

Object Oriented Programming

Lab Report

Lab01



Group Members Name & Reg #:	<u>Muhammad Haris Irfan</u> (FA18-BCE-090)
Class	Object Oriented Programming CSC241 (BCE-4B)
Instructor's Name	Maam Amber Madeeha Zeb

In Lab Tasks

5.1 Task 1:

Write a program that declares a structure to store book Id, price and pages of a book. The structure should include functions to assign user defined values to each book and display the record of most costly book.

Solution:

The code is given below,

```
#include <iostream>

using namespace std;

struct Book {

    int id;
    int price;
    int pages;

}ob[2];

void add_book()
{
    for(int i=0;i<2;i++)
    {
        cout<<"Now you will enter data of book number "<<i<<endl;

        cout<<"Enter book id:"<<endl;
        cin>>ob[i].id;

        cout<<"Enter book price:"<<endl;
        cin>>ob[i].price;

        cout<<"Enter book pages:"<<endl;
        cin>>ob[i].pages;

    }
}
```

```

void display_book()
{
    cout<<"The details of Most costly book is as follows:"<<endl;

    int price=0;
    int id=0;

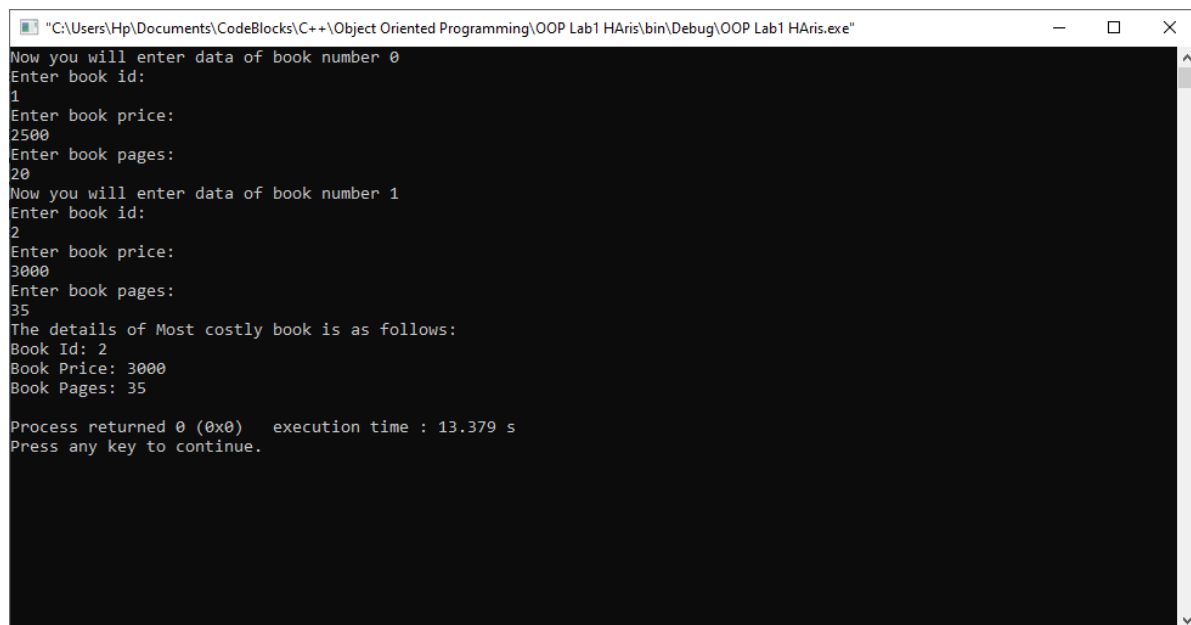
    for(int j=0;j<2;j++)
    {
        if(ob[j].price >= price)
        {
            price=ob[j].price;
            id=j;
        }
    }

    cout<<"Book Id: "<< ob[id].id<<endl;
    cout<<"Book Price: "<< ob[id].price<<endl;
    cout<<"Book Pages: "<< ob[id].pages<<endl;
}

int main()
{
    add_book();
    display_book();
    return 0;
}

```

Console Output solution is shown below.



```

C:\Users\Hp\Documents\CodeBlocks\C++\Object Oriented Programming\OOP Lab1 HARIs\bin\Debug\OOP Lab1 HARIs.exe
Now you will enter data of book number 0
Enter book id:
1
Enter book price:
2500
Enter book pages:
20
Now you will enter data of book number 1
Enter book id:
2
Enter book price:
3000
Enter book pages:
35
The details of Most costly book is as follows:
Book Id: 2
Book Price: 3000
Book Pages: 35
Process returned 0 (0x0)   execution time : 13.379 s
Press any key to continue.

```

5.2 Task:2

Write a program to take the values of two integers and use pointers to add 10 to the value of each integer.

Solution:

I am attaching my code below,

```
#include <iostream>

using namespace std;

int main()
{
    int valueone, valuetwo;
    int *ptr;

    cout<<"Enter the Value of first integer?"<<endl;
    cin>>valueone;

    cout<<"Enter the Value of second integer?"<<endl;
    cin>>valuetwo;

    ptr=&valueone;

    *ptr=*ptr+10;
    ptr=&valuetwo;

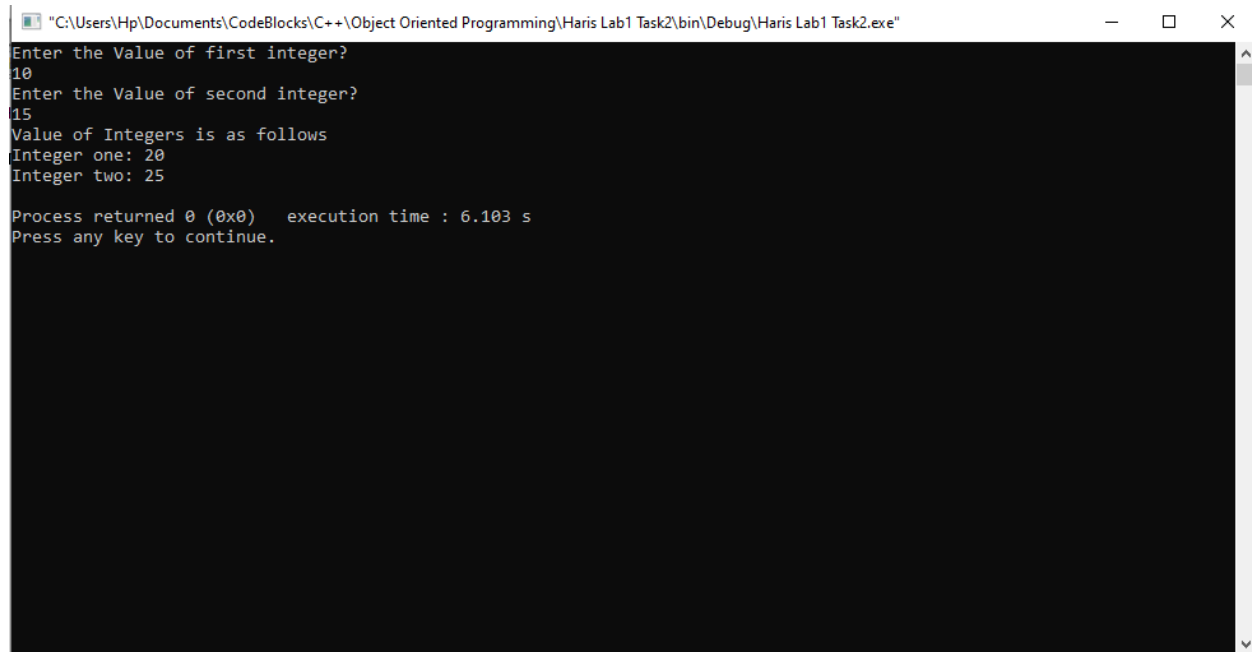
    *ptr=*ptr+10;

    cout<<"Value of Integers is as follows"<<endl;

    cout<<"Integer one: "<<valueone<<endl;
    cout<<"Integer two: "<<valuetwo<<endl;

    return 0;
}
```

The result for this program is shown below,



```
"C:\Users\Hp\Documents\CodeBlocks\C++\Object Oriented Programming\Haris Lab1 Task2\bin\Debug\Haris Lab1 Task2.exe"
Enter the Value of first integer?
10
Enter the Value of second integer?
15
Value of Integers is as follows
Integer one: 20
Integer two: 25

Process returned 0 (0x0)   execution time : 6.103 s
Press any key to continue.
```

5.3 Task:3

Write a function that swaps the values of two integer variables

Solution:

I am attaching my code below,

```
#include <iostream>

using namespace std;

void swapping(int &first,int &second)
{
    int temp;
    temp=first;
    first=second;
    second=temp;
}

int main()
{
    int one,two;
    cout << "Enter two inter you want to swap? "<< endl;
    cin>> one;
    cin >>two;

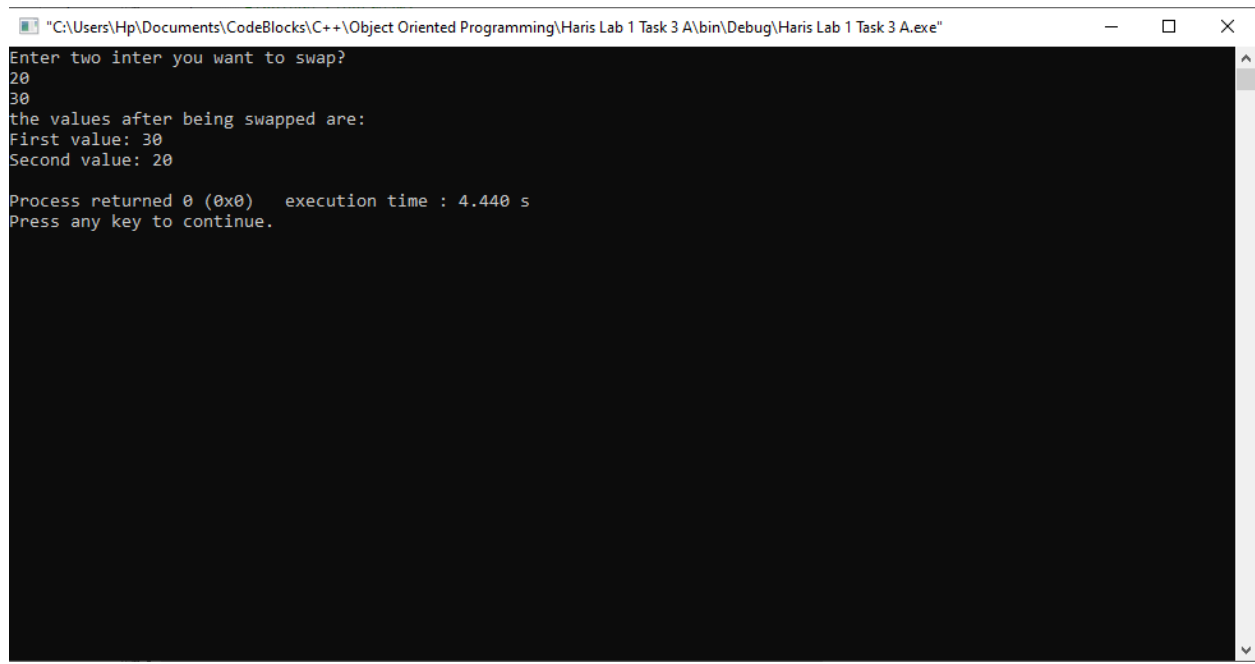
    swapping(one,two);

    cout<<"the values after being swapped are:"<<endl;

    cout<<"First value: "<<one<<endl;
    cout<<"Second value: "<<two<<endl;

    return 0;
}
```

The result for this program is shown below,



```
"C:\Users\Hp\Documents\CodeBlocks\C++\Object Oriented Programming\Haris Lab 1 Task 3 A\bin\Debug\Haris Lab 1 Task 3 A.exe"
Enter two inter you want to swap?
20
30
the values after being swapped are:
First value: 30
Second value: 20

Process returned 0 (0x0)   execution time : 4.440 s
Press any key to continue.
```

The above sorting is done by passing reference, whereas with value you cannot change the actual value.

POST LAB

6.1 Question 1:

There is a structure called employee that holds information like employee code, name, date of joining. Write a program to create an array of the structure and enter some data into it. Then ask the user to enter current date. Display the names of those employees whose tenure is 3 or more than 3 years according to the given current date.

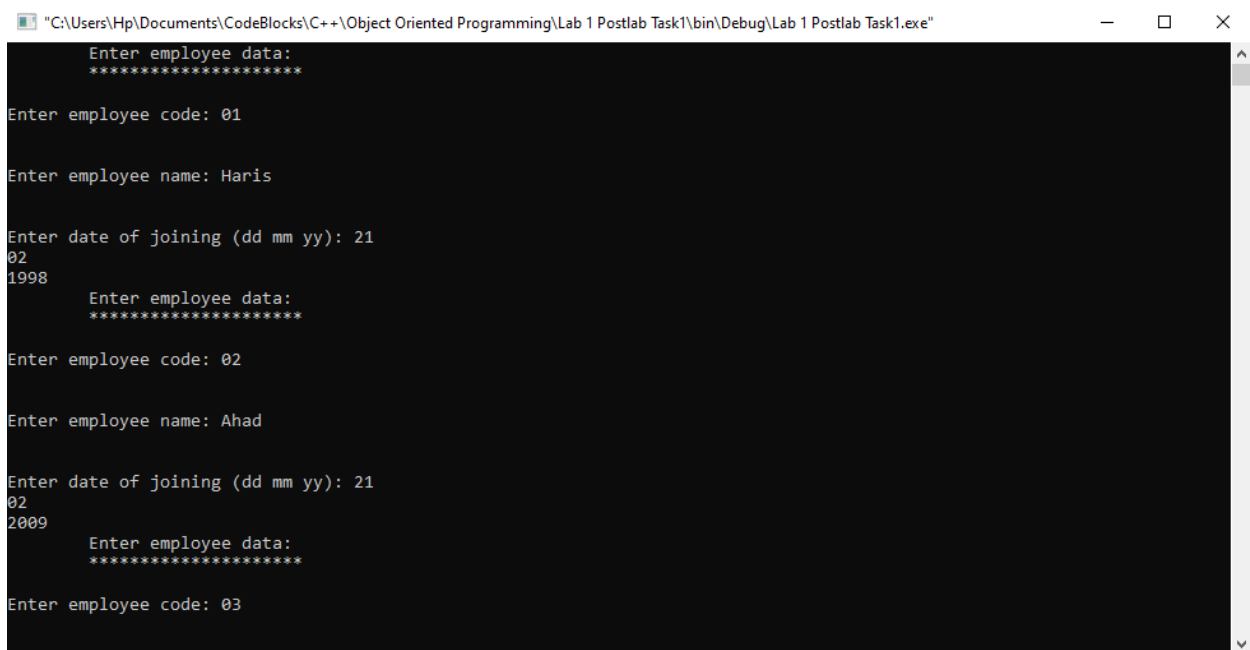
Solution:

I am attaching my code below,

```
#include <iostream>
using namespace std;

int main()
{
    struct emp
    {
        int code;
        char name[20];
        int dd,mm,yy;
    } e[3];
    int d,m,y,i;
    for(i=0;i<3;i++)
    {
        cout<<"\tEnter employee data:\n";
        cout<<"\t*****\n";
        cout<<"\nEnter employee code: ";
        cin>>e[i].code;
        cout<<"\n\nEnter employee name: ";
        cin>>e[i].name;
        cout<<"\n\nEnter date of joining (dd mm yy): ";
        cin>>e[i].dd>>e[i].mm>>e[i].yy;
    }
    cout<<"\n\nEnter current date(dd mm yy): \n\n";
    cin>>d>>m>>y;
    cout<<"\n\n=====List of employee who provide more than 3 year : \n";
    for(i=0;i<3;i++)
    {
        if((y-(e[i].yy))>=3)
        {
            cout<<"\n\n"<<e[i].name<<"\n\n";
        }
    }
}
```


The result for this program is shown below,



```
"C:\Users\Hp\Documents\CodeBlocks\C++\Object Oriented Programming\Lab 1 Postlab Task1\bin\Debug\Lab 1 Postlab Task1.exe"

Enter employee data:
*****

Enter employee code: 01

Enter employee name: Haris

Enter date of joining (dd mm yy): 21
02
1998

Enter employee data:
*****

Enter employee code: 02

Enter employee name: Ahad

Enter date of joining (dd mm yy): 21
02
2009

Enter employee data:
*****

Enter employee code: 03
```



```
"C:\Users\Hp\Documents\CodeBlocks\C++\Object Oriented Programming\Lab 1 Postlab Task1\bin\Debug\Lab 1 Postlab Task1.exe"

Enter employee code: 03

Enter employee name: Hassnain

Enter date of joining (dd mm yy): 21
02
2020

Enter current date(dd mm yy):
21
02
2020

=====List of employee who provide more than 3 year :

Haris

Ahad

Process returned 0 (0x0)   execution time : 44.524 s
Press any key to continue.
```

6.2 Question 2:

Write a function to sort data (in increasing order) in an array.

Solution:

I am attaching my code below,

```
#include <iostream>
#include <cstdlib>

using namespace std;

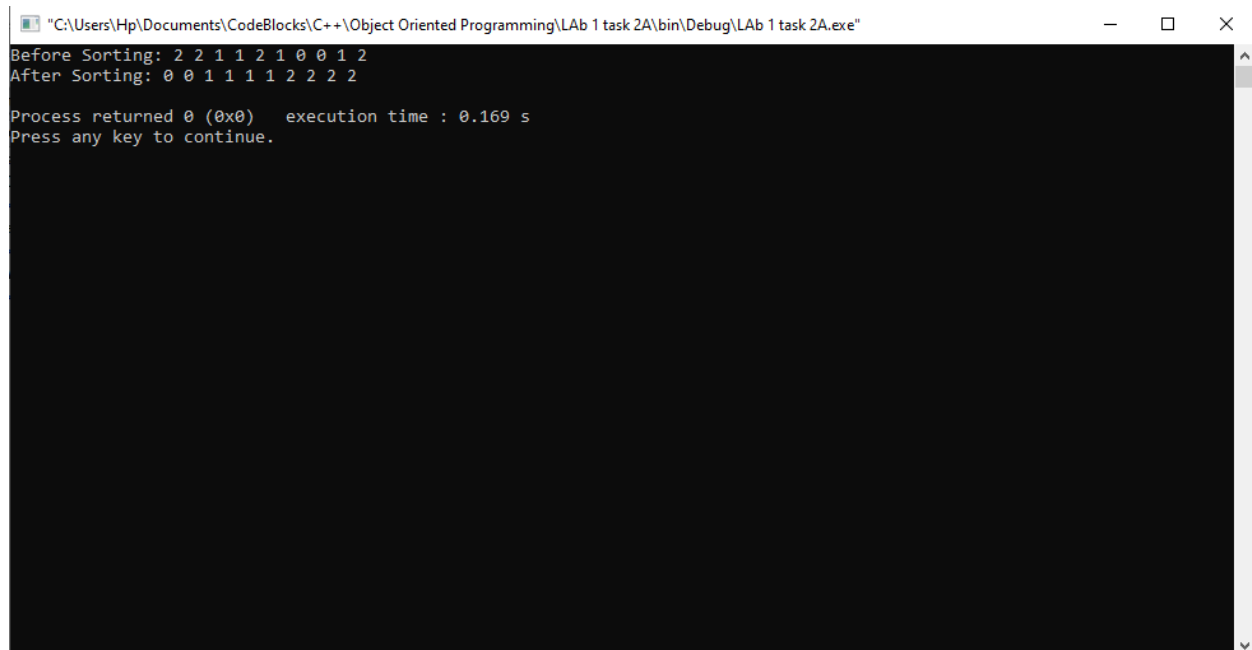
void value_sort(int *i)
{
    cout<<"Before Sorting: ";
    for(int l=0;l<10;l++)
        cout<< *(i+l)<<" ";
    cout<<endl;
    int temp;
    for (int c = 0; c < 10; c++)
    {
        int position = c;

        for (int d = c + 1; d < 10; d++)
        {
            if (*(i+position) > *(i+d))
                position = d;
        }
        if (position != c)
        {
            int swapl = *(i+c);
            *(i+c) = *(i+position);
            *(i+position) = swapl;
        }
    }
    cout<<"After Sorting: ";
    for(int l=0;l<10;l++)
        cout<<*(i+l)<<" ";
    cout<<endl;
}

int main()
{
    int arr[10];
    for(int l=0;l<10;l++)
        arr[l]=rand()%3;

    value_sort(arr);
}
```

The result for this program is shown below,



A screenshot of a Windows command prompt window titled "C:\Users\Hp\Documents\CodeBlocks\C++\Object Oriented Programming\Lab 1 task 2A\bin\Debug\Lab 1 task 2A.exe". The window displays the output of a C++ program. The first two lines are "Before Sorting: 2 2 1 1 2 1 0 0 1 2" and "After Sorting: 0 0 1 1 1 1 2 2 2 2". The third line shows "Process returned 0 (0x0) execution time : 0.169 s". The fourth line says "Press any key to continue." The rest of the window is black.

```
"C:\Users\Hp\Documents\CodeBlocks\C++\Object Oriented Programming\Lab 1 task 2A\bin\Debug\Lab 1 task 2A.exe"
Before Sorting: 2 2 1 1 2 1 0 0 1 2
After Sorting: 0 0 1 1 1 1 2 2 2 2

Process returned 0 (0x0)   execution time : 0.169 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 program that inputs a string value from the user and displays it in reverse using pointer.

Solution:

I am attaching my code below,

```
#include <iostream>
#include <cstring>
#include <string>
#include <cstdio>

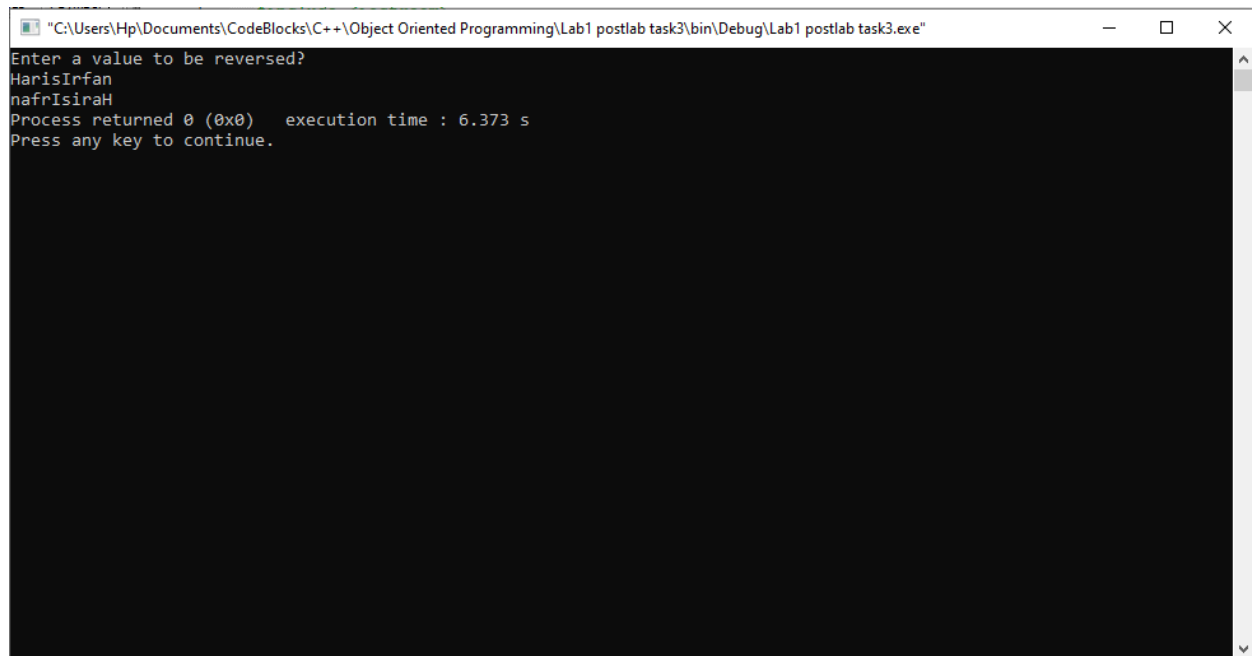
using namespace std;

int main()
{
    int n;
    char ali[100];

    cout<<"Enter a value to be reversed?\n";
    gets(ali);
    n=strlen(ali);

    for(int i=n-1;i>=0;i--)
        cout<<ali[i];
}
```

The result for this program is shown below,



```
"C:\Users\Hp\Documents\CodeBlocks\C++\Object Oriented Programming\Lab1 postlab task3\bin\Debug\Lab1 postlab task3.exe"
Enter a value to be reversed?
HarisIrfan
nafrIsirah
Process returned 0 (0x0)   execution time : 6.373 s
Press any key to continue.
```

_____THE END_____

=====