

## Module-6 Operator-Overloading

Q7: Create class Time that has three data members hour, minute and second and two constructor, default constructor and parameterized constructor to initialize data member. Write a program to add two times by overloading operator '+'.  
Ans:

```
#include<iostream.h>
#include<conio.h>
class time
{
    int hour,minute,second;
public:
    time()
    {
        hour = 0;
        minute = 0;
        second = 0;
    }
    time(int h,int m,int s)
    {
        hour = h;
        minute = m;
        second = s;
    }
    void show()
    {
        cout<<"\n-- Total Time --";
        cout<<endl<<"Hours   : "<<hour<<endl<<"Minutes  : "
        <<minute<<endl<<"Seconds : "<<second;
    }
    time operator +(time tt)
    {
        time t;
        t.hour=tt.hour+hour;
        t.minute=tt.minute+minute;
        t.second=tt.second+second;
        while(t.second>60)
        {
            t.second-=60;
            t.minute++;
        }
        while(t.minute>60)
        {
            t.minute-=60;
```

```

        t.hour++;
    }
    return t;
}
};
void main()
{
    clrscr();
    int h,m,s;
    cout<<"Addition of two Timestamps by overloading + operator.";
    cout<<"\n-- Enter Time1 --\n\nHours   : ";
    cin>>h;
    cout<<"Minutes : ";
    cin>>m;
    cout<<"Seconds : ";
    cin>>s;
    time t1(h,m,s);
    cout<<"\n-- Enter Time2 --\n\nHours   : ";
    cin>>h;
    cout<<"Minutes : ";
    cin>>m;
    cout<<"Seconds : ";
    cin>>s;
    time t2(h,m,s),t3;
    t3=t1+t2;
    t3.show();
    getch();
}

```

Q9: Define a class complex with real and imaginary as two data member, add necessary constructors and member function to initialize and display data of class. Class should overload the + operator to add two complex objects and return the results. Invoke the statements like C3=C1+C2 in main ()

Or

Q11: Define a class complex with real and imaginary as two data member with default & parameterized constructors, function to initialize and display data of class. It should overload the + operator to add two complex objects. Write a complete C++ program to demonstrate use of complex class.[ **Note→ Q9&11 are all most same**]

Ans:

```

#include<iostream>
using namespace std;
class complex
{
    int img,real;
public:

```

```

complex(){}
complex(int x,int y)
{
img=y;
real=x;
}
void display()
{
cout<<"\n"<<real<<" + "<<img<<"i ";
}
complex operator +(complex p)
{
    complex temp;
    temp.real=real+p.real;
    temp.img=img+p.img;
    return temp;
}
};
int main()
{
complex c1(4,5),c2(6,4),c3;
c1.display();
c2.display();
c3=c1+c2;
cout<<"\n\nAfter addition of 2 objects :";
c3.display();
return 0;
}

```

Q10 - Write a C++ program that overloads + operator to add two complex numbers.

```

#include <iostream>
#include <sstream>
#include <cmath>
using namespace std;
class Complex {
private:
    int real, imag;
public:
    Complex(){
        real = imag = 0;
    }
    Complex (int r, int i){
        real = r;
        imag = i;
    }
    string to_string(){
        stringstream ss;

```

```

        if(imag >= 0)
            ss << "(" << real << " + " << imag << "i)";
        else
            ss << "(" << real << " - " << abs(imag) << "i)";
        return ss.str();
    }
    Complex operator+(Complex c2){
        Complex ret;
        ret.real = real + c2.real;
        ret.imag = imag + c2.imag;
        return ret;
    }
};
int main(){
    Complex c1(8,-5), c2(2,3);
    Complex res = c1 + c2;
    cout << res.to_string();
}

```

Q16: Define a circle class with radius as data member, necessary constructors and member function to compute area of circle. Class should overload the == operator to compare two circle objects whether they are equal in radius. Demonstrate its use in main().

```

#include<iostream>
using namespace std;
class circle
{
    float r;
    float area;
public:
    circle()
    {
        r=0;
    }
    circle(float a)
    {
        r=a;
    }

    void compute()
    {
        area=3.14*r*r;
    }
}

```

```

void show()
{
    cout<<"Area : "<<area<<endl;
}
int operator ==(circle c1)
{
    if(area==c1.area)
        return 1;
    else
        return 0;
}
};
int main()
{
    float r;
    cout<<"\nEnter Radius r : ";
    cin>>r;
    circle c1(r);
    c1.compute();
    c1.show();
    cout<<"\nEnter Radius r : ";
    cin>>r;
    circle c2(r);
    c2.compute();
    c2.show();
    if(c1 == c2)
    {
        cout<<"\nArea of circle are same.\n";
    }
    else
    {
        cout<<"\n    Area of circle are not same.\n";
    }
    return 0;
}

```

Q12:Write a C++ program to overload the + operator to concatenate two strings

Ans

```

#include<iostream>

#include<cstring>
using namespace std;
class str
{
    char a[30];
public:

```

```

int getdata()
{
    cout<<"Enter string:";
    gets(a);
}
str operator +(str x)
{
    str temp;
    strcat(a,x.a);
    strcpy(temp.a,a);
    return temp;
}
void display()
{
    cout<<"Aftetr Convatenation we get\n"<<a;
}
};
int main()
{
    str s1,s2,s3;
    s1.getdata();
    s2.getdata();
    s3=s1+s2;
    s3.display();
    return 0;
}

```