/\* WAP in c++ to perform basic operations on the two **complex numbers** using **structures**. \*/

#include<iostream.h>

#include<math.h>

#include<conio.h>

struct complex {

int i,r;

}x,y;

void add(complex a, complex b)

{

cout<<"\n\n Resultant of addition of complex numbers = "<<a.r+b.r<<" + ("<<a.i+b.i<<")i ";

}

void subtract(complex a,complex b)

{int ch;

l:

cout<<"\n\n\t1. Subtract complex 2 from complex 1 : ";

cout<<"\n\n\t12.Subtract complex 1 from complex 2 : ";

cout<<"\n\n\tEnter your choice : "; cin>>ch;

switch(ch)

{

case 1 : cout<<"\n\nResultant of subtraction of complex number => "<<"("<<a.r-b.r<<")"<<" + ("<<a.i-b.i<<") i"; break;

case 2 : cout<<"\n\nResultant of subtraction of complex number => "<<"("<<b.r-a.r<<")"<<" + ("<<b.i-a.i<<") i"; break;

default : cout<<"\n\nPlease enter desired keyword. "; goto l;

}

}

void multiply(complex a, complex b)

{

cout<<"\n\nResultant of multiplication of complex number => "<<"("<<a.r\*b.r-a.i\*b.i<<")"<<" + ("<<a.r\*b.i+a.i\*b.r<<") i";

}

void divide(complex a,complex b)

{int ch;

l: cout<<"\n\n\t1. Divide complex 2 from complex 1 : ";

cout<<"\n\n\t2.Divide complex 1 from complex 2 : ";

cout<<"\n\n\tEnter your choice : "; cin>>ch;

switch(ch)

{

case 1 : cout<<"\n\nResultant of division of complex number => "<<((a.r\*b.r)+(a.i\*b.i))/(pow(b.r,2)+pow(b.i,2))

<<" + ("<<((a.i\*b.r)-(a.r\*b.i))/(pow(b.r,2)+pow(b.i,2))<<") i";

break;

case 2 : cout<<"\n\nResultant of division of complex number => "<<((b.r\*a.r)+(b.i\*a.i))/(pow(a.r,2)+pow(a.i,2))

<<" + ("<<((b.i\*a.r)-(b.r\*a.i))/(pow(a.r,2)+pow(a.i,2))<<") i";

break;

default : cout<<"\n\nPlease enter desired keyword. "; goto l;

}

}

void main()

{

clrscr();

int choice;

char ch;

cout<<"Complex number 1 : ";

cout<<"\n\n\tEnter the real part : "; cin>>x.r;

cout<<"\n\n\tEnter the imaginary part : "; cin>>x.i;

cout<<"\n\n";

cout<<"Coplex number 1 => "<<x.r<<"+("<<x.i<<")i";

cout<<"\n\n\n\nComplex number 2 : ";

cout<<"\n\n\tEnter the real part : "; cin>>y.r;

cout<<"\n\n\tEnter the imaginary part : "; cin>>y.i;

cout<<"\n\n";

cout<<"\n\nComplex number 2 => "<<y.r<<"+("<<y.i<<")i";

do

{cout<<"\n\n\nChoose from the folowing : ";

cout<<"\n\n1. Add two complex numbers ";

cout<<"\n\n2. Subtract two complex numbers ";

cout<<"\n\n3. Multiply two complex numbers ";

cout<<"\n\n4. Divide two complex numbers ";

cout<<"\n\nEnter your choice : "; cin>>choice;

switch(choice)

{

case 1:add(x,y); break;

case 2:subtract(x,y); break;

case 3:multiply(x,y); break;

case 4:divide(x,y); break;

}

cout<<"\n\nWant to Choose again => ";

cin>>ch;

}

while(ch=='y'||ch=='Y');

getch();

}

**Output:**

Complex number 1 :

Enter the real part : 2

Enter the imaginary part : 5

Complex number 1 => 2+(5)i

Complex number 2 :

Enter the real part : 1

Enter the imaginary part : 3

Complex number 2 => 1+(3)i

Choose from the folowing :

1. Add two complex numbers

2. Subtract two complex numbers

3. Multiply two complex numbers

4. Divide two complex numbers

Enter your choice : 1

Resultant of addition of complex numbers = 3 + (8)i

Want to Choose again => Y

Choose from the folowing :

1. Add two complex numbers

2. Subtract two complex numbers

3. Multiply two complex numbers

4. Divide two complex numbers

Enter your choice : 2

1. Subtract complex 2 from complex 1 :

2. Subtract complex 1 from complex 2 :

Enter your choice : 1

Resultant of subtraction of complex number => (1) + (2) i

Want to Choose again => Y

Choose from the folowing :

1. Add two complex numbers

2. Subtract two complex numbers

3. Multiply two complex numbers

4. Divide two complex numbers

Enter your choice : 3

Resultant of multiplication of complex number => (-13) + (11) i

Want to Choose again => y

Choose from the folowing :

1. Add two complex numbers

2. Subtract two complex numbers

3. Multiply two complex numbers

4. Divide two complex numbers

Enter your choice : 4

1. Divide complex 2 from complex 1 :

2. Divide complex 1 from complex 2 :

Enter your choice : 1

Resultant of division of complex number => 1.7 + (-0.1) i

Want to Choose again => N