Assignment 2

Overview

The objective of this assignment is to give you practice in code reading, and to convince you of the importance of good documentation. The program source code files that you need to read have been stripped of all documentation; there is not a single comment in any of them. Furthermore, none of them are executable files, so you cannot simply run them to determine what they do. However, you can read the code and determine what it does, assuming that you know C++. Fortunately for you, the code is relatively simple and contains almost nothing that you did not learn about in the prerequisite courses to this one. There is some code in the files about which you probably did not learn. This is intentional; this will give you practice for the "real world", in which software developers often need to read code that has constructs that they have never seen before. You can use web searches or searches through the C++ documentation in these cases.

Your task in this assignment is to read the files and answer some questions about this code. It is not necessary to read all of the code to answer the questions. It is up to you to determine what code you need to read. All of the questions are either True/False or multiple choice.

Instructions

There are six (6) source code files in the directory

```
/data/biocs/b/student.accounts/cs335_sw/data/code_reading
```

representing three different classes, plus a file named `assignment02_answersheet.txt`. Each class is represented by an interface file, with a `.h` extension, and an implementation file, with a `.cpp` extension. The three classes are `Name`, `Contact`, and `ContactList`, and their respective files are

- `name.h` and `name.cpp`,
- `contact.h` and `contact.cpp`, and
- `contactlist.h` and `contactlist.cpp`.

The file `assignment02_answersheet.txt` is a plain text file in which you will type your answers to the questions below.

You should copy these files to your home directory to do this assignment. You can also copy them to your own computing device, whatever that may be, if you prefer to study them offline. If you do not know enough UNIX to do this, then now is the time to read the tutorials to which I have supplied links, in order to learn how to copy files, transfer them between computers on a network, and so on.However, if you move the answersheet to your own device and you inadvertently change its format so that it is no longer a plain UNIX text file, it will receive a grade of zero, because it will fail to be processed by my grading script. You should understand that UNIX uses a different format for plain text than Windows.

Questions

All of the questions below are based on the contents of the six files identified above. Your answers should be based on the source code found in those files. Follow the instructions next to each question as to what you should write as an answer on the answersheet.

1. (12%) Consider this code snippet:

   ```
   Name name1("Cassandra", "O'Hara");
   Name name2("Smith");
   if ( name1 < name2 ) cout << 0 ; else cout << 1 ;
   ```

   On the answersheet, for question 1, list the letters of the statements below that are true. It is possible that none are true or several are true.

   (a) One or more of these statements results in a compiler error.
   (b) The code compiles correctly but will have a run-time error.
   (c) The code compiles correctly and outputs 0.
   (d) The code compiles correctly and outputs 1.

2. (6%) **True or False**. The declaration below results in an error.

   ```
   Name name3("Gandalf", "The Gray");
   ```

   On the answersheet, for question 2, write either True or False.

3. (6%) **True or False**. The code below sets the value of the private member `fname` of `name` to `"Ben Hur"`.

   ```
   Name name;
   name.set_first("Ben Hur");
   ```

   On the answersheet, for question 3, write either True or False.

4. (6%) **True or False**. The statement

   ```
   #include <iomanip>
   ```

   can be replaced by

   ```
   #include "iomanip"
   ```

   without causing any change to the compiled code. On the answersheet, for question 4, write either True or False.

5. (18%) Given the declaration

   ```
   Contact new_contact;
   ```

   which of the following instructions will execute without error? On the answersheet for question 5, put the letters of the ones that execute without error on the answersheet for this question.

   (a) `new_contact.set("Xavier,Francis,8009367777,fx32@abc.cuny.65");`
   (b) `new_contact.set("donald,duck,7771234567,dduckatdisney");`
   (c) `new_contact.set("Dr.,Strangelove,2223331888,drstrangelove@hollywoodandvine");`
   (d) `new_contact.set("root,user,1111111111,root@192.168.1.0");`
   (e) `new_contact.set("Willy-Nelson,O'Flanagan,6461118888,willi@theHem@music.org");`
   (f) `new_contact.set("Willy-Nilly,O'Keefe,6461118000,willinilli2@music.org");`

6. (15%) The contact.cpp file has the following *include directives*:

   (a) #include <stdio.h>
   (b) #include <string.h>
   (c) #include <iomanip>
   (d) #include "contact.h"
   (e) #include "name.h"

   Are each of these directives necessary for this file to be compiled without error? On the answersheet, for question 6, write the letters of the include directives above *that cannot be removed without introducing a compiler-error*.

Answer questions 7 and 8 based on the following declarations

```
Name security_guard("Jane");
Name office_person("Joe");
Name strange_person("Jane", "Doe");
Name unknown;
```

7. (12%) Which of the following are error-free? List the letters of the ones that are error-free on the answersheet for question 7.

   (a) Contact c1(unknown);
   (b) Contact c2(security_guard);
   (c) Contact c3(strange_person, "8886661234");
   (d) Contact c4("Jane", "Doe", "", "");

8. (4%) What is output by the code below? Enter a 0 or a 1 for question 8.

   ```
   Contact c5("Jane", "", ""), c6(security_guard, "", "");
   if ( c5 == c6 ) cout << 0 ; else cout << 1 ;
   ```

The ContactList class is defined and implemented in the two files contactlist.h and contactlist.cpp.

9. (12%) **True or False**. Based on those files, which of the following statements are true? Put the letters of the true statements on the answersheet for question 9.

   (a) The ContactList is a linked list data structure.
   (b) The ContactList is maintained in sorted order, by last name only.
   (c) The ContactList is not in sorted order.
   (d) The ContactList is in sorted order using the last name as a first key and the first name as a second key.

10. **True or False**. (9%) Based on those files, which of the following statements are true? Put the letters of the true statements on the answersheet for question 10.

    (a) This class has a default constructor.
    (b) The file name supplied to the constructor is a plain text file with no special format.
    (c) This class has a method for saving the list contents into a file using a format that will allow that file to be used as input to the constructor.

Grading Rubric

This assignment is worth 2% of your final grade, but it is scored on a scale from 0 to 100. Each question is worth the number of points indicated. If it is not submitted by the deadline, you get 0.

Submitting the Homework

This assignment is due by the end of the day (i.e. 11:59PM, EST) on February 12, 2019. You must submit the answersheet before this deadline. You submit your homework by running the `submit_cs335_hwk` command, following the exact instructions below. Do not deviate from these instructions.

To be precise:

1. If you have filled in the answersheet on your own computer, upload it to our server first, using either `sftp` or `scp` (on Mac systems in the terminal window or on Linux systems in a terminal window), or in Windows using the PuTTY file transfer agent called `psftp` or `pscp`. or the ssh client you installed from my website. If you have never used any of these, read the documentation that comes with it (such as man pages in Linux or the Mac.)

2. Login using `ssh` to `eniac.cs.hunter.cuny.edu` with your valid username and password, **and then ssh into any `cslab` host.**

3. Navigate (`cd`) to the directory into which you uploaded the answersheet.

4. Assuming that the answersheet is named `assignment02_answersheet.txt`, you must run the command

        submit_cs335_hwk 2 assignment02_answersheet.txt

    Do exactly this. The command will create a copy of the file in the directory

        /data/biocs/b/student.accounts/cs335_sw/hwks/hwk2

    It will be named `hwk2_`*`username`*, where *`username`* is your username on the network. You will not be able to read this file, nor will anyone else except for me. If you decide to make any changes and resubmit, just run the command again and it will replace the old file with the new one. Do not try to put your file into this directory in any other way - you will be unable to do this.

4