/\*

Michael Dobachesky

SE124.12

Program 3

PURPOSE:

You have been asked to prepare a report which will analyze the test grades for a number of students in a class.

The data used by the program should be entered by the user of the program and stored in a sequential disk file.

The file should then be used as input for the processing instructions of the program.

The program should be structured, well documented and submitted with appropriate documentation.

VARIABLE DICTIONARY:

REPRESENTS TYPE VARIABLE

Add records? char add\_records

Create new file? char create\_disk

Letter grade char letter\_grade

Run reply char run\_reply

Total students processed int total\_students

Total students with A's int total\_a

Total students with B's int total\_b

Total students with C's int total\_c

Total students with D's int total\_d

Total students with F's int total\_f

First name string first\_name

Last name string last\_name

Average score double average\_score

Test score double test\_score

Score accumulator double score\_accumulator

\*/

#include<iostream>

#include<string>

#include<fstream>

using namespace std;

char add\_records;

char create\_disk;

char letter\_grade;

char run\_reply;

int total\_students;

int total\_a;

int total\_b;

int total\_c;

int total\_d;

int total\_f;

string first\_name;

string last\_name;

double average\_score;

double test\_score;

double score\_accumulator;

void setup();

void build\_file();

void headings();

void extract\_data();

void process();

void totals();

ofstream fout;

ifstream fin;

int main()

{

cout << "Do you want to run the Test Grades application? (Y/N) ";

cin >> run\_reply;

run\_reply = toupper(run\_reply);

while (run\_reply != 'Y' && run\_reply != 'N')

{

cout << "Invalid response " << endl;

cout << "Please enter either a Y or an N ";

cin >> run\_reply;

run\_reply = toupper(run\_reply);

}

system("cls");

if(run\_reply == 'Y')

{

setup();

cout << "Would you like to enter a new set of grades? (Y/N) ";

cin >> create\_disk;

create\_disk = toupper(create\_disk);

while(create\_disk != 'Y' && create\_disk != 'N')

{

cout << "Invalid response " << endl;

cout << "Please enter either a Y or an N ";

cin >> create\_disk;

create\_disk = toupper(create\_disk);

}

system("cls");

if (create\_disk == 'Y')

{

build\_file();

}

headings();

extract\_data();

totals();

}

return 0;

}

void setup()

{

score\_accumulator = 0;

total\_students = 0;

total\_a = 0;

total\_b = 0;

total\_c = 0;

total\_d = 0;

total\_f = 0;

}

void build\_file()

{

fout.open("student\_grades.txt");

add\_records = 'Y';

while (add\_records == 'Y')

{

cout << "First Name: ";

cin >> first\_name;

cout << "Last Name: ";

cin >> last\_name;

cout << "Grade received on test: ";

cin >> test\_score;

while (test\_score > 100 || test\_score < 0)

{

cout << "Invalid response ";

cout << "Please enter a score between 0 and 100 ";

cin >> test\_score;

}

fout << first\_name << " " << last\_name << " " << test\_score << " " << endl;

cout << "Would like like to add another test score? (Y/N)" ;

cin >> add\_records;

add\_records=toupper(add\_records);

while(add\_records != 'Y' && add\_records != 'N')

{

cout << "Invalid response ";

cout << "Please enter either a Y or an N ";

cin >> add\_records;

add\_records=toupper(add\_records);

}

system("cls");

}

fout.close();

}

void headings()

{

cout << "CLASS GRADE REPORT" << endl << endl << endl;

cout << "First name Last name Grade" << endl << endl;

}

void extract\_data()

{

fin.open("student\_grades.txt");

fin >> first\_name >> last\_name >> test\_score;

while(!fin.eof())

{

process();

fin >> first\_name >> last\_name >> test\_score;

}

system("pause");

system("cls");

fin.close();

}

void process()

{

total\_students = total\_students + 1;

score\_accumulator = score\_accumulator + test\_score;

if(test\_score >= 90)

{

letter\_grade = 'A';

total\_a = total\_a + 1;

}

else

{

if(test\_score >= 80)

{

letter\_grade = 'B';

total\_b = total\_b + 1;

}

else

{

if(test\_score >= 70)

{

letter\_grade = 'C';

total\_c = total\_c + 1;

}

else

{

if(test\_score >= 60)

{

letter\_grade = 'D';

total\_d = total\_d + 1;

}

else

{

letter\_grade = 'F';

total\_f = total\_f + 1;

}

}

}

}

cout << first\_name << " " << last\_name << " " << letter\_grade << endl;

}

void totals()

{

cout << "Total students processed: " << total\_students << endl;

cout << "Total students receiving an A: " << total\_a << endl;

cout << "Total students receiving a B: " << total\_b << endl;

cout << "Total students receiving a C: " << total\_c << endl;

cout << "Total students receiving a D: " << total\_d << endl;

cout << "Total students receiving an F: " << total\_f << endl;

average\_score = score\_accumulator / total\_students;

cout << "Average score for the class: " << average\_score << endl;

system ("pause");

}