

OPERATOR OVERLOADING USING A FRIEND FUNCTION

You can overload an operator for a class by using a nonmember function, which is usually a friend of the class. Since a **friend** function is not a member of the class, it does not have a **this** pointer. Therefore, an overloaded friend operator function is passed the operands explicitly. This means that a friend function that overloads a binary operator has two parameters, and a friend function that overloads a unary operator has one parameter. When overloading a binary operator using a friend function, the left operand is passed in the first parameter and the right operand is passed in the second parameter.

In this program, the **operator+()** function is made into a friend:

```
#include <iostream>
using namespace std;
class loc {
int longitude, latitude;
public:
loc() {} // needed to construct temporaries
loc(int lg, int lt) {
longitude = lg;
latitude = lt;
}
void show() {
cout << longitude << " ";
cout << latitude << "\n";
}
friend loc operator+(loc op1, loc op2); // now a friend
loc operator-(loc op2);
loc operator=(loc op2);
loc operator++();
};
// Now, + is overloaded using friend function.
```

```

loc operator+(loc op1, loc op2)
{
loc temp;
temp.longitude = op1.longitude + op2.longitude;
temp.latitude = op1.latitude + op2.latitude;
return temp;
}
// Overload - for loc.
loc loc::operator-(loc op2)
{
loc temp;
// notice order of operands
temp.longitude = longitude - op2.longitude;
temp.latitude = latitude - op2.latitude;
return temp;
}
// Overload assignment for loc
loc loc::operator=(loc op2)
{
longitude = op2.longitude;
latitude = op2.latitude;
return *this; // i.e., return object that generated call
}
// Overload ++ for loc.
loc loc::operator++()
{
longitude++;
latitude++;
return *this;
}

```

```
int main()
{
loc ob1(10, 20), ob2( 5, 30);
ob1 = ob1 + ob2;
ob1.show();
return 0;
}
```

There are some restrictions that apply to friend operator functions. First, you may not overload the =, (), [], or -> operators by using a friend function. Second, as explained in the next section, when overloading the increment or decrement operators, you will need to use a reference parameter when using a friend function.

Source : <http://elearningatria.files.wordpress.com/2013/10/cse-iii-object-oriented-programming-with-c-10cs36-notes.pdf>