CS 1410 Programming Assignment #10
Templates and Polymorphism with Virtual Functions

Assignment

Modify the code from Lab #9, making Employee into an abstract class and adding a virtual function to SalesEmployee, SalariedEmployee, and WagedEmployee. Modify the Lab #9 driver program to place employee objects into a circularly linked list as demonstrated in class.

1. Modify the CList class to make it a “templatized” class
   a. Copy the code from CList.cpp into CList.h (between the class declaration and the closing #endif)
   b. Add “template <class T>” before the class and before each member function
   c. Modify all function signatures to reflect the templatized class scope: CList<T>::
   d. Replace Employee with T

2. Modify the Lab #9 driver to place the instantiated employee objects into an instance of CList
   a. Include the CList header file
   b. Instantiate a circularly linked list
   c. Insert each new employee object (e.g., we and se) in the list
   d. Discard the cout statements at the end of cases 1, 2, and 3
   e. Implement case 4, which calls the CList list function

3. Employee class
   a. Make the Employee class abstract by adding a pure virtual function named calcPay:
      
      virtual double calcPay() = 0;
   b. Add a “getName” function to return the employee’s name
   c. Add a display function to display (to cout) the employee’s name, address, and birth date

4. WagedEmployee class
   a. Add a virtual function named calcPay: double calcPay() to calculate and return a waged employee’s pay
      i. A waged employee’s pay is his/her wage times the hours worked
   b. Add a virtual display function that
      i. Calls the Employee display function
      ii. Displays the employee’s wage, hours, and pay (i.e., calls calcPay)
5. SalariedEmployee class
   a. Add a virtual function named calcPay: double calcPay()
      i. A salaried employee’s pay is his/her salary divided by 24
   b. Add a virtual display function that
      i. Calls the Employee display function
      ii. Displays the employee’s salary and pay (i.e., calls calcPay)

6. SalesEmployee class
   a. Add a virtual function named calcPay: double calcPay()
      i. A sales employee’s pay is his/her salary (call the salaried employee’s calcPay function) plus commission times sales
   b. Add a virtual display function that
      i. Calls the salaried employee’s display function
      ii. Displays the employees commission, total sales, and pay (i.e., calls calcPay)

Grading

Upload seven files (employee.h, salariedemployee.h, wagedemployee.h, salesemployee.h, address.h, date.h, and CList.h) to WSU Online for grading – place the files in a new directory as instructed, please do not zip