

Object Oriented Programming

Lab Report

Lab06



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Class	Object Oriented Programming CSC241 (BCE-4B)
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In Lab Tasks

5.1 Task 1:

Create a `SavingsAccount` class. Use a static data member `annualInterestRate` to store the annual interest rate for each of the savers. Each member of the class contains a private data member `savingsBalance` indicating the amount the saver currently has on deposit. Provide member function `calculateMonthlyInterest` that calculates the monthly interest by multiplying the balance by `annualInterestRate` divided by 12; this interest should be added to `savingsBalance`. Provide a static member function `modifyInterestRate` that sets the static `annualInterestRate` to a new value. Write a driver program to test class `SavingsAccount`. Instantiate two different objects of class `SavingsAccount`, `saver1` and `saver2`, with balances of \$2000.00 and \$3000.00, respectively. Set the `annualInterestRate` to 3 percent. Then calculate the monthly interest and print the new balances for each of the savers. Then set the `annualInterestRate` to 4 percent, calculate the next month's interest and print the new balances for each of the savers.

Solution:

The code is given below,

```
1  #include <iostream>
2
3  using namespace std;
4
5  class SavingsAccount
6  {
7  private:
8      static float annualInterestRate;
9      float savingBalance;
10
11  public:
12      SavingsAccount()
13      {
14
15      }
16      SavingsAccount(float x)
```

```

17     {
18         savingBalance=x;
19     }
20     void calculateMonthly()
21     {
22         float monthlyint;
23         monthlyint=savingBalance*(annualInterestRate/12);
24         savingBalance=savingBalance+monthlyint;
25         cout<<"The Interest rate is: "<<annualInterestRate<<endl;
26     }
27
28     void printbalance()
29     {
30         cout<<"The balance is: "<<savingBalance<<endl;
31     }
32     static void ModifyInterestRate(float x)
33     {
34         annualInterestRate=x;
35     }
36 };
37 float SavingsAccount::annualInterestRate=3;
38 int main()
39 {
40     SavingsAccount saver1(2000);
41     SavingsAccount saver2(3000);
42
43     //saver2.ModifyInterestRate(3);
44
45
46
47     saver1.printbalance();
48     saver1.calculateMonthly();
49     saver1.printbalance();
50     cout<<endl;
51     saver2.printbalance();
52     saver2.calculateMonthly();
53     saver2.printbalance();
54
55     saver2.ModifyInterestRate(4);
56     cout<<endl;
57     saver1.printbalance();
58     saver1.calculateMonthly();
59     saver1.printbalance();
60     cout<<endl;
61     saver2.printbalance();
62     saver2.calculateMonthly();
63     saver2.printbalance();
64
65     return 0;
66 }

```

Console Output is shown below.

```
"D:\Documents\CodeBlocks\C++\Object Oriented Programming\Lab06Task1\bin\Debug\Lab06Task1\1.exe"
The balance is: 2000
The Interest rate is: 3
The balance is: 2500

The balance is: 3000
The Interest rate is: 3
The balance is: 3750

The balance is: 2500
The Interest rate is: 4
The balance is: 3333.33

The balance is: 3750
The Interest rate is: 4
The balance is: 5000

Process returned 0 (0x0)   execution time : 0.135 s
Press any key to continue.
```

POST LAB

6.1 Question 1:

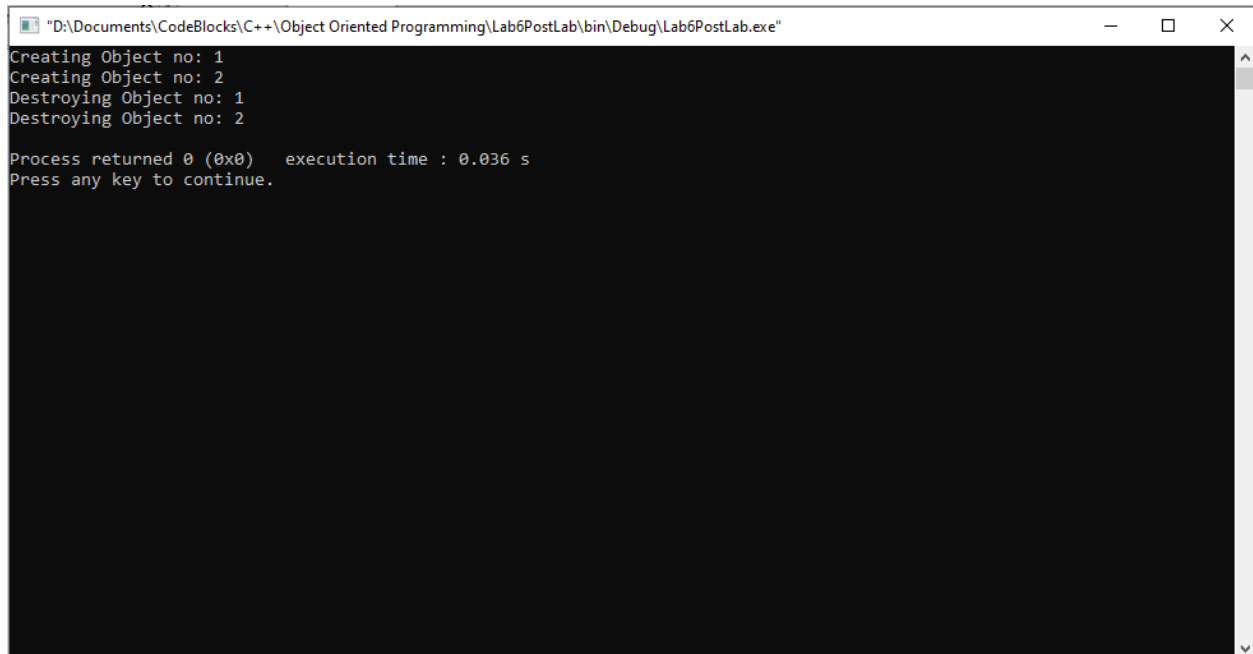
Write C++ program to count the number of objects created and destroyed for a class using static data members and static member functions

Solution:

I am attaching my code below,

```
1  #include <iostream>
2  using namespace std;
3  int countv=1;
4  int countvl=1;
5  class mainClass
6  {
7  private:
8      int value;
9      int value1;
10
11 public:
12     mainClass()
13     {
14         value=countv++;
15         cout<<"Creating Object no: "<<value<<endl;
16     }
17     ~mainClass()
18     {
19         value1=countvl++;
20         cout<<"Destroying Object no: "<<value1<<endl;
21     }
22 };
23
24
25
26 int main()
27 {
28     mainClass ob1;
29     mainClass ob2;
30
31
32     return 0;
33 }
```

The result for this program is shown below,



A screenshot of a Windows command prompt window. The title bar at the top reads: "D:\Documents\CodeBlocks\C++\Object Oriented Programming\Lab6PostLab\bin\Debug\Lab6PostLab.exe". The window contains the following text output from a program:

```
Creating Object no: 1
Creating Object no: 2
Destroying Object no: 1
Destroying Object no: 2

Process returned 0 (0x0)   execution time : 0.036 s
Press any key to continue.
```

____THE END____
