

*“Heaven’s Light is Our Guide”*



**Department of Computer Science & Engineering**  
**RAJSHAHI UNIVERSITY OF ENGINEERING & TECHNOLOGY**

**Lab Report-06**

**Submitted By:**

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**Course code: CSE 1204**

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**Task-01: Make a program with the class “Complex” to make operations on complex numbers and overload operators...**

Solution:

```
#include<iostream>
```

```
using namespace std;
```

```
class Complex{
```

```
    float real;
```

```
    float imaginary;
```

```
public:
```

```
    void setvalue(float r,float i){
```

```
        real=r;
```

```
        imaginary=i;
```

```
    }
```

```
    Complex operator+(Complex x){
```

```
        Complex temp;
```

```
        temp.real=real+x.real;
```

```
        temp.imaginary=imaginary+x.imaginary;
```

```
        return temp;
```

```
    }
```

```
    Complex operator-(Complex x){
```

```
        Complex temp;
```

```
        temp.real=real-x.real;
```

```
        temp.imaginary=imaginary-x.imaginary;
```

```

return temp;
}
Complex operator*(Complex x){
Complex temp;
temp.real=real*(x.real)-(imaginary)*(x.imaginary);
temp.imaginary=(real)*(x.imaginary)+(imaginary)*(x.real);
return temp;
}
Complex operator/(Complex x){
Complex temp;
float g=(x.real)*(x.real)+(x.imaginary)*(x.imaginary);
temp.real=(real*(x.real)+(imaginary)*(x.imaginary))/g;
temp.imaginary=((x.real)*(imaginary)-(x.imaginary)*(real))/g;
return temp;
}
void print(){
cout<<real<<" + i"<<imaginary<<endl;
}
Complex operator+(float x){
Complex temp;
temp.real=real+x;
temp.imaginary=imaginary;
return temp;
}
Complex operator*(float x){

```

```
Complex temp;  
temp.real=real*x;  
temp.imaginary=imaginary*x;  
return temp;  
}
```

```
Complex operator/(float x){  
Complex temp;  
temp.real=real/x;  
temp.imaginary=imaginary/x;  
return temp;  
}
```

```
///postfix increment
```

```
Complex operator++(int){  
Complex temp=*this;  
real++;  
return temp;  
}
```

```
///prefix increment
```

```
void operator++(){  
real++;  
}
```

```
///postfix decrement
```

```
Complex operator--(int){  
Complex temp=*this;
```

```
real--;  
return temp;  
}  
///  
//prefix decrement  
void operator--(){  
    real--;  
}
```

```
friend Complex operator+(float x,Complex y);  
friend Complex operator-(float x,Complex y);  
friend Complex operator*(float x,Complex y);  
friend Complex operator/(float x,Complex y);
```

```
friend istream& operator>>(istream &in,Complex &a);  
friend ostream& operator<<(ostream &ou,Complex &b);
```

```
};
```

```
Complex operator+(float x,Complex y){  
    Complex temp;  
    temp.real=y.real+x;  
    temp.imaginary=y.imaginary;  
    return temp;  
}
```

```
Complex operator-(float x,Complex y){  
    Complex temp;  
    temp.real=y.real-x;  
    temp.imaginary=y.imaginary;  
    return temp;  
}
```

```
Complex operator*(float x,Complex y){  
    Complex temp;  
    temp.real=(y.real)*x;  
    temp.imaginary=-(y.imaginary)*x;  
    return temp;  
}
```

```
Complex operator/(float x,Complex y){  
    Complex temp;  
    float g=(y.real)*(y.real)+(y.imaginary)*(y.imaginary);  
    temp.real=(y.real)*x/g;  
    temp.imaginary=-(y.imaginary)*x/g;  
    return temp;  
}
```

```
istream& operator>>(istream &in,Complex &a){
    cout<<"Enter the real part: ";
    in>>a.real;
    cout<<"Enter the complex part: ";
    in>>a.imaginary;
    return in;
}
```

```
ostream& operator<<(ostream &ou,Complex &b){
    ou<<b.real<<" + i( "<<b.imaginary<<" ) "<<endl;
    return ou;
}
```

```
int main(){
```

```
    Complex a,b,c;
```

```
    cin>>a>>b;
```

```
    cout<<a<<endl<<b<<endl;
```

```
    c=a+b;
```

```
    cout<<"sum= "<<c<<endl;
```

```
    c=a-b;
```

```
    cout<<"subtraction= "<<c<<endl;
```

```
    c=a*b;
```

```
    cout<<"multiplication= "<<c<<endl;
```

```
c=a/b;
cout<<"division= "<<c<<endl;
cout<<"a= "<<a<<endl;
++a;
cout<<"prefix increment of a: "<<a<<endl;
cout<<"a= "<<a<<endl;
--a;
cout<<"prefix decrement of a: "<<a<<endl;
cout<<"a= "<<a<<endl;
a++;
cout<<"postfix increment of a: "<<a<<endl;
cout<<"a= "<<a<<endl;
a--;
cout<<"postfix decrement of a: "<<a<<endl;
cout<<"a= "<<a<<endl;
c=4+a;
cout<<"4+a = "<<c<<endl;
cout<<"a= "<<a<<endl;
c=4-a;
cout<<"4-a = "<<c<<endl;
cout<<"a= "<<a<<endl;
c=4*a;
cout<<"4*a = "<<c<<endl;
cout<<"a= "<<a<<endl;
c=4/a;
```



```
cout<<"4/a = "<<c<<endl;
```

```
}
```

## OUTPUT:



The screenshot shows a Windows command prompt window titled "Select 'D:\ruet\RUET academics\semester 1-2\all courses 20\CSE 1204\practice\lab\_06\_01.exe'". The output of the program is as follows:

```
Enter the real part: 4
Enter the complex part: 5
Enter the real part: 6
Enter the complex part: 7
4 + i( 5 )
6 + i( 7 )
sum= 10 + i( 12 )
subtractioc= -2 + i( -2 )
multiplication= -11 + i( 58 )
division= 0.694118 + i( 0.0235294 )
a= 4 + i( 5 )
prefix increment of a: 5 + i( 5 )
a= 5 + i( 5 )
prefix decrement of a: 4 + i( 5 )
a= 4 + i( 5 )
postfix increment of a: 5 + i( 5 )
a= 5 + i( 5 )
```

Select "D:\ruet\RUET academics\semester 1-2\all courses 20\CSE 1204\practice\lab\_06\_01.exe"

```
prefix increment of a: 5 + i( 5 )
a= 5 + i( 5 )
prefix decrement of a: 4 + i( 5 )
a= 4 + i( 5 )
postfix increment of a: 5 + i( 5 )
a= 5 + i( 5 )
postfix decrement of a: 4 + i( 5 )
a= 4 + i( 5 )
4+a = 8 + i( 5 )
a= 4 + i( 5 )
4-a = 0 + i( 5 )
a= 4 + i( 5 )
4*a = 16 + i( -20 )
a= 4 + i( 5 )
4/a = 0.390244 + i( -0.487805 )
```

Select "D:\ruet\RUET academics\semester 1-2\all courses 20\CSE 1204\practice\lab\_06\_01.exe"

```
a= 4 + i( 5 )
postfix increment of a: 5 + i( 5 )
a= 5 + i( 5 )
postfix decrement of a: 4 + i( 5 )
a= 4 + i( 5 )
4+a = 8 + i( 5 )
a= 4 + i( 5 )
4-a = 0 + i( 5 )
a= 4 + i( 5 )
4*a = 16 + i( -20 )
a= 4 + i( 5 )
4/a = 0.390244 + i( -0.487805 )
```

Process returned 0 (0x0) execution time : 1.779 s  
Press any key to continue.