student array
    ifstream file("data.txt");
```

```

    if (file.is_open()) {
        int n = 0; // number of students

        // Data reading
        while (file >> students[n].number >> students[n].name >>
students[n].score) {
            n++;
        }

        // Data output
        for(int i = 0; i < n; i++) {
            cout << left << setw(5) << students[i].number << setw(10) <<
students[i].name << setw(5) << students[i].score;
            float result = ((float) students[i].score / 50) * 100;

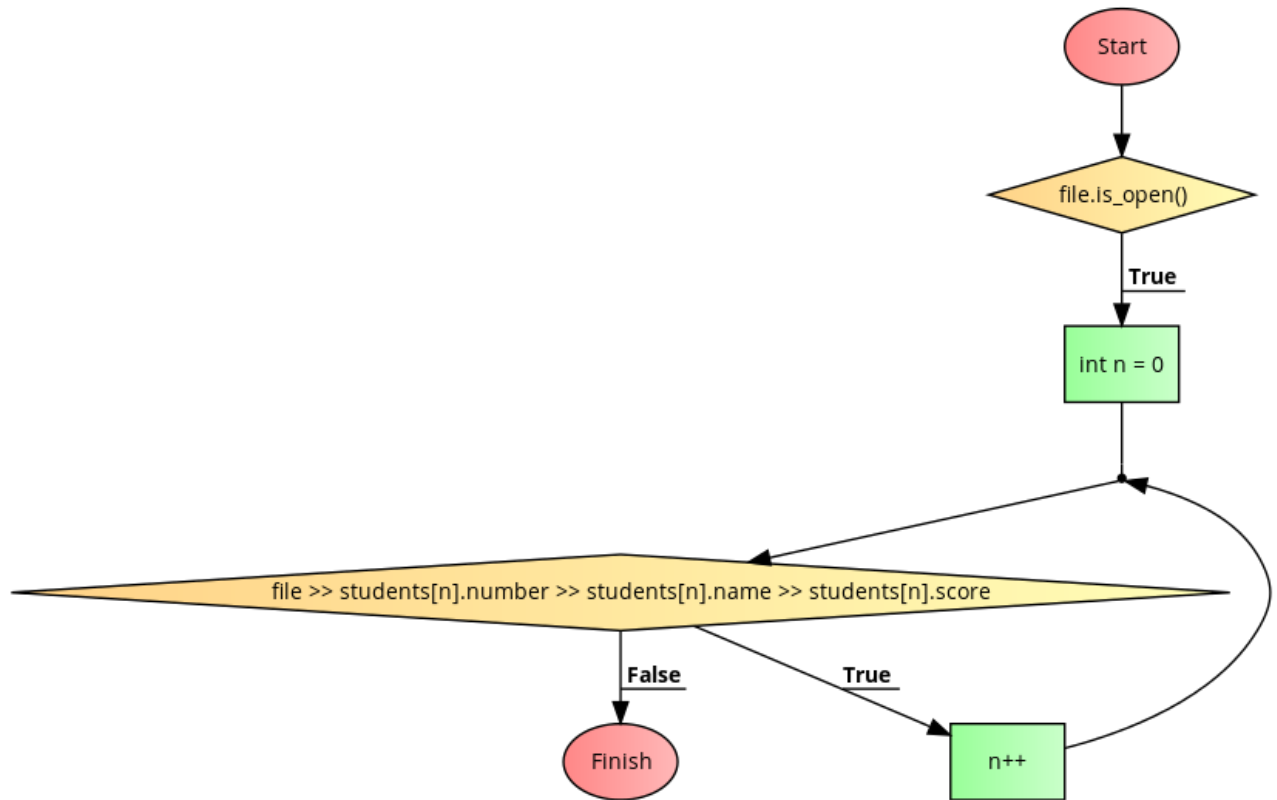
            if (result >= 90) {
                cout << setw(5) << "A";
            }
            if ((80 <= result) && (result < 90)) {
                cout << setw(5) << "B";
            }
            if ((70 <= result) && (result < 80)) {
                cout << setw(5) << "C";
            }
            if ((60 <= result) && (result < 70)) {
                cout << setw(5) << "D";
            }
            if (result < 60) {
                cout << setw(5) << "E";
            }

            if (i != n) {
                cout << endl;
            }
        }
    }

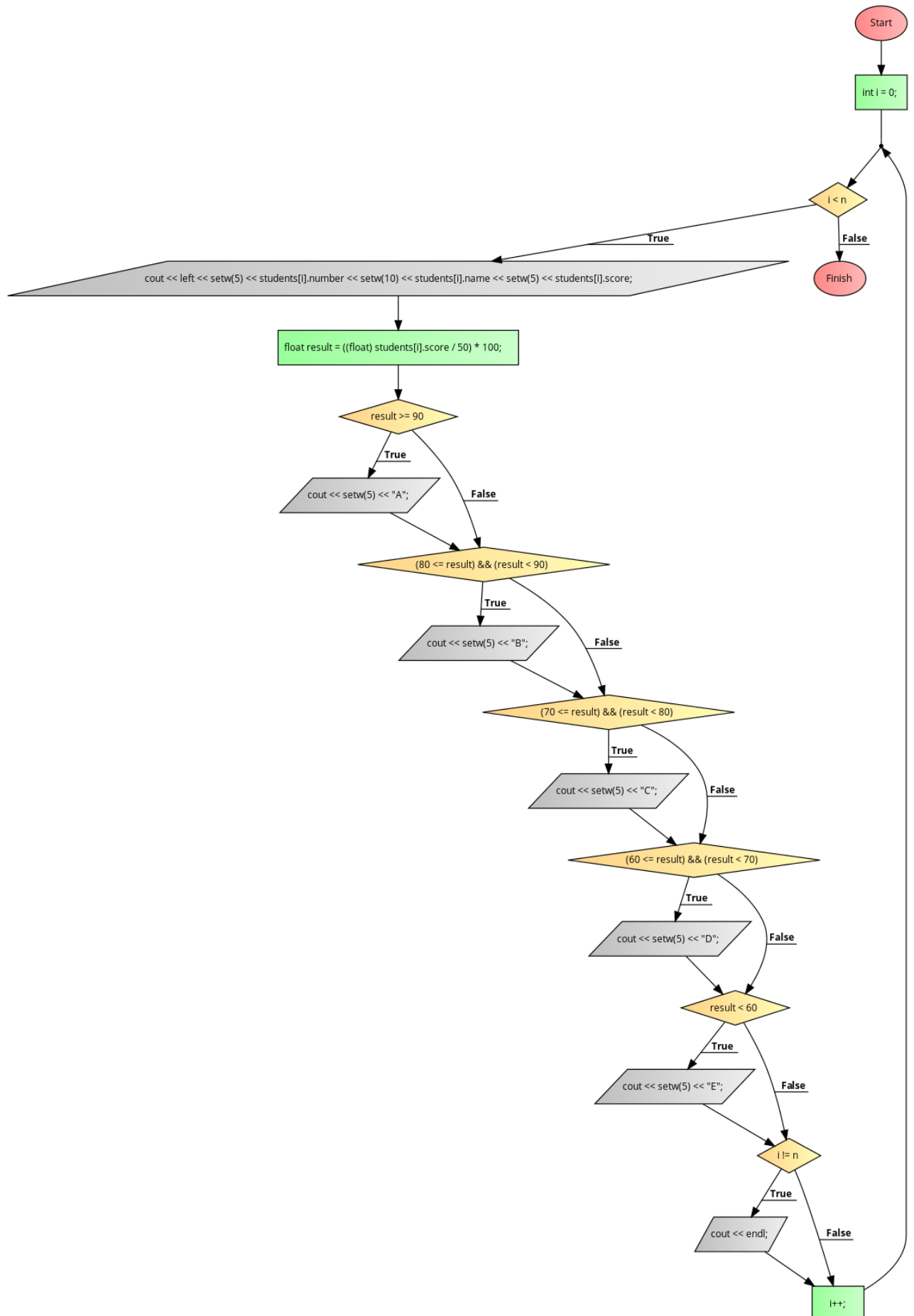
    return 0;
}

```

Flowchart (data reading)



Flowchart (data output)



Result

```
1 Oles 34 D
2 Andrew 22 E
3 Jack 44 B
4 Sam 21 E
5 Lina 32 D
6 Lima 37 C
7 Jemmy 43 B
8 Barack 17 E
9 Bred 38 C
10 Liam 30 D
```

```
Process returned 0 (0x0)   execution time : 3.045 s
Press any key to continue.
```