

## Tutorial 2: Working with Operators and Expressions

### Logical Operators

*Logical operators* compare Boolean expressions and return a Boolean result (Boolean is either true or false). Logical operators are mainly used to control program flow. Usually, you will find them as part of an If...Then...Else, loop, or some other control statement. The concept of logical operators is simple. They allow a program to make a decision based on multiple conditions. The use of parentheses with logical operators improves readability; however, they can be omitted sometimes.

Here are the *logical operators*.

Logical Operators		
Operator Name	Operator	Description
And	&&	Returns true if both the left operand and right operand return a value of true; otherwise, it returns a value of false
Or		Returns true if either the left operand or right operand returns a value of true; if neither operand returns a value of true the expression containing the Or operator returns a value of false
Not	!	Returns true if an expression is false and returns false if an expression is true

Here are the *logical operator matrices*.

And Operator Matrix			
Condition 1	Operator	Condition 2	Result
True	&&	True	True
True	&&	False	False
False	&&	True	False
False	&&	False	False

Or Operator Matrix			
Condition 1	Operator	Condition 2	Result
True		True	True
True		False	True
False		True	True
False		False	False

Not Operator Matrix		
Operator	Value	Result
!	True	False
!	False	True

Here are some *logical operator* examples.

<b>Example 1</b>	<b>Example 2</b>	<b>Example 3</b>
If (5 > 3) <b>&amp;&amp;</b> (5 < 4) Then <i>statements a...</i> Else <i>statements b...</i> End If	If (5 > 3) <b>  </b> (5 < 4) Then <i>statements a...</i> Else <i>statements b...</i> End If	If <b>!</b> (5 > 3) Then <i>statements a...</i> Else <i>statements b...</i> End If