NOI 2020 C++ Basics Course Content

Note 8

Operators

Operators are used to do different types of operations on values.
Eg: addition, multiplication, larger than, less than,etc..

There are 4 types of operators

- Arithmetic operations - to do mathematical operations

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 from 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 operations - to assign values to variables

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
&=	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)

- Operator precedence
  Operator precedence is the order of execution of operators when two or more operators are present. The operator with higher precedence will be executed first. It is the same as doing multiplication before addition in maths. Following table contains the operators according to their precedence. The operators at to has higher precedence.

Category	**Operator**	**Associativity**
Postfix	() [] -> . ++ - -	Left to right
Unary	+ - ! ~ ++ - - (type)* & sizeof	Right to left
Multiplicative	* / %	Left to right
Additive	+ -	Left to right
Shift	<< >>	Left to right
Relational	< <= > >=	Left to right
Equality	== !=	Left to right
Bitwise AND	&	Left to right
Bitwise XOR	^	Left to right
Bitwise OR	|	Left to right
Logical AND	&&	Left to right
Logical OR	||	Left to right
Conditional	?:	Right to left
Assignment	= += -= *= /= %=>>= <<= &= ^= |=	Right to left
Comma	,	Left to right

Extra resources:

- Operators

  Video:
  - https://www.youtube.com/watch?v=NIDMcjyIGwE
  - https://www.youtube.com/watch?v=oxVmwnFrkR
  - W
  - https://www.youtube.com/watch?v=VOz1O8vXCHU
  - https://www.youtube.com/watch?v=EV3f387kYGE
  - https://www.youtube.com/watch?v=Y3ycQVx8TdE
  - https://www.youtube.com/watch?v=qShbH8hyfwg
  - https://www.youtube.com/watch?v=THiWb_5N73g

  Reading:
  - https://www.tutorialspoint.com/cplusplus/cpp_operators.htm
  - https://www.geeksforgeeks.org/operators-c-c/