

Electronic copies of handouts for L02 can be found at

<http://www.enel.ucalgary.ca/People/Norman/engg233-L02-fall2004/>

Below is code from the file Lab10.cc as posted on Blackboard. (I have reformatted some of the indentation and line breaks so that it fits better on this page, but I haven't changed anything that would change program behaviour.)

<pre> struct student { string last; string first; int id; double midterm; double final; vector<double> lab_scores; double final_score; char letter_grade; }; </pre>	<pre> void ReadData(vector<student>& section, int& num_Students, string& filename); void WriteData(const vector<student>& section, int num_Students, const string& filename); void AddNewStudent(vector <student>& section, int& num_Students); void CalculateScore(vector<student>& section); void FindStudent (const vector<student>& section); </pre>
<pre> int main() { vector<student> section; int num_Students=0; string filename; ReadData(section, num_Students, filename); char choice; do { cout << "What do you wish to do with the database?"<< endl; cout << "Input the relevant letter: Options are"<< endl; cout << "(A) Add new student" << endl; cout << "(B) Calculate the final score and letter grade for the students" << endl; cout << "(C) Find a student and output their details"<< endl; cout << "(D) End the program"<< endl; cin>>choice; switch (choice) { case ('A'): AddNewStudent(section, num_Students); break; case ('B'): CalculateScore(section); break; case ('C'): FindStudent(section); break; case ('D'): cout << "program ending" << endl; WriteData(section, num_Students, filename); } } while(choice != 'D'); return 0; } </pre>	

Lecture_Section2.txt, one of the test data files from Blackboard:

<pre> 3 Elizabeth Cannon 25869 40 32 12 13 14 17 12 Gerard Lachapelle 76258 20 30 12 12 18 20 14 Susan Skone 55642 50 52 15 16 16 15 17 </pre>
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(Blank lines were removed so that the listing would fit on this page. You do not have to remove blank lines to get the program to work in the lab.)

A complete function definition for ReadData:

```
void ReadData(vector<student> & section, int& num_Students, string& filename)
{
    // Attempt to get a file name and open the file.
    ifstream in;
    cout << "Please enter the name of a file containing grade data: " << endl;
    cin >> filename;
    in.open(filename.c_str());

    // If the file did not get opened, give the user more chances to
    // pick a valid file name.
    int open_count = 1;          // So far, 1 try at opening the file.
    while (in.fail() && open_count < MAX_OPEN_ATTEMPTS) {
        cout << "Failed to open " << filename
             << "; please try another file name: " << endl;
        cin >> filename;
        in.clear();
        in.open(filename.c_str());
        open_count++;
    }
    if (in.fail()) {
        cout << "Program is quitting due to "
             << "repeated failures to open the input file." << endl;
        exit(1);
    }

    // Read all the data from the file into section, and assign safe values
    // to final_score_and letter_grade members. Then close the file.
    in >> num_Students;
    section.resize(num_Students);
    for (int i = 0; i < num_Students; i++) {
        in >> section.at(i).first;
        in >> section.at(i).last;
        in >> section.at(i).id;
        in >> section.at(i).midterm;
        in >> section.at(i).final;
        section.at(i).lab_scores.resize(NUMBER_OF_LABS);
        for (int lab = 0; lab < NUMBER_OF_LABS; lab++)
            in >> section.at(i).lab_scores.at(lab);
        section.at(i).final_score = INITIAL_FINAL_SCORE;
        section.at(i).letter_grade = INITIAL_LETTER_GRADE;
    }
    in.close();
}
```

If you go to this web address:

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you can find a link to my complete solution to Lab 10.