Course Name: A Level (2nd Sem) **Subject:** Data Struture using C++
Topic: Operator Overloading using Friend Function **Date:** 08-04-2020

Overload Binary Operator using Friend Function

If you define operator function as a **friend function** then it will accept **two arguments**. Because friend functions is not a member function so it is not invoked using object of the class. Thus we need to pass two objects as an argument explicitly.

Example1: To overload binary operator + using friend function.

```
#include <iostream.h>
class demo
{
int x,y;
public:
demo()
{
x=0;
y=0;
}
demo(int a, int b)
{
x=a;
y=b;
}
friend demo operator + (demo &d1, demo &d2)
{
demo d3;
d3.x = d1.x + d2.x;
d3.y = d1.y + d2.y;
return d3;
}
void display()
{
cout<<"X="<<x<<endl;
cout<<"Y="<<y<<endl;
}
};
int main()
{
demo d1(2,3);
demo d2(4,5);
demo d3;
d3 = operator + (d1,d2);
cout<<"Object C1\n";
d1.display();
cout<<"Object C2\n";
d2.display();
cout<<"Object C3\n";
d3.display();
```

```
return 0;
}
```

Output:

Object C1
X=2
Y=3
Object C2
X=4
Y=5
Object C3
X=6
Y=8

Example2 : Write a C++ program to add two complex numbers using operator overloaded by a friend function.

```
#include<iostream>
using namespace std;
class Complex
{
      int num1, num2;
   public:
      void accept()
      {
            cout<<"\n Enter Two Complex Numbers : ";
            cin>>num1>>num2;
      }

      //Overloading '+' operator using Friend function
      friend Complex operator+(Complex c1, Complex c2);

      void display()
      {
            cout<<num1<<"+"<<num2<<"i"<<"\n";
      }
};
Complex operator+(Complex c1, Complex c2)
{
      Complex c;
      c.num1=c1.num1+c2.num1;
      c.num2=c1.num2+c2.num2;
      return(c);
}
int main()
{
      Complex c1,c2, sum;      //Created Object of Class Complex i.e c1 and c2

      c1.accept();  //Accepting the values
      c2.accept();

      sum = c1+c2;   //Addition of object

      cout<<"\n Entered Values : \n";
      cout<<"\t";
      c1.display();    //Displaying user input values
```

```
        cout<<"\t";
        c2.display();

        cout<<"\n Addition of Real and Imaginary Numbers : \n";
        cout<<"\t";
        sum.display();  //Displaying the addition of real and imaginary numbers

        return 0;
    }
```

Output:

```
Enter Two Complex Numbers : 5 6

Enter Two Complex Numbers : 7 8

Entered Values :
       5+6i
       7+8i

Addition of Real and Imaginary Numbers :
       12+14i
```