2005025_Hitu raj

KALINGA INSTITUTE OF INDUSTRIAL TECHNOLOGY (KIIT)

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OBJECT ORIENTED PROGRAMMING

LAB 5

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```
/*Q1 Create a class complex which stores real_025 and imaginary part of a compl
ex
number. Include all types of constructors and destructor. The destructor should
display a message about the destructor being invoked. Create objects using
different constructors and display them.*/
#include <iostream>
using namespace std;
class complex
{
    int real_025;
    int img_025;

public:
    complex() //DEFAULT CONSTRUCTOR
    {

        real_025 = 10;
        img_025 = 20;
    }
    complex(int a, int b) //parameterized constr
    {

        real_025 = a;
```

```
        img_025 = b;
    }
    complex(const complex &c) //copy constructor
    {

        real_025 = c.real_025;
        img_025 = c.img_025;
    }
    void display()
    {
        cout << real_025 << "+i" << img_025;
    }

    ~complex()
    {

      cout<<"\n memory released";
    }
};
int main()
{
    int n;
    cout << "\npress 1 if you want to use default constructor"
            "\npress 2 if you want to use parameterzed constructor"

            "\npress 3 if you want to use copy constructor";
    cin >> n;
    switch (n)
    {
    case 1:
    {
        complex c1;
        c1.display();

        break;
    }
    case 2:
    {
        complex c1(2, 3);
        c1.display();

        break;
    }
    case 3:
    {

        complex c2;
        complex c1(c2);
        c1.display();

        break;
    }
```

```
    default:
        break;
    }
    return 0;
}
```

OUTPUT Q1

```
Windows PowerShell
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PS D:\my codes\OOPS\lab5_constructor> cd "d:\my codes\OOPS\lab5_constructor\" ; if ($?) { g++ q1_construc.cpp -o q1_construc
 } ; if ($?) { .\q1_construc }

press 1 if you want to use default constructor
press 2 if you want to use parameterzed constructor
press 3 if you want to use copy constructor1
10+i20
 memory released
PS D:\my codes\OOPS\lab5_constructor> cd "d:\my codes\OOPS\lab5_constructor\" ; if ($?) { g++ q1_construc.cpp -o q1_construc
 } ; if ($?) { .\q1_construc }

press 1 if you want to use default constructor
press 2 if you want to use parameterzed constructor
press 3 if you want to use copy constructor2
2+i3
 memory released
PS D:\my codes\OOPS\lab5_constructor> cd "d:\my codes\OOPS\lab5_constructor\" ; if ($?) { g++ q1_construc.cpp -o q1_construc
 } ; if ($?) { .\q1_construc }

press 1 if you want to use default constructor
press 2 if you want to use parameterzed constructor
press 3 if you want to use copy constructor3
10+i20
 memory released
 memory released
PS D:\my codes\OOPS\lab5_constructor>
```

```
/*Q2 Create a class which stores time1 in hh:mm format. Include all the constru
ctors.
The parameterized constructor should initialize the minute value to zero, if it
is not provided.*/
#include <iostream>
using namespace std;
class time1
{
    int hr_025;
    int min_025;

public:
    time1() //default cons
    {
        hr_025 = 10;
        min_025 = 20;
```

```
    }
    time1(int t, int j = 0) //parameterized
    {

        hr_025 = t;
        min_025 = j;
    }
    time1(const time1 &a) //copy cons
    {

        hr_025 = a.hr_025;
        min_025 = a.min_025;
    }
    void display()
    {
        cout << hr_025 << ":" << min_025;
    }
};
int main()
{
    int a, call = 0;
    ;

    cout << "\npress 1 to create obj using default constructor"
         << "\npress 2 to create obj using paramerized constructor"
         << "\npress 3 to create obj using copy constructor";
    cin >> a;
    switch (a)
    {
    case 1:
    {
        time1 b;

        b.display();
        break;
    }
    case 2:
    {
    x:
        int x, y;
        cout << "enter the value of hr_025 and min_025\n";
        cin >> x >> y;

        if (call == 0)
        {
            time1 c(x, y);
            c.display();
            time1 d(c);
        }

        else
        {
```

```
            cout << "the value copied\n";
            time1 c(x, y);
            time1 d(c);
            d.display();
        }

        break;
    }
    case 3:
    {
        call = 1;
        goto x;
    }

    default:
        break;
    }

    return 0;
}
```

OUTPUT Q2

```
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PS D:\my codes\OOPS\lab5_constructor> cd "d:\my codes\OOPS\lab5_constructor\" ; if ($?) { g++ q2_time.cpp -o q2_time } ; if
($?) { .\q2_time }

press 1 to create obj using default constructor
press 2 to create obj using paramerized constructor
press 3 to create obj using copy constructor1
10:20
PS D:\my codes\OOPS\lab5_constructor> cd "d:\my codes\OOPS\lab5_constructor\" ; if ($?) { g++ q2_time.cpp -o q2_time } ; if
($?) { .\q2_time }

press 1 to create obj using default constructor
press 2 to create obj using paramerized constructor
press 3 to create obj using copy constructor2
enter the value of hr_025 and min_025
32
34
32:34
PS D:\my codes\OOPS\lab5_constructor> cd "d:\my codes\OOPS\lab5_constructor\" ; if ($?) { g++ q2_time.cpp -o q2_time } ; if
($?) { .\q2_time }

press 1 to create obj using default constructor
press 2 to create obj using paramerized constructor
press 3 to create obj using copy constructor3
enter the value of hr_025 and min_025
21
43
the value copied
21:43
PS D:\my codes\OOPS\lab5_constructor>
```

```
/*Q3Create a class which stores a string1 and its length_025 as data members. I
nclude all
the constructors. Include a member function to join two string1s and display th
e
concatenated string1.*/
```

```cpp
#include <iostream>
#include <string.h>
using namespace std;
class string1
{
    char str_025[10];
    int length_025;

public:
    string1() //default
    {

        strcpy(str_025, "hitu");
        length_025 = strlen(str_025);
    }
    string1(char a[]) //paramet
    {

        strcpy(str_025, a);
        length_025 = strlen(str_025);
    }
    string1(const string1 &c)
    {

        strcpy(str_025, c.str_025); //cant write equal to!!!!
        length_025 = c.length_025;
    }
    void concatinate(string1 a, string1 b)
    {
        strcpy(str_025, strcat(a.str_025, b.str_025));
        length_025 = strlen(a.str_025) + strlen(b.str_025);
        cout << "the concated string is " << str_025;
    }
    void display()
    {

        cout<<"the string is "<<str_025;
    }
};
int main()
{   string1 a;

    char stri[10];
    int ca;

    cout << "press 1 to use default const\n"
         << "press 2 to use paramet const\n"
         << "press 3 to use copy const\n";
    cin >> ca;

    switch (ca)
    {
```

```
    case 1:
    {

        break;
    }
    case 2:
    {
        cout << "enter a string";
        cin >> stri;
        string1 b(stri);
        break;
    }
    case 3:
    {
        string1 c(a);
        break;
    }
    default:
        break;
    }

   a.concatinate(a,a);

    return 0;
}
```

OUTPUT Q3

```
Windows PowerShell
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PS D:\my codes\OOPS\lab5_constructor> cd "d:\my codes\OOPS\lab5_constructor\" ; if ($?) { g++ q3_string_concat.cpp -o q3_str
ing_concat } ; if ($?) { .\q3_string_concat }
press 1 to use default const
press 2 to use paramet const
press 3 to use copy const
press 4 to concatinate string
4
enter a string ilovecoding
the string is ilovecoding
the concated string is ilovecodingi!
PS D:\my codes\OOPS\lab5_constructor> cd "d:\my codes\OOPS\lab5_constructor\" ; if ($?) { g++ q3_string_concat.cpp -o q3_str
ing_concat } ; if ($?) { .\q3_string_concat }
press 1 to use default const
press 2 to use paramet const
press 3 to use copy const
press 4 to concatinate string
1
the string is hitu
PS D:\my codes\OOPS\lab5_constructor> cd "d:\my codes\OOPS\lab5_constructor\" ; if ($?) { g++ q3_string_concat.cpp -o q3_str
ing_concat } ; if ($?) { .\q3_string_concat }
press 1 to use default const
press 2 to use paramet const
press 3 to use copy const
press 4 to concatinate string
2
enter a string hitu
the string is hitu
the string is hitu
PS D:\my codes\OOPS\lab5_constructor>
```

```
/*Q4 Write a C++ program using class to dynamically allocate two integer arrays
,
add them it to a third array and display all the arrays.
For(int I=0; I&lt;a.len;I++)
P[I]=a.p_025[I];*/
#include <iostream>
using namespace std;
class aray
{
    int *p_025;
    int length_025;

public:
    void create(int a)
    {
        length_025 = a;
        p_025 = new int[a];
        cout << "enter data in array\n";
        for (int i = 0; i < a; i++)
        {
            cin >> p_025[i];
        }
    }
    void display()
    {

        for (int i = 0; i < length_025; i++)
        {
            cout << p_025[i]<<" ";
        }
    }
    void add(aray a, aray b)
    {  length_025=a.length_025 + b.length_025;
        p_025 = new int[length_025];
        int c = 0;
        for (int i = 0; i < a.length_025; i++)
        {
            p_025[i] = a.p_025[i];
            c++;
        }
        for (int i = 0; i < b.length_025; i++)
        {
            p_025[c] = b.p_025[i];
            c++;
        }


    }
};
int main()
```

```
{
    aray a, b, c;
    int n, m;
    cout << "how many elements you have in the 1st array\n";
    cin >> n;
    a.create(n);

    cout << "how many elements you have in the 2st array\n";
    cin >> m;
    b.create(m);
    cout<<"\n1st array is \n";
     a.display();
     cout<<"\n2nd array is \n";
     b.display();

    cout << "\nadded array is\n";
     c.add(a,b);
    c.display();


    return 0;
}
```

OUTPUT Q4

```
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PS D:\my codes\OOPS\lab5_constructor> cd "d:\my codes\OOPS\lab5_constructor\" ; if ($?) { g++ q4_dynamicarray.cpp -o q4_dyna
micarray } ; if ($?) { .\q4_dynamicarray }
how many elements you have in the 1st array
4
enter data in array
432
24
2112
21
how many elements you have in the 2st array
5
enter data in array
21332
23123121
3
221
2

1st array is
432 24 2112 21
2nd array is
21332 23123121 3 221 2
added array is
432 24 2112 21 21332 23123121 3 221 2
PS D:\my codes\OOPS\lab5_constructor>
```

```cpp
/*Q5  WAP to demonstrate the order of call of constructors and destructors for
 a
class.*/
#include <iostream>
using namespace std;
class test
{
    static int count_025;

public:
    test()
    {
        cout << "constructor for obj" << count_025 << "is called\n";
        count_025++;
    }
    ~test()
    {

        cout << "destructor for obj" << --count_025 << "is called\n";

    }
};
int test::count_025=1;
int main()
{
    test a,b,c,d,e;


    return 0;
}
```

OUTPUT Q5

```
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PS D:\my codes\OOPS\lab5_constructor> cd "d:\my codes\OOPS\lab5_constructor\" ; if ($?) { g++ q5_concept_of_destructor.cpp -
o q5_concept_of_destructor } ; if ($?) { .\q5_concept_of_destructor }
constructor for obj1is called
constructor for obj2is called
constructor for obj3is called
constructor for obj4is called
constructor for obj5is called
destructor for obj5is called
destructor for obj4is called
destructor for obj3is called
destructor for obj2is called
destructor for obj1is called
PS D:\my codes\OOPS\lab5_constructor>
```

```
/*Q6 WAP to count number of objects created from a class using concept of stati
c
data members and static member function./
Class test{
Int I;
Static int count;
Public:
Test(){count++;}
Test(int k) { I=k; count ++;}
Static void print(){ cout&lt;&lt;” “&lt;&lt;count; }
};
int test:: count;
*/
#include<iostream>
using namespace std;
class count
{   int i;
    static int Count_025;
    public:
    count()
    {
        Count_025++;
    }
    count(int k)
    {

        i=k;
        Count_025++;
    }
    static void display()
    {

        cout<<"no. of times object created is "<<Count_025<<" times";
    }



};
int count::Count_025;
int main()
{
    count a,b,c;
    count f(23);
    count::display();


    return 0;
}
```

OUTPUT Q6


```
/*Q7 .A book shop maintains the inventory of books that are being sold at the
workshop. The list includes details such as author_025, title_025, price_025, p
ublisher_025 and stock_025
position. Whenever a customer wants a book, the sales person inputs the title_0
25 and

author_025 and the system searches the list and displays whether it is availabl
e or not. If it
is not, an appropriate message is displayed. If it is, then the system displays
 the book
details and requests for the number of copies required. If the requested copies
 are
available, the total cost of their quested copies is displayed otherwise the me
ssage
“Required copies not in stock” is displayed. WAP using a class called Books wit
h
suitable member functions and constructors.*/
#include<iostream>
#include<string.h>
using namespace std;
class Books
{
    string author_025, title_025, publisher_025;
    int price_025, stock_025;

public:
    Books()
    {
    }
    Books(string a, string t, string p, int m, int s)
    {
        author_025 = a;
        title_025 = t;
        publisher_025 = p;
        price_025 = m;
        stock_025 = s;
```

```
    }
    friend void searchBooks(Books *b, int n, string t, string a);
};
void searchBooks(Books *b, int n, string t, string a)
{
    for (int i = 0; i < n; i++)
    {
        if (b[i].author_025 == a && b[i].title_025 == t)
        {
            if (b[i].stock_025 <= 0)
            {
                cout << "The required book is not available!! Sorry!!\n";
                return;
            }
            else
            {
                cout << b[i].title_025 << " by " << b[i].author_025 << " publis
hed by " << b[i].publisher_025 << "\n";
                cout << "Cost : " << b[i].price_025 << "\n";
                cout << "Enter the required amount of books :- ";
                int no;
                cin >> no;
                if (b[i].stock_025 >= no)
                {
                    int bill = no * b[i].price_025;
                    cout << "Your bill is :- " << bill << "\n";
                    b[i].stock_025 -= no;
                    cout << "Visit again :)\n";
                    return;
                }
                else
                {
                    cout << "Sorry!! We don't have required amount of this book
. Visit again :)\n";
                    return;
                }
            }
        }
        if (i == n - 1)
        {
            cout << "Never heard of this book. Sorry!!\n";
            cout << "Visit again :)\n";
            return;
        }
    }
}
int main()
{
    int n;
    cout << " How many books u have : ";
    cin >> n;
    Books *b = new Books[n];
```

```
    for (int i = 0; i < n; i++)
    {
        cout << "\n=================================================== ===
=====\n";
        string a, t, p;
        int m, s;
        cout << "\nEnter the price_025 and stock_025 of the book :- ";
        cin >> m >> s;

        getchar();
        cout << "\nEnter the name of the author_025 of the book :- ";
        getline(cin, a);
      ///  cout << "\n";
        cout << "\nEnter the name of the book :- ";
        getline(cin, t);

        cout << "\nEnter the publisher_025 name of the book :- ";
        getline(cin, p);
        b[i] = Books(a, t, p, m, s);
    }
    string st, sa;
    cout << "\n=================================================== =======
=\n";
    cout << "Enter the name of the book you wish to search :- ";
    getline(cin, st);
    cout << "Enter the name of the author_025 of the book you wish to search :-
 ";
    getline(cin, sa);
    cout << "\n=================================================== =======
=\n";
    searchBooks(b, n, st, sa);
    cout << "\n=================================================== =======
=\n";
    cout << "The Program is terminated successfully!! ;)\n";
    return 0;
}
```

OUTPUT Q7

```
PS D:\my codes\OOPS\lab5_constructor> cd "d:\my codes\OOPS\lab5_constructor\" ; if ($?) { g++ q7_book.cpp -o q7_book } ; if ($?) { .\q7_book }
($?) { .\q7_book }
 How many books u have : 2

========================================================= ========

Enter the price_025 and stock_025 of the book :- 300
4

Enter the name of the author_025 of the book :- hitu

Enter the name of the book :- gyanpuksta

Enter the publisher_025 name of the book :- hpublication

========================================================= ========

Enter the price_025 and stock_025 of the book :- 200
5

Enter the name of the author_025 of the book :- ayushansh

Enter the name of the book :- charamshukhistika

Enter the publisher_025 name of the book :- ganjestanaana

========================================================= ========
Enter the name of the book you wish to search :- gyanpuksta
Enter the name of the author_025 of the book you wish to search :- hitu

========================================================= ========
gyanpuksta by hitu published by hpublication
Cost : 300
Enter the required amount of books :- 3
Your bill is :- 900
Visit again :)

========================================================= ========
The Program is terminated successfully!! ;)
PS D:\my codes\OOPS\lab5_constructor>
```

2005025_Hitu raj