Introduction to C++ Programming

Agenda

- Arithmetic Operators
- Assignment Operators
- Comparison Operators
- Logical Operators
- Precedence
- Problem Solving

Arithmetic Operators

Operator	Name	Description	Example
+	Addition	Adds together two values	x + y
-	Subtraction	Subtracts one value from another	x - y
*	Multiplication	Multiplies two values	x * y
/	Division	Divides one value by another	x / y
%	Modulus	Returns the division remainder	x % y
++	Increment	Increases the value of a variable by 1	++x
--	Decrement	Decreases the value of a variable by 1	--x

Assignment Operators

Operator	Example	Same As
=	x = 5	x = 5
+=	x += 3	x = x + 3
-=	x -= 3	x = x - 3
*=	x *= 3	x = x * 3
/=	x /= 3	x = x / 3
%=	x %= 3	x = x % 3

Comparison Operators

Operator	Name	Example
==	Equal to	x == y
!=	Not equal	x != y
>	Greater than	x > y
<	Less than	x < y
>=	Greater than or equal to	x >= y
<=	Less than or equal to	x <= y

Logical Operators

Operator	Name	Description	Example
&&	Logical and	Returns true if both statements are true	x < 5 && x < 10
||	Logical or	Returns true if one of the statements is true	x < 5 || x < 4
!	Logical not	Reverse the result, returns false if the result is true	!(x < 5 && x < 10)

Precedence

- ( ) - Parentheses
- *, /, % - Multiplication, Division, Modulus
- +, - - Addition, Subtraction
- >, <, >=, <= - Comparison
- ==, != - Equality
- && - Logical AND
- || - Logical OR
- = - Assignment

Problem solving:

1. Ask the user for two numbers and display their summation , subtraction, Multiplication, division and modulus.

2. store one number , display it's increment and decrement.

3. Ask the user to enter one number then apply the assignment operators and display the final value of this number

4. Ask the user to enter two numbers then apply the comparison operators on them

5. Ask the user for two numbers and display their logical and , or and not.

First program

```cpp
#include <iostream>
using namespace std;
int main() {
   int x , y ;
   cout << "please enter two numbers : ";
   cin >> x>>y;
   cout <<"summation of two numbers : " << (x + y) << endl ;
   cout <<"Subtraction of two numbers : " << (x - y) << endl ;
   cout <<"Multiplication of two numbers : " << (x * y) << endl ;
   cout <<"Division of two numbers : " << (x / y) << endl ;
   cout <<"Modulus of two numbers : " << (x % y) << endl ;
    return 0;
}
```

Second program

```
#include <iostream>
using namespace std;
int main() {
   int x = 5  ;
   ++x;
   cout <<"pre-increment : " << x << endl ;
   x++;
   cout <<"post-increment : " << x << endl ;
   --x;
   cout <<"pre-decrement :  " << x << endl ;
   x--;
   cout <<"post-decrement: " << x << endl ;
    return 0;
}
```

Third program

```cpp
#include <iostream>
using namespace std;
int main() {
  int x ;
  cout << "please enter one number :  " ;
  cin >> x ;
   x += 5;
    x -= 3;
    x *= 2;
    x /= 4;
    x %= 4;
   cout << "Final value of x: " << x;
   return 0 ;
}
```

Fourth program

```cpp
#include <iostream>
using namespace std;
int main() {
    int a, b ;
    cout<< "please enter two numbers : " ;
    cin>> a >> b ;
    cout << (a == b) << endl;
    cout << (a != b) << endl;
    cout << (a > b) << endl;
    cout << (a < b) << endl;
    cout << (a >= b) << endl;
    cout << (a <= b) << endl;
    return 0 ;
}
```

Fifth example

```cpp
#include <iostream>
using namespace std;
int main() {
int x , y;
cout << "please enter two numbers : " ;
cin >> x >> y;
cout << (x > 0 && y > 0) << endl;
cout << (x > 0 || y > 0) << endl;
cout << !(x > 0) << endl;
return 0;
}
```