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Friend Classes and Member Friend Function in C++

#### Member Friend Functions in C++

Friend functions are those function which has access to private members of the class in which they are declared. The main thing to note here is that only that function can access the member function which is made friend of the other class. An example of a friend function is shown below.

#include <iostream>

using namespace std;

class complex;  // forward declaration of class

class calculator

{

public:

    int realnumber(complex, complex);

    int complexpart(complex, complex);

};

class complex

{

    int a, b;

    friend int calculator ::realnumber(complex o1, complex o2);

    friend int calculator ::complexpart(complex o1, complex o2);

public:

    void getnum(int n1, int n2)

    {

        a = n1;

        b = n2;

    }

};

int calculator::realnumber(complex o1, complex o2)

{

    return (o1.a + o2.a);

}

int calculator ::complexpart(complex o1, complex o2)

{

    return (o1.b + o2.b);

}

int main()

{   complex c1,c2;

    c1.getnum(2,3);

    c2.getnum(3,2);

    calculator c;

    int res=c.realnumber(c1,c2);

    cout<<"The real part of given eqation is: "<<res<<endl;

    int res2=c.complexpart(c1,c2);

    cout<<"The complex part of given eqation is: "<<res2<<endl;

    return 0;

}

**Output:**

The real part of given eqation is: 5

The complex part of given eqation is: 5

#### Friend Classes in C++

Friend classes are those classes which have the permission to access private members of the class in which they are declared. The main thing to note here is that if the class is made friend of another class then it can access all the private members of that class. An example program to demonstrate friend classes in C++ is shown below.

#include <iostream>

using namespace std;

class complex;

class calculator

{

public:

    int realumber(complex, complex);

    int complexnumber(complex, complex);

};

class complex

{

    int a, b;

    friend class calculator; //declareing all class as friend

public:

    void getnum(int n1, int n2)

    {

        a = n1;

        b = n2;

    }

};

int calculator::realumber(complex o1, complex o2)

{

    return (o1.a + o2.a);

}

int calculator::complexnumber(complex o1, complex o2)

{

    return (o1.b + o2.b);

}

int main()

{

    complex c1, c2;

    c1.getnum(2, 3);

    c2.getnum(3, 2);

    calculator c;

    int res = c.realumber(c1, c2);

    cout<<"The real part of given eqation is: "<<res<<endl;

    int res2 = c.complexnumber(c1,c2);

    cout<<"The complex part of given eqation is: "<<res2<<endl;

        return 0;

}

**Output:**

The real part of given eqation is: 5

The complex part of given eqation is: 5