Heaven's Light is Our Guide

Rajshahi University of Engineering and Technology

Department of Computer Science and Engineering

Course No: CSE.1204

Course Title: Sessional based on CSE.1203 (Object Oriented Programming)

Lab Report No: 06

Lab Report On: Pointer & Static type variable and Operator Overloading.

Submitted By

Md. Ariful Islam

Roll No: 1803046

Section: A

Department: CSE

Submitted To

Md. Asifur Rahman

Lecturer

Dept. of CSE,RUET

Problem No: 01

Problem Statement: Implementation of **Pointer & Static type variable** and **Operator overloading** in the following classes.

class classtest

int *marks;
classtest ( ); classtest (int); void print_marks ( ); classtest operator + (classtest&) ; ~classtest ( );

class classtest1

int *marks; static int no_of_students; static int total_marks;
classtest1 ( ); classtest1 (int); void print_marks ( ); classtest1 operator + (classtest1&) ; ~classtest1 ( );

Theory

A **pointer type variable** is a variable that represents a location rather than a value of a data item. The syntax for dynamically allocate memory for a pointer variable **int *m** is **m = new int( )**
and syntax for assign value to that allocated memory is

***m = value**

We must call a **destroyer** at the end of the program to avoid **memory leakage**.

A **static variable** is that variable that's **lifetime** is the execution time of the program. That is never destroyed before finishing the program. In a class if we declare a static variable **must be initialized** outside of the class. The syntax of declaring a static variable is **static data_type variable_name = value**.

Operator overloading is the method by which we can change the function of some specific **operators** to do some different task. Operator overloading is just a type of function overloading with some additional rules. The syntax is

```
Return_type_classname operator op ( argument list )
{
        Function body
}
```

In binary operators, the operator overloading function get called for the object that is immediately left to it.

Source Code

1. main.cpp :

```
#include <iostream>
#include "classtest.h"
#include "classtest1.h"

using namespace std;

int main ( )
{
   cout<<"\n # Class 1 #\n"<<endl;
   classtest s1(10);
   classtest s2(18);
   classtest s3;

   s3=s1+s2;

   s1.show();
   s2.show();
   s3.show();


   cout<<"\n # Class 2 #\n"<<endl;
   classtest1 st1(10);
   st1.show1();
   classtest1 st2(18);
   st2.show1();
   classtest1 st3(5);
   st3.show1();
   classtest1 st4;
   st4=st1+st2;
   st4.show1();

   return 0;
}
```

2. .h file :

classtest.h

```
#ifndef CLASSTEST_H
#define CLASSTEST_H

class classtest
{
   private:
      int *marks;
   public:
      classtest();
      classtest(int);
      void show();
      classtest operator+(classtest&);
      ~classtest();
};

#endif // CLASSTEST_H
```

classtest1.h

```
#ifndef CLASSTEST1_H
#define CLASSTEST1_H

class classtest1
{
   private:
      int *marks;
      static int no_of_student;
      static int total_marks;

   public:
      classtest1();
      classtest1(int);
      void show1();
      classtest1 operator+(classtest1&);
      ~classtest1();

};

#endif // CLASSTEST1_H
```

3. .cpp file

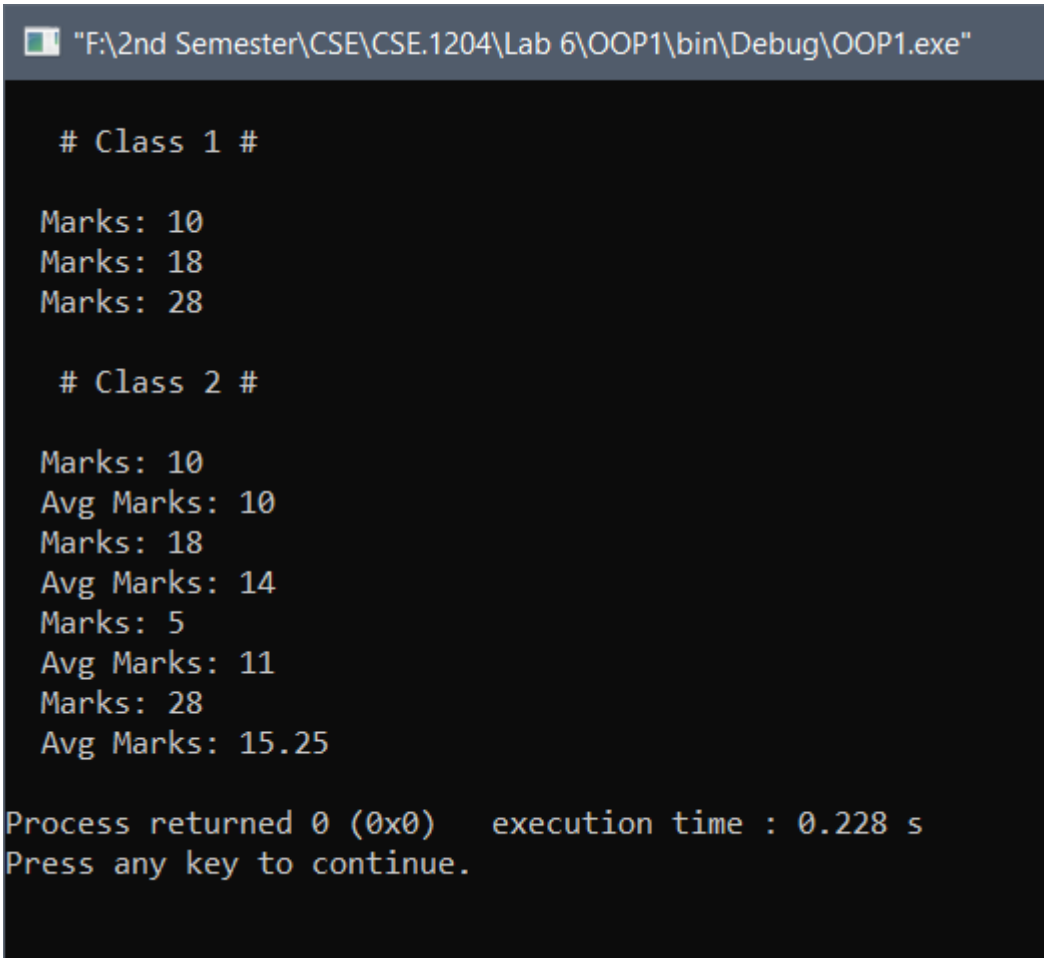
classtest.cpp

```
#include <iostream>
#include "classtest.h"

using namespace std;

classtest::classtest(){
   marks=new int();
   *marks=0;
}

classtest::classtest(int a){
   marks=new int();
   *marks=a;
}

void classtest::show(){
   cout<<"Marks: "<<*marks<<endl;
}

classtest classtest::operator+(classtest&
ob){
   int a;
   a=*marks+*ob.marks;
   classtest z(a);
   return z;
}

classtest::~classtest(){
   delete (marks);
}
```

classtest1.cpp

```
#include<iostream>
#include "classtest1.h"

using namespace std;

int classtest1::no_of_student=0;
int classtest1::total_marks=0;

classtest1::classtest1(){
   marks=new int();
   *marks=0;
   no_of_student+=1;
   total_marks+=0;
}

classtest1::classtest1(int a){
   marks=new int();
   *marks=a;
   no_of_student+=1;
   total_marks+=a;
}

void classtest1::show1(){
   cout<<"Marks: "<<*marks<<endl;
   cout<<"Avg Marks:
"<<1.0*total_marks/no_of_student<<endl;
}

classtest1 classtest1::operator+(classtest1&
st){
   int a;
   a=*marks+*st.marks;
   classtest1 Z(a);
   no_of_student--;
   return Z;
}

classtest1::~classtest1(){
   delete (marks);
}
```

Output



Conclusion : By our Course Teachers help and my knowledge about C and C++, I completed the program.

 # The End #