Computer Science 181

Project 3 – Using Inheritance with Dynamically Created Objects

For this project, you are to write a class that represents a manager at a company. The Manager class should be derived from the Employee class. The Employee base class is shown on the next page.

A Manager is an Employee, except that a manager has a fixed bonus that is paid at every pay period. Your Manager derived class should have a private instance variable for the bonus, plus a redefined function calcPay() that calculates the pay of the manager. To calculate the pay of a manager, calculate the wage of an employee using that class’s calcPay() method, and then add the bonus.

Once you have written the Manager class, write a main program that uses your Manager class. The main program should declare an array of pointers to Manager objects. Prompt the user for the number of managers, and then for each manager, read the name, wage, hours worked, and bonus from the user. Dynamically create a Manager object, and then store a pointer to this object in an array.

Once information about all the managers has been entered and stored in the array, iterate over the array to determine which manager who is most highly paid, and the average pay of all the managers, and then print this information out.

Here is an example of what your program *must* look like when it is run. User input is shown in **bold**.

Enter number of managers: **4**

Enter manager 0 name: **Anne Archer**

Enter manager 0 hourly wage: **12.00**

Enter manager 0 hours worked: **40**

Enter manager 0 bonus: **200.00**

Enter manager 1 name: **Beth Brown**

Enter manager 1 hourly wage: **15.00**

Enter manager 1 hours worked: **35**

Enter manager 1 bonus: **250.00**

Enter manager 2 name: **Carl Castle**

Enter manager 2 hourly wage: **45**

Enter manager 2 hours worked: **10**

Enter manager 2 bonus: **0.00**

Enter manager 3 name: **Diane Dubinski**

Enter manager 3 hourly wage: **22.50**

Enter manager 3 hours worked: **40**

Enter manager 3 bonus: **0.00**

Highest paid manager is Diane Dubinski who is paid $900.00

Average pay is $701.25

* Comment your code appropriately, including an introductory comment at the beginning of the main program giving the programmer’s name, the date, and a brief description of the program.
* Do not make any changes to the Employee class. Your program must run with the employee class exactly as written.
* Do not inline any functions in your Manager class. All function definitions should be given in the implementation file.
* You can assume that there will be no more than 100 Managers entered in the main program.
* Print out all dollar amounts correct to 2 decimal places.

**What to turn in:** When you are ready to turn your program in, upload all 5 files to blackboard.

Contents of Employee.h

#ifndef EMPLOYEE\_H

#define EMPLOYEE\_H

class Employee

{

protected:

string name;

double wage;

double hours;

public:

// Create a new employee

Employee (string theName, double theWage, double theHours);

// Calculate the employee’s pay.

double calcPay() const;

string getName () const;

};

#endif // EMPLOYEE\_H

Contents of Employee.cpp

#include <string>

#include <cstdlib>

using namespace std;

#include "Employee.h"

Employee::Employee (string theName, double theWage, double theHours)

{

name = theName;

wage = theWage;

hours = theHours;

}

double Employee::calcPay() const

{

return wage \* hours;

}

string Employee::getName () const

{

return name;

}