CSCI 325 Programming II – HW2

DUE: Sunday, February 16 - 11:59PM

This assignment will evaluate your understanding of object-oriented programming fundamentals and the three primary pillars of this programming paradigm. You will be walked through the creation of a project utilizing all three of these pillars, but it is up to you to successfully code and test each part.

You will create the backend for a database used in a school environment. This school has teachers and students, which function similarly to each other but have some key differences. Follow the steps below to create this database backend.

1) First, create a new project in your preferred code editor. In this project, create files for a few different classes. These will include Student, Teacher, Person, and Date. Remember, each of these classes should include an implementation file (.cpp) and a header file (.h). Also, do not forget to add the implementation files to your build system to ensure they compile each time.
2) Begin your coding by defining the class Date. Date objects should keep track of a day, month, and year. Make these attributes private. Create a default constructor for the Date class that sets the date to January 1, 1970 and a specific constructor to manually set the date at the time of object creation. The Date class should also include an output stream operator (<<) that outputs the date to the terminal in M/D/Y format.
3) Define the class Person. Remember to include the Date header at the top of the file. It should include the attributes start date, first name, and last name. Create getter/setter functions for first name and last name.
4) Move to the Student class. Let it inherit from the Person class. Add the attributes graduation year and major. Create getter and setter functions for both of these attributes. Create a specific constructor to assign the start day, start month, start year, first name, last name, graduation year, and major. Finally, create a function called summary that outputs all of these attributes to the command line, formatted neatly.
5) Next, the Teacher class. Follow the same steps as the Student class, but instead of graduation year and major, add department and title.
6) All our class definitions should be completed now, so we can begin our primary code body. Ensure you include both the Student and Teacher header files in your main file. In the main function, create a student named Jonah Tyree. He is an engineering major who started August 16, 2018, and is set to graduate in 2022. Create another student named Katherine Walls who started January 3, 2020 as an English major and is set to graduate in 2024. Finally, create a teacher named Jud Davis. He is an associate professor in the Christian Studies department who started June 11, 2009.
7) Call your summary function on each of your three defined people to check that you have the right information. Katherine has decided she wants to change her major to education. Dr. Davis has taught long enough to achieve tenure, and with that comes a promotion from associate professor to full professor. Jonah is doing exceptionally well in his coursework, so

his graduation date has been pushed forward to 2021. Call your summary functions again to show the changes you have made to the people in the database. Output the Dr. Davis’s start date (remember you can access it with the access operator “.”).

8) Ensure your code is well documented in all of your files. Explain your code, even if it seems self-explanatory. Commit your code to a repository titled “HW02”. Take a screenshot of your final output from the command line. Turn in a document to Brightspace including your output screenshot and a screenshot of your repository.

Hint: When using a class in another file, remember to #include the header file. This goes for implementation files of the same name (date.h should be included in date.cpp). Inclusions are also cascading, meaning if a file is included in a higher file, then lower ones do not need it. For example, date.h will be included in person, but not in teacher or student. Teacher and student include person, so they gain access to date through person.