Aim: To write Program to declare a structure to declare a complex number .Write a function to add, subtract, multiply and divide two complew numbers.

Source Code:

```
#include<iostream.h>
#include<process.h>
#include<conio.h>
struct complex
{
      int x, y;
};
complex add(complex, complex);
complex add(complex a1, complex a2)
{
      complex a3;
      a3.x=a1.x+a2.x;
      a3.y=a1.y+a2.y;
      return(a3);
}
complex sub(complex, complex);
complex sub(complex a1, complex a2)
{
      complex a3;
      a3.x=a1.x-a2.x;
      a3.y=a1.y-a2.y;
      return(a3);
}
complex mul(complex, complex);
complex mul(complex a1, complex a2)
{
      complex a3;
      a3.x=((a1.x*a2.x)-(a1.y*a2.y));
      a3.y=((a1.x*a2.y)+(a2.x*a1.y));
      return(a3);
}
complex div(complex, complex);
complex div(complex a1, complex a2)
{
      complex a3;
      a3.x=((a1.x*a2.y)+(a1.y*a2.y))/((a2.x*a2.x)+(a2.y*a2.y));
      a3.y=((a2.x*a1.y)-(a1.x*a2.y))/((a2.x*a2.x)+(a2.y*a2.y));
      return(a3);
}
void main()
{
      clrscr();
      complex a1, a2;
      int choice;
      cout<<"Enter complex no 1\n";
```

```
        cout<<"Enter real part of complex number 1 :";
        cin>>a1.x;
        cout<<"Enter imaginary part of complex number 1:";
        cin>>a1.y;
        cout<<"Enter complex no 2\n";
        cout<<"Enter real part of complex number 2 : ";
        cin>>a2.x;
        cout<<"Enter imaginary part of complex 2 :";
        cin>>a2.y;
        cout<<"Action to be performed";
        cout<<"\n1.Add"
            <<"\n2.Subtract"
            <<"\n3.Multiply"
            <<"\n4.Divide"
            <<"\nEnter choice ";
        complex a3;
        cin>>choice;
        if(choice==1)
        {
              a3=add(a1,a2);
              cout<<"The result is "<<a3.x<<"+"<<a3.y<<"i";
        }
        else if(choice==2)
        {
              a3=sub(a1,a2);
              cout<<"The result is "<<a3.x<<"+"<<a3.y<<"i";
        }
        else if(choice==3)
        {
              a3=mul(a1,a2);
              cout<<"The result is "<<a3.x<<"+"<<a3.y<<"i";
        }
        else if(choice==4)
        {
              a3=div(a1,a2);
              cout<<"The result is "<<a3.x<<"+"<<a3.y<<"i";
        }
        else
              exit(0);
        getch();
}
```

Output: