```
/*
Implement a class Complex which represents the Complex Number data type. Implement
the following operations:
1. A constructor (including a default constructor which creates the complex number
0+0i).
2. Overloaded operator+ to add two complex numbers.
3. Overloaded operator* to multiply two complex numbers.
4. Overloaded << and >> to print and read Complex Numbers. To do this, you will
need to decide    what you want your input and output format to look like.
*/
#include<iostream>    //including header file
using namespace std;            //define scope
class complex
{
  private: int r,i;
           char ch;            //declaring variables
  public: complex()                    //default constructor
          {
            r=0;
            i=0;
          }
         friend istream &operator >> (istream & in, complex & s)  //overloaded
operator for accepting variable
          {
              /*cout<<"Enter the real part of equation: ";
              in>>s.r;
              cout<<"\nEnter the imaginary part of equation: ";
              in>>s.i;*/
              cout<<"\nEnter the equation: ";
              in>>s.r>>s.i>>s.ch;
                if(s.ch!='i')
                 {
                   cout<<"\nInvalid !!!";
                   cout<<"\nEnter again: ";
                   in>>s.r>>s.i>>s.ch;
                 }
          }
         friend ostream &operator << (ostream & out,complex &s)  //overloade
operator for displaying variables
           {
             out<<"Entered Equation is:"<<s.r<<"+"<<s.i<<"i"<<endl;
           }
         complex operator+(complex k)           //overloaded operator for addition
of complex number
          {
             complex temp;
              temp.r=r+k.r;
              temp.i=i+k.i;
              cout<<"Your answer is: "<<temp.r<<"+"<<temp.i<<"i"<<endl;
              return temp;
          }
         complex operator*(complex k)           //overloaded operator for
multiplication of complex number
           {
             complex temp;
             temp.r=(r*(k.r)-(i*(k.i)));
             temp.i=((r)*(k.i)+(i*k.r));
             cout<<"Your answer is:
"<<temp.r<<"+"<<temp.i<<"i"<<endl;
           }
};  //end of class
int main()
{  char op;
int op2;
  complex c1,c2,c3,c4;  //creating object of class
```

```
do{
       cout<<"\nEnter i/I to give data";
       cout<<"\nEnter a/A for addition of complex numbers";
       cout<<"\nEnter m/M for multiplication of complex numbers";
       cout<<"\nEnter n/N for new complex numbers";
       cin>>op;
          switch(op)
          {
             case 'i':{
                                cin>>c1;
                                cout<<c1;
                                cin>>c2;
                                cout<<c2;
                        }break;
             case 'I':{
                                cin>>c1;
                                cout<<c1;
                                cin>>c2;
                                cout<<c2;
                        }break;
             case 'a':{
                                c3=c1+c2;
                        }break;
             case 'A':    {
                                cin>>c1;
                                cout<<c1;
                                 cin>>c2;
                                 cout<<c2;
                                c3=c1+c2;
                           }break;
            case 'm':{
                                c4=c1*c2;
                             }break;
            case 'M':{
                                c4=c1*c2;
                           }break;
            case 'n':{
                                cin>>c1;
                                cout<<c1;
                                cin>>c2;
                                cout<<c2;
                            }break;
            case 'N':{
                                cin>>c1;
                                cout<<c1;
                                cin>>c2;
                                cout<<c2;
                      }break;
        }
        cout<<"\nPress 1 to continue";
        cin>>op2;
 }while(op2==1);
return 0;
}    //end of program



/*
OUTPUT:
dell@ghe1de-saurabh16-12-99:~/Desktop/oops_assignment$ g++ ass3oops.cpp
dell@ghe1de-saurabh16-12-99:~/Desktop/oops_assignment$ ./a.out

Enter i/I to give data
Enter a/A for addition of complex numbers
Enter m/M for multiplication of complex numbers
Enter n/N for new complex numbersi
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```
Enter the equation: 4+5i
Entered Equation is:4+5i

Enter the equation: 6+7i
Entered Equation is:6+7i

Press 1 to continue1

Enter i/I to give data
Enter a/A for addition of complex numbers
Enter m/M for multiplication of complex numbers
Enter n/N for new complex numbersa
Your answer is: 10+12i

Press 1 to continue1

Enter i/I to give data
Enter a/A for addition of complex numbers
Enter m/M for multiplication of complex numbers
Enter n/N for new complex numbersm
Your answer is: -11+58i

Press 1 to continue1

Enter i/I to give data
Enter a/A for addition of complex numbers
Enter m/M for multiplication of complex numbers
Enter n/N for new complex numbersn

Enter the equation: 9+8i
Entered Equation is:9+8i

Enter the equation: 10+12i
Entered Equation is:10+12i

Press 1 to continue1

Enter i/I to give data
Enter a/A for addition of complex numbers
Enter m/M for multiplication of complex numbers
Enter n/N for new complex numbersa
Your answer is: 19+20i

Press 1 to continue1

Enter i/I to give data
Enter a/A for addition of complex numbers
Enter m/M for multiplication of complex numbers
Enter n/N for new complex numbersm
Your answer is: -6+188i

Press 1 to continue0
*/
```