

Lab V

Working with class

Question 1

Implement the following algorithm

1. Start.
2. Declare a class named calc with following variables and member functions using private visibility label.
 - I. Two variables x and y of float type.
 - II. One variable op of char type.
 - III. One variable res of double type.
 - IV. Member function void sum ().
 - V. Member function void sub ().
 - VI. Member function void mul ().
 - VII. Member function void div ().
 - VIII. Member function void disp ().
3. Declare the following member functions using public visibility label.
 - I. Member function void input ().
 - II. Member function void eval ().
4. Close the class.
5. Start the main function.
6. Declare c as an object of class calc.
7. Declare a variable *ch* of char type.
8. Repeat steps 9 to 12 till *ch* = 'y' or *ch* = 'y'.
9. Clear the screen.
10. Call the input member function of class calc using object c of class calc.
11. Call the evaluate member function of class calc using object c of class calc.
12. Ask user for another operation.
13. End of step 8 loop.
14. Stop.

Question 2

A phone number, such as (212) 767-8900, can be thought of as having three parts: the area code (212), the exchange (767) and the number (8900). Write a program that uses a class to store these three parts of a phone number separately. Call the class phone.

Create two class objects of type phone. Initialize one, and have the user input a number for the other one. Display both the numbers.

ALGORITHM

1. Start.
2. Declare a class named phone with following variables using private visibility label.
 - I. Two variables area, exc of int type.
 - II. One variable num of type long.
3. Declare the following using private visibility label..
 - I. A intializ() with three parameters of phone (int, int, long) to initialize the members.
 - II. Member function void input ().
 - III. Member function void disp ().
 - IV. Default constructor.
4. End the class.
5. Start the main function.
6. Declare two objects p1 (91, 124, 2304871), p2 of class phone and initialize the objects.
7. Clear the screen.
8. Call input member function of class phone through object of class p2.
9. Call disp() member function of class phone through object of class p1.
10. Print "my number is =".
11. Call disp member function of class phone through object of class p2.
12. Print "your number is =".
13. Stop.

Question 3

Given that an EMPLOYEE class contains the following members:

Date Members: Employee_Number, Employee_Name, Basic, DA, IT, Net_Sal;

Member Function: to read data, to calculate Net_Sal and to print data members;

Write a C++ program to read data on N employees and compute the Net_Sal of each employee (DA = 58% of Basic and Income Tax = 20% of the gross salary).

Question 4

Create a class called Counter. The counter class has one private data member to hold the counter value. It has three member functions. Init to initialize the data member, count to increment the counter whenever needed and display to display the value of the counter. The counter works until the user wants to count. Design a menu driven program.

Bonus Questions (from lab 4)

1. Sum of digits

As an example, the sum of the digits of 2 to the 10th power is:

$$2^{10} = 1024 \Rightarrow 1+0+2+4 \Rightarrow 7$$

What is the sum of the digits of 2^{50} ?

2. Factorials

Given the first few factorials:

$$1! = 1$$

$$2! = 2 \times 1 = 2$$

$$3! = 3 \times 2 \times 1 = 6$$

$$4! = 4 \times 3 \times 2 \times 1 = 24$$

What is the sum of the first 15 factorials, NOT INCLUDING 0!?