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// hw1-v1.cpp          Dave Reed
////////////////////////////////////////////////////////////////////////////////////////////////////////////////////////////////
#include <iostream>          // needed for cin & cout
#include <fstream>          // needed for ifstream
#include <vector>           // needed for vector class
#include <string>           // needed for string class
#include <cctype>           // needed for tolower function
using namespace std;

vector<string> GetClasses();
void DisplayClasses(const string & stuName, const vector<string> & classes);
string Lower(const string & str);

int main()
{
    vector<string> classes = GetClasses();

    string response = "yes", firstName, lastName;
    while (tolower(response[0]) == 'y') {
        cout << "Enter the first and last names of the student: ";
        cin >> firstName >> lastName;
        DisplayClasses(firstName+" "+lastName, classes);

        cout << endl << "Another student? (y/n) ";
        cin >> response;
    }

    return 0;
}

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vector<string> GetClasses()
// Assumes: classlist file is stored with each class name preceded by "****" and a space,
//          then the names of students, each on a separate line
// Returns: contents of classlist file (whose name is specified by the user) in a vector
{
    string filename;
    cout << "Enter the classlist file name: ";
    cin >> filename;

    ifstream ifstr(filename.c_str());
    if (!ifstr) {
        cout << "File not found. Please try again." << endl;
        exit(0);
    }

    vector<string> classlist;
    string word;
    while (ifstr >> word) {
        classlist.push_back(word);
    }
    return classlist;
}

void DisplayClasses(const string & stuName, const vector<string> & classes)
// Assumes: classes stores the contents of a classlist in order
// Results: all classes taken by stuName are displayed (or warning if no classes)
{
    bool found = false;
    string currentClass;
    for (int i = 0; i < classes.size(); i += 2) {
        if (classes[i] == "****") {
            currentClass = classes[i+1];
        }
        else if (Lower(stuName) == Lower(classes[i]+" "+classes[i+1])) {
            cout << "\t" << currentClass << endl;
            found = true;
        }
    }
    if (!found) {
        cout << "\tNot registered for any classes." << endl;
    }
}

string Lower(const string & str)
// Returns: copy of str with all uppercase letters made lowercase
{
    string copy;
    for (int i = 0; i < str.length(); i++) {
        copy += tolower(str[i]);
    }
    return copy;
}

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// hw1-v2.cpp          Dave Reed
////////////////////////////////////////////////////////////////////////////////////////////////////////////////////////////////
#include <iostream>          // needed for cin & cout
#include <string>           // needed for string class
#include <cctype>           // needed for tolower function
#include "ClassList.h"     // needed for user-defined ClassList class
using namespace std;

int main()
{
    string filename;
    cout << "Enter the classlist file name: ";
    cin >> filename;

    ClassList currentClasses(filename);

    string response = "yes", firstName, lastName;
    while (tolower(response[0]) == 'y') {
        cout << "Enter the first and last names of the student: ";
        cin >> firstName >> lastName;
        currentClasses.DisplayClasses(firstName+" "+lastName);

        cout << endl << "Another student? (y/n) ";
        cin >> response;
    }

    return 0;
}

// ClassList.h          Dave Reed
////////////////////////////////////////////////////////////////////////////////////////////////////////////////////////////////
#ifndef _CLASSLIST_H_
#define _CLASSLIST_H_

#include <vector>           // needed for vector class
#include <string>           // needed for string class
using namespace std;

class ClassList {
public:
    ClassList(string filename);
    void DisplayClasses(const string & stuName) const;
private:
    vector<string> classes;
    string Lower(const string & str) const;
};

#endif

```

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// ClassList.cpp        Dave Reed
////////////////////////////////////////////////////////////////////////////////////////////////////////////////////////////////
#include <iostream>          // needed for cin & cout
#include <fstream>          // needed for ifstream
#include <vector>           // needed for vector class
#include <string>           // needed for string class
#include <cctype>           // needed for tolower function
#include "ClassList.h"
using namespace std;

ClassList::ClassList(string filename)
{
    ifstream ifstr(filename.c_str());
    if (!ifstr) {
        cout << "File not found. Please try again." << endl;
        exit(0);
    }

    string word;
    while (ifstr >> word) {
        classes.push_back(word);
    }
}

void ClassList::DisplayClasses(const string & stuName) const
{
    bool found = false;
    string currentClass;
    for (int i = 0; i < classes.size(); i += 2) {
        if (classes[i] == "****") {
            currentClass = classes[i+1];
        }
        else if (Lower(stuName) == Lower(classes[i]+" "+classes[i+1])) {
            cout << "\t" << currentClass << endl;
            found = true;
        }
    }

    if (!found) {
        cout << "\tNot registered for any classes." << endl;
    }
}

string ClassList::Lower(const string & str) const
// Returns: copy of str with all uppercase letters made lowercase
{
    string copy;
    for (int i = 0; i < str.length(); i++) {
        copy += tolower(str[i]);
    }
    return copy;
}

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// hw1-v3.cpp          Dave Reed
////////////////////////////////////////////////////////////////////////////////////////////////////////////////////////////////
#include <iostream>          // needed for cin & cout
#include <string>           // needed for string class
#include <cctype>           // needed for tolower function
#include "ClassList.h"     // needed for user-defined ClassList class
using namespace std;

int main()
{
    string filename;
    cout << "Enter the classlist file name: ";
    cin >> filename;

    ClassList currentClasses(filename);

    string response = "yes", firstName, lastName;
    while (tolower(response[0]) == 'y') {
        cout << "Enter the first and last names of the student: ";
        cin >> firstName >> lastName;
        currentClasses.DisplayClasses(firstName+" "+lastName);

        cout << endl << "Another student? (y/n) ";
        cin >> response;
    }

    return 0;
}

// ClassList.h          Dave Reed
////////////////////////////////////////////////////////////////////////////////////////////////////////////////////////////////
#ifndef _CLASSLIST_H_
#define _CLASSLIST_H_

#include <vector>           // needed for vector class
#include <string>           // needed for string class
using namespace std;

class Course {
public:
    Course(const string & courseName);
    string GetID() const;
    void AddStudent(const string & studentName);
    bool IsRegistered(const string & studentName) const;
    void Display() const;
private:
    string courseID;
    vector<string> students;
    string Lower(const string & str) const;
};

class ClassList {
public:
    ClassList(string filename);
    void AddEntry(const string & courseName, const string & studentName);
    void DisplayClasses(const string & stuName) const;
private:
    vector<Course> classes;
};

#endif

```

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// ClassList.cpp        Dave Reed
////////////////////////////////////////////////////////////////////////////////////////////////////////////////////////////////
#include <iostream>          // needed for cin & cout
#include <fstream>          // needed for ifstream
#include <vector>           // needed for vector class
#include <string>           // needed for string class
#include <cctype>           // needed for tolower function
#include "ClassList.h"
using namespace std;

Course::Course(const string & courseName)
{
    courseID = courseName;
}

string Course::GetID() const
{
    return courseID;
}

void Course::AddStudent(const string & studentName)
{
    students.push_back(studentName);
}

bool Course::IsRegistered(const string & studentName) const
{
    for (int i = 0; i < students.size(); i++) {
        if (Lower(students[i]) == Lower(studentName)) {
            return true;
        }
    }
    return false;
}

void Course::Display() const
{
    cout << courseID << ":" << endl;
    for (int i = 0; i < students.size(); i++) {
        cout << " " << students[i] << endl;
    }
}

string Course::Lower(const string & str) const
// Returns: copy of str with all uppercase letters made lowercase
{
    string copy;
    for (int i = 0; i < str.length(); i++) {
        copy += tolower(str[i]);
    }
    return copy;
}

```

```

ClassList::ClassList(string filename)
{
    ifstream ifstr(filename.c_str());
    if (!ifstr) {
        cout << "File not found. Please try again." << endl;
        exit(0);
    }

    string first, second, course;
    while (ifstr >> first >> second) {
        if (first == "**") {
            course = second;
        }
        else {
            AddEntry(course, first+" "+second);
        }
    }
}

void ClassList::AddEntry(const string & courseName, const string & studentName)
{
    int i;

    for (i = 0; i < classes.size(); i++) {
        if (classes[i].GetID() == courseName) {
            break;
        }
    }

    if (i == classes.size()) {
        classes.push_back( Course(courseName) );
    }
    classes[i].AddStudent(studentName);
}

void ClassList::DisplayClasses(const string & stuName) const
{
    bool found = false;
    for (int i = 0; i < classes.size(); i++) {
        if (classes[i].IsRegistered(stuName)) {
            cout << "\t" << classes[i].GetID() << endl;
            found = true;
        }
    }

    if (!found) {
        cout << "\tNot registered for any classes." << endl;
    }
}

```

```

// hw1-v4.cpp          Dave Reed
////////////////////////////////////////////////////////////////////////////////////////////////////////////////////////////////
#include <iostream>          // needed for cin & cout
#include <string>           // needed for string class
#include <cctype>           // needed for tolower function
#include "ClassList.h"     // needed for user-defined ClassList class
using namespace std;

int main()
{
    string filename;
    cout << "Enter the classlist file name: ";
    cin >> filename;

    ClassList currentClasses(filename);

    string response = "yes", firstName, lastName;
    while (tolower(response[0]) == 'y') {
        cout << "Enter the first and last names of the student: ";
        cin >> firstName >> lastName;
        currentClasses.DisplayClasses(firstName+" "+lastName);

        cout << endl << "Another student? (y/n) ";
        cin >> response;
    }

    return 0;
}

// ClassList.h          Dave Reed
////////////////////////////////////////////////////////////////////////////////////////////////////////////////////////////////
#ifndef _CLASSLIST_H_
#define _CLASSLIST_H_

#include <vector>           // needed for vector class
#include <string>           // needed for string class
using namespace std;

class Student {
public:
    Student(const string & stuName);
    string GetName() const;
    void AddCourse(const string & courseName);
    bool IsRegistered(const string & courseName) const;
    void Display() const;
private:
    string studentName;
    vector<string> courses;
};

class ClassList {
public:
    ClassList(string filename);
    void AddEntry(const string & courseName, const string & studentName);
    void DisplayClasses(const string & stuName) const;
private:
    vector<Student> classes;
};

#endif

```

```

// ClassList.cpp        Dave Reed
////////////////////////////////////////////////////////////////////////////////////////////////////////////////////////////////
#include <iostream>          // needed for cin & cout
#include <fstream>          // needed for ifstream
#include <vector>           // needed for vector class
#include <string>           // needed for string class
#include <cctype>           // needed for tolower function
#include "ClassList.h"
using namespace std;

string Lower(const string & str)
// Returns: copy of str with all uppercase letters made lowercase
{
    string copy;
    for (int i = 0; i < str.length(); i++) {
        copy += tolower(str[i]);
    }
    return copy;
}

Student::Student(const string & stuName)
{
    studentName = stuName;
}

string Student::GetName() const
{
    return studentName;
}

void Student::AddCourse(const string & courseName)
{
    courses.push_back(courseName);
}

bool Student::IsRegistered(const string & courseName) const
{
    for (int i = 0; i < courses.size(); i++) {
        if (Lower(courses[i]) == Lower(courseName)) {
            return true;
        }
    }
    return false;
}

void Student::Display() const
{
    cout << studentName << ":" << endl;
    for (int i = 0; i < courses.size(); i++) {
        cout << " " << courses[i] << endl;
    }
}

```

```

ClassList::ClassList(string filename)
{
    ifstream ifstr(filename.c_str());
    if (!ifstr) {
        cout << "File not found. Please try again." << endl;
        exit(0);
    }

    string first, second, course;
    while (ifstr >> first >> second) {
        if (first == "****") {
            course = second;
        }
        else {
            AddEntry(course, first+" "+second);
        }
    }
}

void ClassList::AddEntry(const string & courseName, const string & studentName)
{
    int i;
    for (i = 0; i < classes.size(); i++) {
        if (Lower(classes[i].GetName()) == Lower(studentName)) {
            break;
        }
    }

    if (i == classes.size()) {
        classes.push_back( Student(studentName) );
    }
    classes[i].AddCourse(courseName);
}

void ClassList::DisplayClasses(const string & stuName) const
{
    int i;
    for (i = 0; i < classes.size(); i++) {
        if (Lower(classes[i].GetName()) == Lower(stuName)) {
            classes[i].Display();
            break;
        }
    }

    if (i == classes.size()) {
        cout << "\tNot registered for any classes." << endl;
    }
}

```