Object Oriented Programming

Week 06
Inheritance

Cảm ơn thầy Trần Duy Quang đã cung cấp template cho môn học

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Notes

Create a single solution/folder to store your source code in a week.

Then, create a project/sub-folder to store your source code of each assignment.

The source code in an assignment should have at least 3 files:

- A header file (.h): struct definition, function prototypes/definition.
- A source file (.cpp): function implementation.
- Another source file (.cpp): named YourID_Ex01.cpp, main function. Replace 01 by id of an assignment.

Make sure your source code was built correctly. Use many test cases to check your code before submitting to Moodle.

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Content

In this lab, we will review the following topics:

1. Apply inheritance to build class B based on existing class A.

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Assignments

A: YY: 01 (W06-b-Class implementation for Farm (use Inheritance).pdf)

H: YY: 02 + 'W06-b-Class implementation for Farm (use Inheritance).pdf'

Draw a class diagram (png format) and implement in C++ for each of the following assignments.

Class diagram: https://en.wikipedia.org/wiki/Class_diagram

Student can use class string and class vector.

3.1. Assignment 1 – Company

Company ABC asks you to build an employee management system.

The system should store the following info for each employee: employ id, full name, hire date, address.

There are 2 types of employees in the company: Office employee and worker.

- Salary of an office employee in a month = number of his/her working days * pay rate per day (300.000 VND/day)
- Salary of a worker in a month = number of items he/she produced in the month * rate pay per item (20.000VND/item)

In this week exercise, you are asked to create 3 classes: Employee, OfficeEmployee and Worker. OfficeEmployee and Worker extends/inherits from Employee.

Then you must define and implement the following methods for each Employee classes.

1. Input the information of an employee
2. Print the information of an employee to console.
3. Compute the salary in a month of an employee
4. Define at least 5 constructors for each of 3 classes.

3.2. Assignment 2 – Bank Account

Define a class, named BankAccount with the following attributes and methods: Attributes:

1. Account number
2. Name of owner
3. Social ID of owner
4. Balance (money in the account)

Methods:

1. Input from keyboard.
2. Print out to console.
3. Deposit an amount of money.
4. Withdraw an amount of money. After withdrawing, the balance should be equal or greater than 50.000 VND.
5. Check the current balance.

Then, define another class, named, SavingBankAccount,which extends / inherits from class BankAccount.

The attributes and methods of new classes are below. Attributes:

1. Account number
2. Name of owner
3. Social ID of owner
4. Balance (money in the account)
5. Annual interest rates, for example: 6% in a year (360 days)
6. Period, for example, 1, 2, 3, 6 or 12 months.
7. Number of saving months until now, for examples, 3 months.

Methods:

1. Input from keyboard.
2. Print out to console.
3. Deposite an amount of money. Do not allow the customer to deposit if the number of saving months < period. In fact, the bank teller will ask the customer to create a new saving account to store new amount of money.
4. Withdraw an amount of money. Do not allow the customer to withdraw if the number of saving months < period.
5. Withdraw immediately. Then the saving account is considered as free-period one, and the interest rate is only 2%.
6. Check the current balance. Remember to add the current amount of interest to the balance. Use balance, interest rate, period and number of saving months to compute the interest.
7. Check the interest at this time.