NAME: TAHA TANVIR

SAP ID: 70126633

SEC / SEMESTER:THIRD-(T)

ASSIGNMENT 1

SECTION A:

Q1: Consider the following code and display the output against each line?

```
int num, *numPtr;
num = 987;
        numPtr = &num;
        cout<<"The value in num is ,"<< num<<endl;
        cout<<"The address of  num is, "<<&num<<endl;
        cout<<"The value in numPtr is ,"<< numPtr<<endl;
        cout<<"The value in the address pointed by numPtr is ,"<<
*numPtr<<endl;
        cout<<"The address of numPtr is ,"<< &numPtr<<endl;
        cout<<"The value in the address of num is , "<<*&num<<endl;
        cout<<"The value in the address of numPtr is ,"<< *&numPtr<<endl;
```

OUTPUT:

```
The value in num is ,987
The address of  num is, 0x7afe1c
The value in numPtr is ,0x7afe1c
The value in the address pointed by numPtr is ,987
The address of numPtr is ,0x7afe10
The value in the address of num is , 987
The value in the address of numPtr is ,0x7afe1c

--------------------------------
Process exited after 0.03885 seconds with return value 0
Press any key to continue . . .
```

Q2: Given the following declaration. What is the value of each of the following expression?

```
int  a=5;
int b=7;
int *p = &a;
int *q = &b;
```

OUTPUT:

```
#include<iostream>
using namespace std;
int main()
{
    int  a=5;
    int b=7;
    int *p = &a;
    int *q = &b;
    cout<<"a="<<a<<endl;
    cout<<"b="<<b<<endl;
    cout<<"*p="<<p<<endl;
    cout<<"*q="<<q<<endl;
}
```

```
a=5
b=7
*p=0x7afe0c
*q=0x7afe08

--------------------------------
Process exited after 0.0347 seconds with return value 0
Press any key to continue . . .
```

Q3: Run the following programs and check their execution and output:

a) **Function Overloading:**

```
int cube(int a)
{
return a*a*a;
}
double cube(double a)
{ return a*a*a;
}
void main ()
{
cout<<"cube of integer value 5 is :"<<cube(5)<<endl;
cout<<"\n\ncube of float value 10.24 is :"<<cube(5.4)<<endl;
}
```

Output:

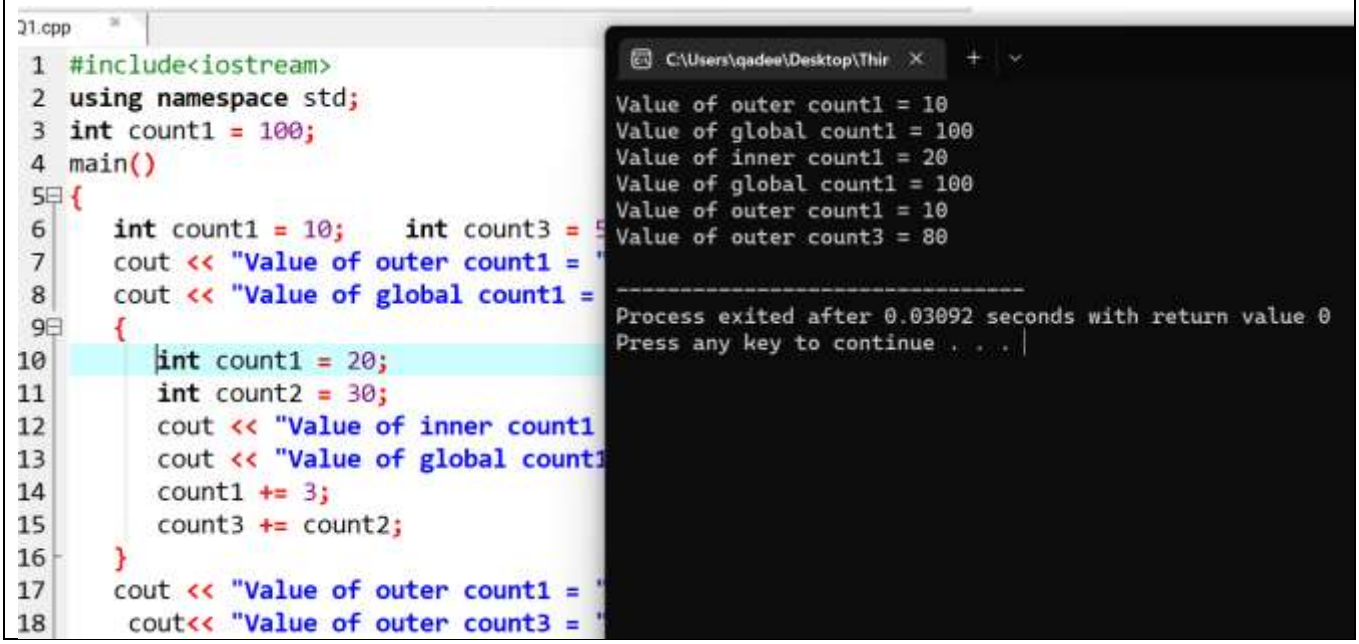
Void doesn't return any data type. To get actual execution answer **void main()** must be changed with **int main()** to run a program.

```
cube of integer value 5 is :125


cube of float value 10.24 is :157.464

--------------------------------
Process exited after 0.03384 seconds with return value 0
Press any key to continue . . .
```

b) **Local and Global scope of a variable:**

```
int count1 = 100;                    main()
{
  int count1 = 10;   int count3 = 50;   cout << "Value of
outer count1 = " << count1 << endl;
  cout << "Value of global count1 = " << ::count1 << endl;
  {                                  int
count1 = 20;
    int count2 = 30;      cout << "Value of inner count1 = " <<
count1 << endl;      cout << "Value of global count1 = " <<
::count1 << endl;      count1 += 3;
    count3 += count2;
  }
  cout << "Value of outer count1 = " << count1 << endl
       << "Value of outer count3 = " << count3 << endl;
}
```

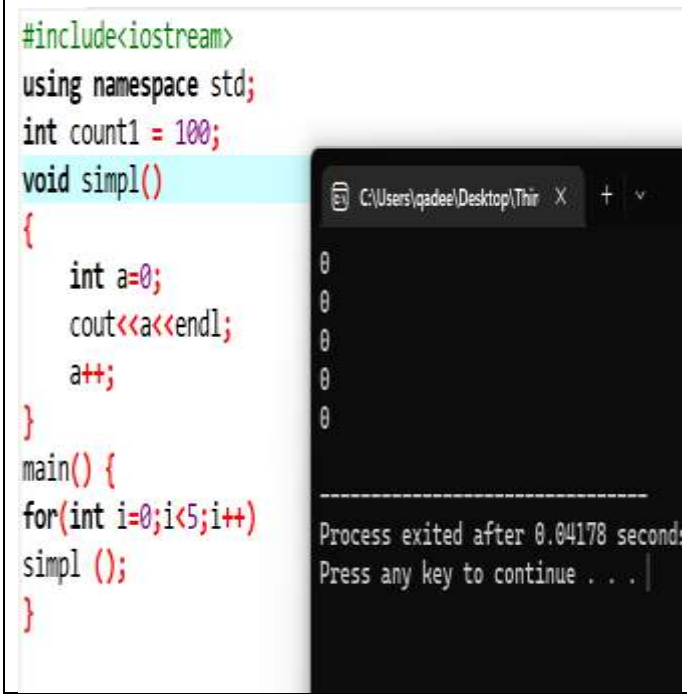
Output:



c) **Simple/Automatic Variable** **Static variable**

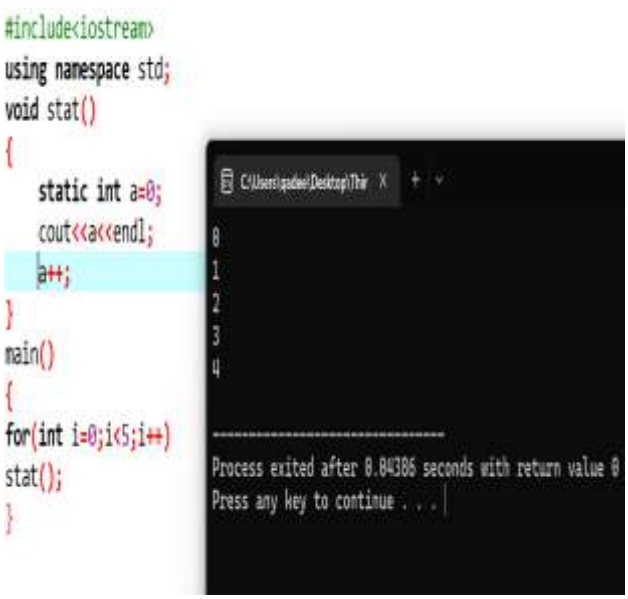
```
void simpl()
{
        int a=0;
        cout<<a<<endl;
        a++;
} main() {
for(int i=0;i<5;i++) simpl
();
}
```

Output:




```
void stat()
{
        static int a=0;
        cout<<a<<endl;
        a++;
} main()
{
for(int i=0;i<5;i++)
stat();
}
```

Output:



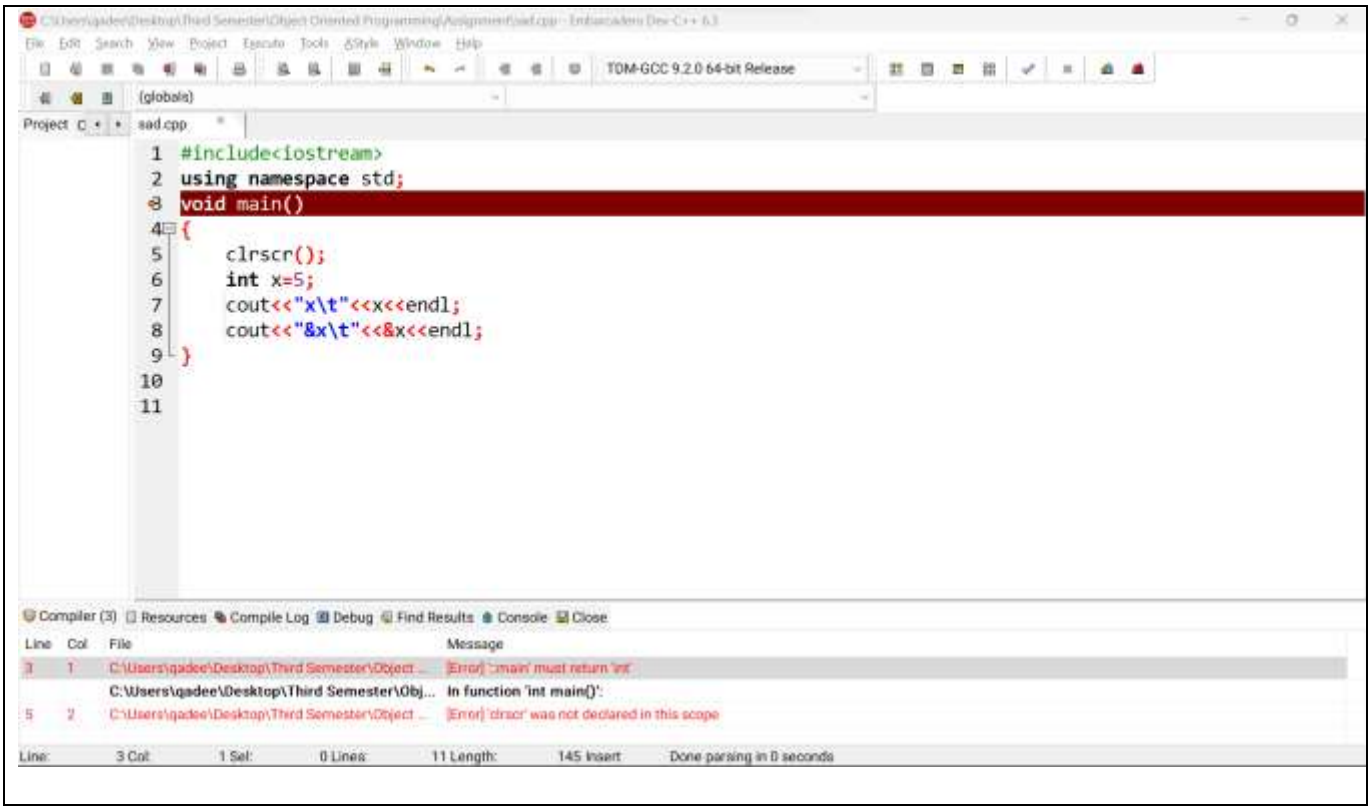
d) **Pass by value and reference:**

```
void main()
{ clrscr(); int
x=5;
        cout<<"x\t"<<x<<endl;
        cout<<"&x\t"<<&x<<endl;
}
```

Output:

clrscr(); was not declared in main() and void doesn't return any data type. To run code void must be changed to int.

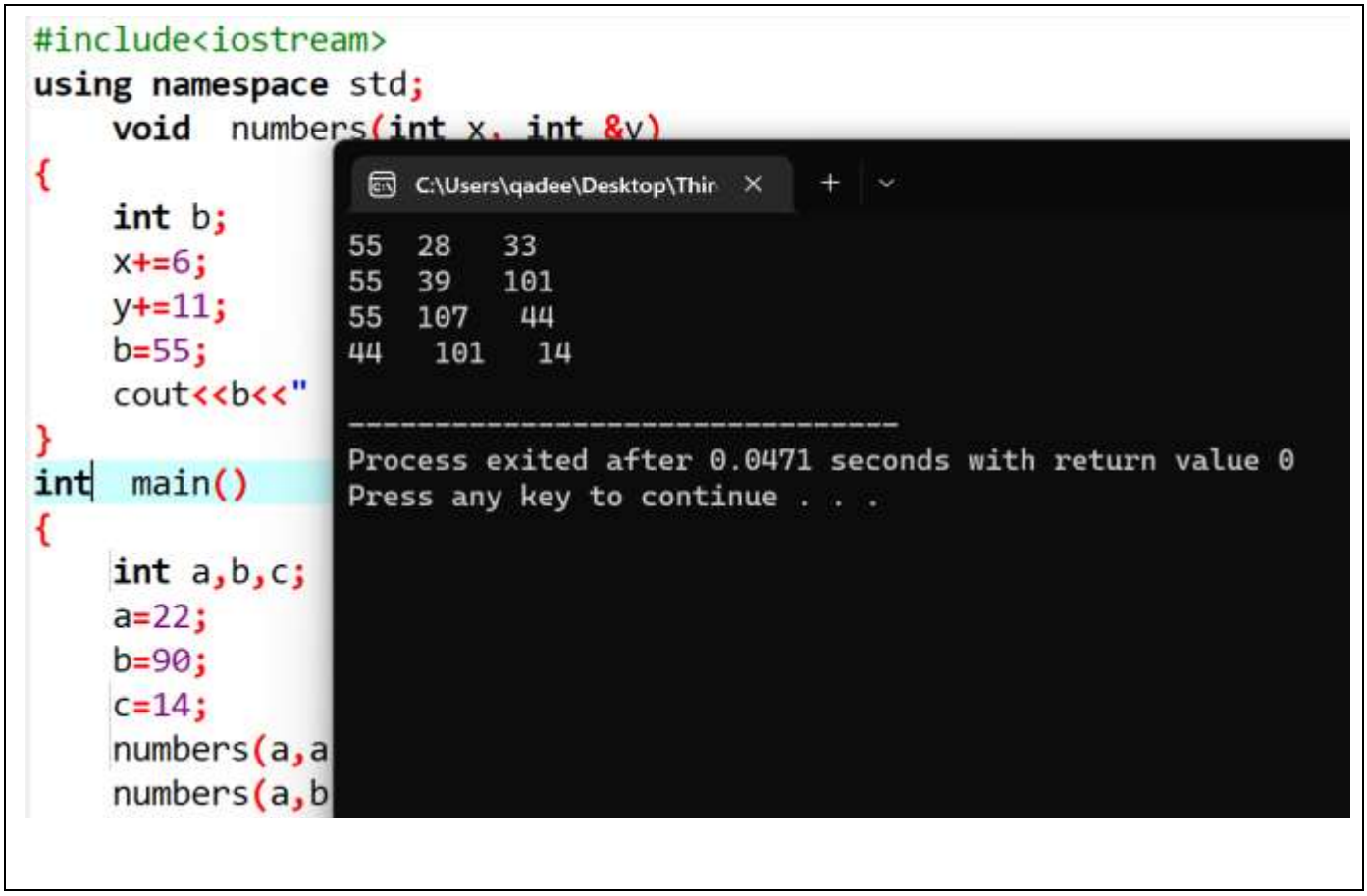
CS-02203-Object Oriented Programming: *ASSIGNMENT 1*




```
void  numbers(int x, int &y)

{
  int b;

        x+=6;

        y+=11;

        b=55;

        cout<<b<<"  "<<x<<"   "<<y<<endl;
  }
void  main()
{
        int a,b,c;
        a=22;    b=90;
        c=14;
        numbers(a,a);    numbers(a,b);
        numbers(b,a);    cout<<a<<"   "<<b<<"
  "<<c<<endl;
}
```

Output:

By changing void main() to int main() we get;



SECTION B:

Q3: Write a Class "Bank" that contains a parameterized constructor to initialize data members & contains the following additional member functions:
Deposit Function to deposit some amount. It should accept amount as a parameter.
Withdraw function to withdraw an amount. It should also accept amount as a parameter.
Display function to display name and balance amount after deposit and withdraw

Code:

```
#include<iostream>
using namespace std;
class bank{
        private:
        string name;
        int dep,with,bal;
        public:

        bank(string name="Unknown", int bal=0 )
        {
        cout<<"Customer Data:"<<endl;
        cout<<"Name of Customer: "<<name<<endl;
        cout<<"Account Balance:"<<bal<<endl;
        cout<<"------------------------------"<<endl;
        }
```

```
        void setdeposit(int dep){
                this->dep=dep;
        }

        void setwithdraw(int with){
                this->with=with;
        }

        void setdisplay(string name, int bal){
                bal=bal+dep;
                if(bal<with)
                {
                        cout<<"\nError occured!"<<endl;
                        cout<<"Transaction failed!"<<endl;
                }
                else if(bal>with)
                {
                        bal=bal-with;
                        cout<<"-------------------------------"<<endl;
                        cout<<"\nName:"<<name<<endl;
                        cout<<"Balance After Transaction:"<<bal<<endl;
                }
        }
};
int main()
{
        bank b1;
        int bal,dep,with;
        string name;
        cout<<"Enter name:"<<endl;
        cin>>name;
        cout<<"Enter balance:"<<endl;
        cin>>bal;
        cout<<"Enter deposit amount:"<<endl;
        cin>>dep;
        cout<<"Enter withdraw amount:"<<endl;
        cin>>with;
        b1.setdeposit(dep);
        b1.setwithdraw(with);
        b1.setdisplay(name, bal);
}
```

Output:

```
Customer Data:
Name of Customer: Unknown
Account Balance:0
------------------------------
Enter name:
Taha
Enter balance:
1000
Enter deposit amount:
200
Enter withdraw amount:
1100
------------------------------

Name:Taha
Balance After Transaction:100

------------------------------
Process exited after 14.69 seconds with return value 0
Press any key to continue . . .
```

Q4: Write a program to input date(day,month,year) by a member function and print the date(day,month,year) by writing the another member function.

Code:

```
#include<iostream>
using namespace std;
class cal{
        private:
        double day,year;
        string month;
        public:

        void setcalender(){
                cout<<"Instructions:"<<endl;
                cout<<"Enter date and year in number and month in characters:"<<endl;
                cout<<"-------------------------------"<<endl;
                cout<<"Enter day:"<<endl;
                cin>>day;
                if(day>0 && day<30)
                {
                cout<<"Enter month:"<<endl;
                cin>>month;
                cout<<"Enter year:"<<endl;
                cin>>year;
                cout<<"-------------------------------"<<endl;
                }
                else if(day<0 || day>30)
                {
                cout<<"-------------------------------"<<endl;
                cout<<"Digit out of range:"<<endl;
                cout<<"-------------------------------"<<endl;
                }
        }

        void setcale(){
                if(day>0 && day<30)
                {
                cout<<"Day:"<<day<<endl;
                cout<<"Month:"<<month<<endl;
                cout<<"Year:"<<year<<endl;
                cout<<"Overall Date:"<<endl;
                cout<<day<<"."<<month<<"."<<year<<endl;
                }
        }
};
int main()
{
        cal c1;
        c1.setcalender();
        c1.setcale();
}
```

Output:

```
Instructions:
Enter date and year in number and month in characters:
------------------------------
Input Date information:
Enter day:
14
Enter month:
August
Enter year:
2022
------------------------------
Day:14
Month:August
Year:2022
Date:
14.August.2022

--------------------------------
Process exited after 12.16 seconds with return value 0
Press any key to continue . . .
```