C++ Programming

Prefix and Postfix Operators

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++ operators

```
int a, b;

// ++a: prefix increment: increment then assign
a = 10;
b = ++a;
cout<<a<<" "<<b<<"\n";  // 11 11

a = 10;
cout<<++a<<"\n";    // 11

// a++: postfix increment: assign then increment
a = 10;
b = a++;
cout<<a<<" "<<b<<"\n";  // 11 10

a = 10;
cout<<a++<<"\n";    // 10

a = 10;
cout<<(a++)<<"\n";  // 10

a = 10;
cout<<a++ + ++a<<"\n";  // undefined
```

- ++ is another **unary** operator
  - **Prefix operator**: ++x
    - Pre = before
    - Increment x first, then assign its value to right side.
  - **Postfix operator**: x++
    - Post = after
    - Assign it first to the right side, then increment it
- Your turn:
  - int a = 5, b = 10;
  - cout<<a + 5 + b;
  - cout<<++a + 5 + b++;

++ operators

- What is problem?: g **+** ++g
- Don’t code like that. This is **undefined behaviour**
  - X + Y: No defined order if X evaluated first or Y.
- Tips
  - Don’t overuse this operator
  - Avoid it using it in complex expressions.
  - Expression use a variable more than once?
    - Don’t use ++ with this variable
  - The best use
    - ++x;
    - Int temp = x++;

-- operators

```
int a, b;

// --a: prefix decrement: decrement then assign
a = 10;
b = --a;
cout<<a<<" "<<b<<"\n";  // 9 9

a = 10;
cout<<--a<<"\n";    // 9

// a--: postfix decrement: assign then decrement
a = 10;
b = a--;
cout<<a<<" "<<b<<"\n";  // 9 10

a = 10;
cout<<a--<<"\n";    // 10

a = 10;
cout<<(a--)<<"\n";  // 10

a = 10;
cout<<a-- + --a<<"\n";  // undefined
```

- Same concepts as ++
  - Just decrementing

"Acquire knowledge and impart it to the people."

"Seek knowledge from the Cradle to the Grave."