Object Oriented Programming

Lab Report

Lab02

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

5.1 Task 1:

Write a class that displays a simple message "I am object no. __", on the screen whenever an object of that class is created.

Solution:

The code is given below,

```cpp
#include <iostream>

using namespace std;

  int countv=1;

class mainClass
{
private:
    int value;

public:
    mainClass()
    {
        value=countv++;
        cout<<"I am Object no: "<<value<<endl;
    }

};


int main()
{
    mainClass ob1;
    mainClass ob2;
    mainClass ob3;
    mainClass ob4;
    mainClass ob5;

    return 0;
}
```
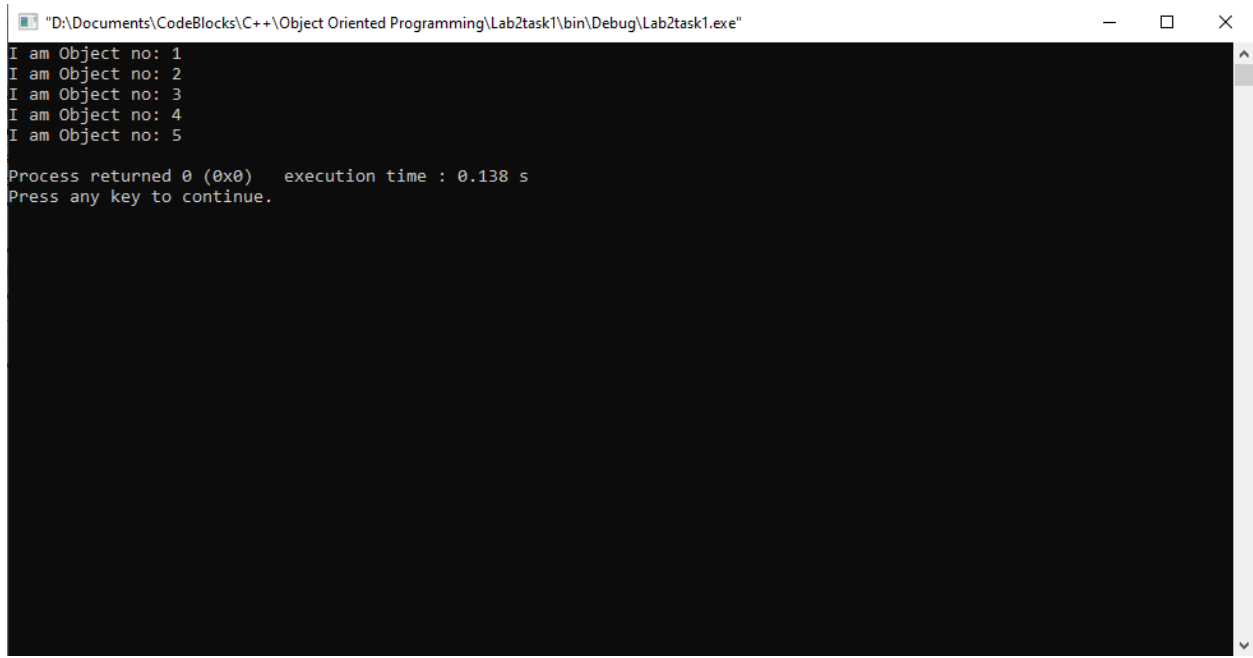
Console Output solution is shown below.

```
I am Object no: 1
I am Object no: 2
I am Object no: 3
I am Object no: 4
I am Object no: 5

Process returned 0 (0x0)   execution time : 0.138 s
Press any key to continue.
```
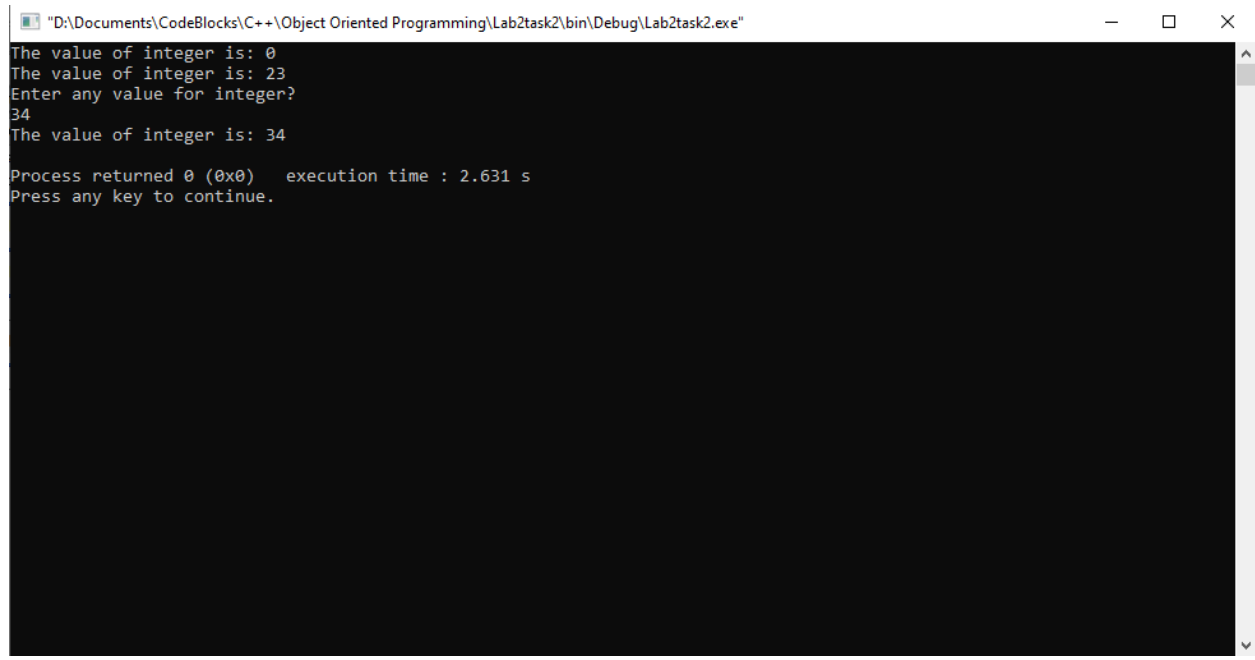
5.2 Task:2

Create a class that imitates part of the functionality of the basic data type int, call the class Int. The only data in this class is an integer variable. Include member functions to initialize an Int to zero, to initialize it to an integer value and to display it. Write a program that exercises this class by creating an Int variable and calling its member functions.

Solution:

I am attaching my code below,

```cpp
#include <iostream>
using namespace std;
class integer
{
    private:
    int var;
    public:
        void set_zero()
        {
            var=0;
        }
        void set_val(int n)
        {
            var=n;
        }
        void display()
        {
            cout<<"The value of integer is: "<<var<<endl;
        }
};
int main()
{
    int i;
    integer ob;
    ob.set_zero();
    ob.display();
    ob.set_val(23);
    ob.display();
    cout<<"Enter any value for integer?"<<endl;
    cin>> i;
    ob.set_val(i);
    ob.display();
    return 0;
}
```

The result for this program is shown below,

```
"D:\Documents\CodeBlocks\C++\Object Oriented Programming\Lab2task2\bin\Debug\Lab2task2.exe"
The value of integer is: 0
The value of integer is: 23
Enter any value for integer?
34
The value of integer is: 34

Process returned 0 (0x0)   execution time : 2.631 s
Press any key to continue.
```

POST LAB

6.1 Question 1:

Write a program to calculate the number of objects created and destroyed for the counter class.

Solution:

I am attaching my code below,

```cpp
#include <iostream>
using namespace std;
  int countv=1;
  int countv1=1;
class mainClass
{
private:
    int value;
    int value1;

public:
    mainClass()
    {
        value=countv++;
        cout<<"Creating Object no: "<<value<<endl;
    }
    ~mainClass()
    {
        value1=countv1++;
        cout<<"Destroying Object no: "<<value1<<endl;
    }
};


int main()
{
    mainClass ob1;
    mainClass ob2;

    return 0;
}
```

The result for this program is shown below,

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

Process returned 0 (0x0)   execution time : 0.237 s
Press any key to continue.
```

6.2 Question 2:

Create a class named time, the data members are hours, minutes and seconds. Write a function to read the data members supplied by the user, write a function to display the data members in standard (24) hour and also in (12) hour format.
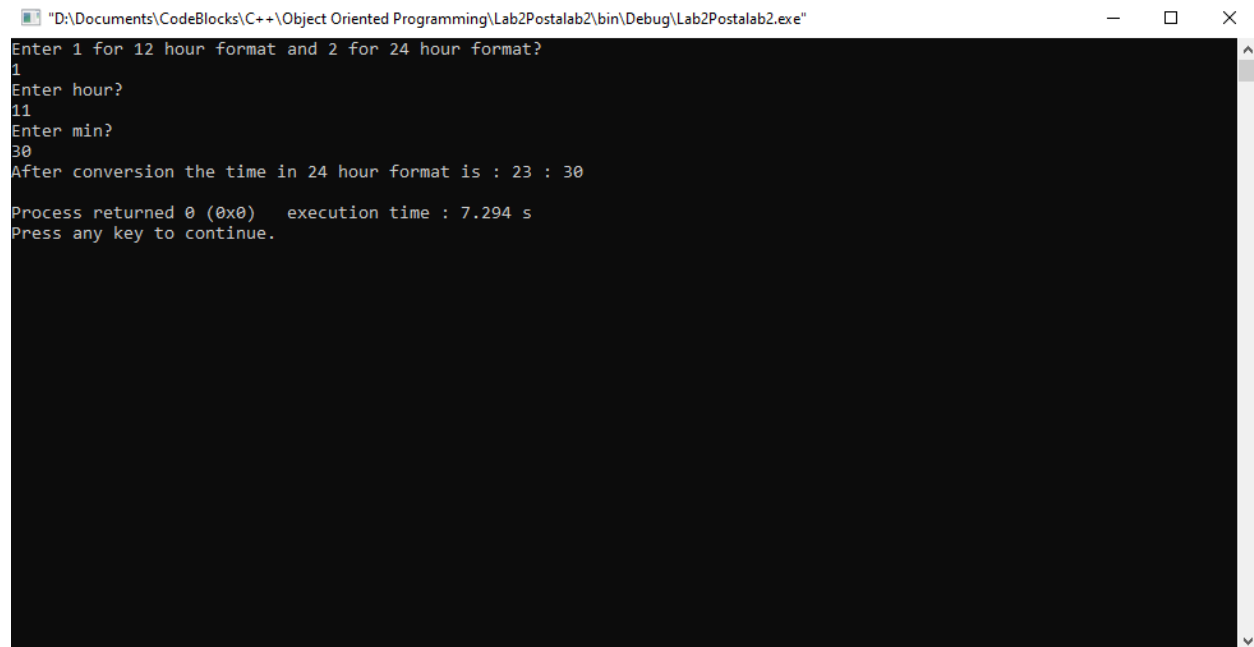
Solution:

I am attaching my code below,

```cpp
#include <iostream>
using namespace std;
class time
{
private:
    int hours;
    int mins;
    char op;
public:

void time12(int val,int h,int m)
{
    if(val==1)
    {
        if(val>12)
        {
            cout<<"value cannot be greater then 12 in 12 hour format"<<endl;
        }
        h=h+12;

        cout<<"After conversion the time in 24 hour format is : "<< h <<" : "<<m<<endl;

    }
}
void time24(int val,int h,int m)
{
    if(val==2)
    {
        if(val>24)
        {
            cout<<"value cannot be greater then 12 in 12 hour format"<<endl;
        }
        h=h-12;

        cout<<"After conversion the time in 12 hour format is : "<< h <<" : "<<m<<endl;

    }
}
};
int main()
{
    time t;
    int hour;
    int val;
    int mins;
    cout<<"Enter 1 for 12 hour format and 2 for 24 hour format?"<<endl;
    cin>>val;
    cout<<"Enter hour?"<<endl;
    cin>>hour;
    cout<<"Enter min?"<<endl;
    cin>>mins;
    if (val==1)
    t.time12(1,hour,mins);
    if(val==2)
    t.time24(2,hour,mins);
    return 0;
}
```

The result for this program is shown below,


```
"D:\Documents\CodeBlocks\C++\Object Oriented Programming\Lab2Postalab2\bin\Debug\Lab2Postalab2.exe"

Enter 1 for 12 hour format and 2 for 24 hour format?
1
Enter hour?
11
Enter min?
30
After conversion the time in 24 hour format is : 23 : 30

Process returned 0 (0x0)   execution time : 7.294 s
Press any key to continue.
```

The above sorting is done by passing reference, because you cannot pass an array by value.

6.3 Question 3:

Write a class marks with three data members to store three marks. Write three member functions, set_marks() to input marks, sum() to calculate and return the sum and avg() to calculate and return average marks.
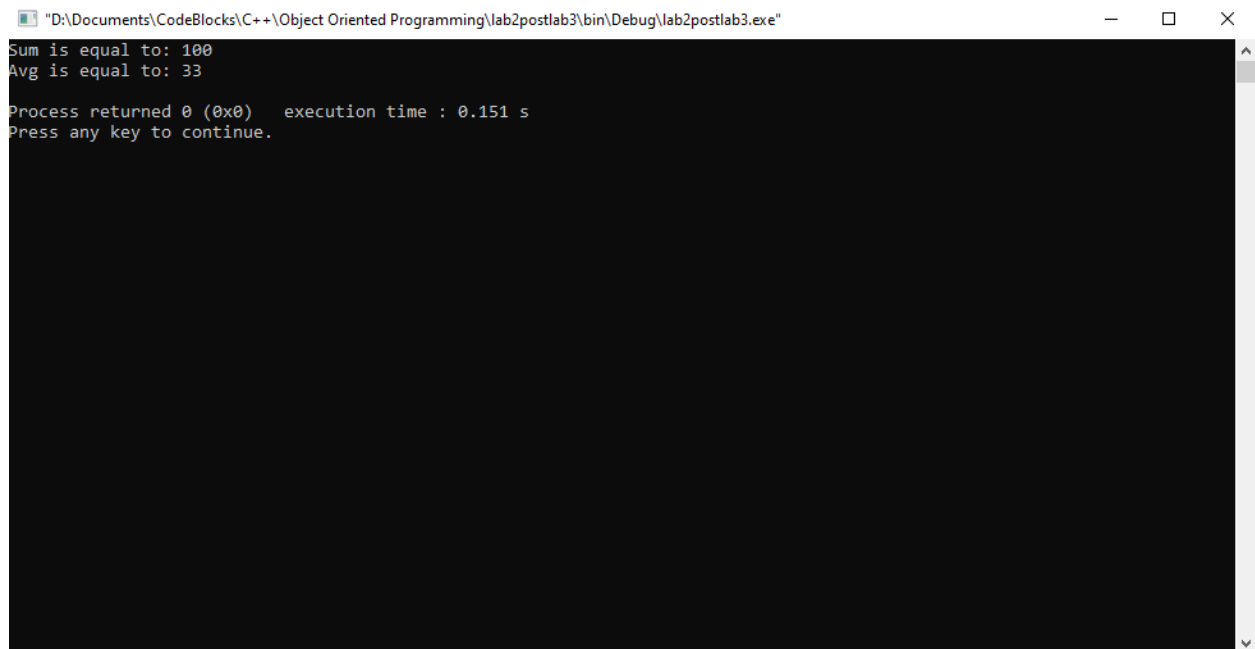
Solution:
I am attaching my code below,

```cpp
#include <iostream>

using namespace std;

class marks
{
private:
    int mark1;
    int mark2;
    int mark3;
public:
    void setmarks(int n, int j, int k)
    {
        mark1=n;
        mark2=j;
        mark3=k;
    }
int sum()
{
    int sum;
    sum=mark1+mark2+mark3;
    return(sum);
}

int avg()
{
    int avg;
    avg=mark1+mark2+mark3;
    avg=avg/3;
    return (avg);

}
};

int main()
{

    marks one;
    one.setmarks(20,30,50);
    cout<<"Sum is equal to: "<<one.sum()<<endl;
    cout<<"Avg is equal to: "<<one.avg()<<endl;

    return 0;
}
```

The result for this program is shown below,


```
"D:\Documents\CodeBlocks\C++\Object Oriented Programming\lab2postlab3\bin\Debug\lab2postlab3.exe"

Sum is equal to: 100
Avg is equal to: 33

Process returned 0 (0x0)   execution time : 0.151 s
Press any key to continue.
```

_____THE END_____