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| **Assignment Title:** | Implement a class Complex which represents the Complex Number data type. Implement the following<br>1. Constructor (including a default constructor which creates the complex number 0+0i).<br>2. Overloaded operator+ to add two complex numbers.<br>3. Overloaded operator* to multiply two complex numbers.4. Overloaded << and >> to print and read Complex Numbers. |
| **Assignment No.:** | 01 |
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| **Year & DIV.:** | SE A |
| **Batch:** | C |
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## Program Code:

```
#include<iostream>
#include<iomanip>

using namespace std;

class complex
{
      public:
            float real,img;
            complex()
            {
            real=0;
            img=0;
            }

            complex operator +(complex);
            complex operator *(complex);
            friend ostream &operator <<(ostream &,complex &);
            friend istream &operator >>(istream &,complex &);
};
```

```
istream &operator >>(istream &is,complex &obj)
{
      is>>obj.real;
      is>>obj.img;
      return is;
}

ostream &operator <<(ostream &out,complex &obj)
{
      out<<" "<<obj.real;
      out<<"+"<<obj.img<<"i";
      return out;
}

complex complex::operator+(complex obj)
{
      complex temp;
      temp.real=real+obj.real;
      temp.img=img+obj.img;
      return temp;
}

complex complex::operator*(complex obj)
{
      complex temp;
      temp.real=real*obj.real-img*obj.img;
      temp.img=img*obj.real+real*obj.img;
      return temp;
}


int main()
{
      complex a,b,c,d;
      int ch;
      cout<<"\n The first complex number is:";
      cout<<"\nEnter real and img:";
      cin>>a;

      cout<<"\n The second complex number is:";
      cout<<"\nEnter real and img:";
      cin>>b;

      do
      {

      cout<<"Enter Your Choice\n1.Adition\n2.Multiplication\n3.Exit\n";
      cin>>ch;
      switch(ch)
      {
      case 1:
```

```
      c=a+b;
      cout<<"\n Addition=";
      cout<<c<<endl;
      break;

      case 2:
      d=a*b;
      cout<<"\n Multiplication=";
      cout<<d<<endl;
      break;
      }
      }
      while(ch!=3);

      return 0;
}
```

## Program Output:

The first complex number is:
Enter real and img:10 5
The second complex number is:
Enter real and img:20 8
Enter Your Choice
1.Adition
2.Multiplication
3.Exit
1
Addition= 30+13i
Enter Your Choice
1.Adition
2.Multiplication
3.Exit
2
Multiplication= 160+180i
Enter Your Choice
1.Adition
2.Multiplication
3.Exit
3