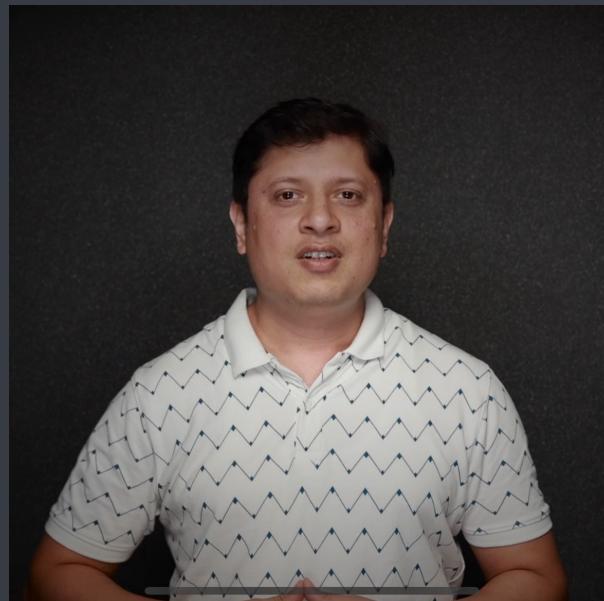


C, C++, DSA in depth

## Friend Function



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## Agenda

- ① Friend function
- ② Friend operator
- ③ Benefits of friend function
- ④ Overloading of << & >>

## Friend Function

- Friend function is not a member of a class to which it is a friend
- Function which is friend to a class can access any member of the class (private, protected or public)

## Making a function friend to a class

- Function needs to be declared with **friend** Keyword in the class to which we want to make it a friend.
- Friend function is defined outside the class without membership label , as it is not a member function
- Remember friend function can be a member to another class , so membership label is required while defining outside all the classes.

- You can declare friend function without bothering access specifier because it is not a member, so no impact of access specifier on it.
- A function which is a friend to some class can be
  - a non member function, or
  - a member of some class

- if friend function is an absolute non member function then you can invoke it like any other function

functionName( );

- if friend function is a member to same class , then you can invoke it using object of the class

ObjectName.functionName();

- ② Member function can access properties of current object directly, but friend function needs an object to access its properties or methods

- A function can be a member to zero or one class and friend to zero or many classes

```
class A  
{  
public:  
    void f1();
```

}

```
void A::f1()  
{
```

—  
—  
—

}

```
class B  
{
```

```
friend void A::f1();
```

}

## friend to multiple classes

class A1  
{

friend void f1();

};

class A2  
{

friend void f1();

};

class A3  
{

friend void f1();

};

void f1()

{

==

}

Defining friend operator

friend Complex operator + (Complex, Complex);

friend Complex operator - (Complex)

## Difference between defining operator as a member and a friend

Jab operator ko as a member banate ho , tab jitne arguments dete ho, usse exactly ex jyada argument pass karna padega agar friend banoge .

Kyunki jo kabhi caller object tha use bhi pass Karna padega

## Benefits of Friend

- Function can be a friend to multiple classes, which makes it possible to access private members of multiple classes in the same functionality.

- With the friend operator it is possible to overload a binary operator in which left operand is not an object.
- Various operators can only be defined using friend

# Defining << & >>

operator >> ( Item &i) ← not available in  
operator >> ( int &y)      'istream' class.

cin . operator >> ( ii);        
                istream      Item  
                                ↓      ↓

operator>> ( cin, ii)

cin>> ii;

int x;

cin>> x;

✓  
cin>> x>> y;