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Unit I- Operators

Part-4

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Operators :

- **VB.NET is rich in built-in operators, which let you manipulate your data.**
- The value elements that are combined with an operator are called operands of that operator.
- Operators combined with value elements form expressions, except for the assignment operator, which forms a statement.
- **VB.NET Provides following types of commonly used operators:**
    - Arithmetic Operators.
    - Comparison Operators.
    - Logical/Bitwise Operators.
    - Bit Shift Operators.
    - Assignment Operators.
    - Miscellaneous Operators.

- Arithmetic Operators perform familiar calculations on numeric values, including shifting their bit patterns.

Operators	Meaning	Example
^	Raises a number to the power of another number.	Dim exp1 as Double exp1 = 2 ^ 2
*	Multiplies two numbers.	Dim testValue As Double testValue = 2 * 2
+	Addition of two numbers	Dim k As Integer k = 23 + 5
-	Subtraction of two numbers	Dim k As Integer k = 23 + 5
\	Division of two numbers	Dim k As Integer k = 23 \ 5
MOD	Modulus Operator and remainder of after an integer division	A=10 mod 2

- Comparison Operators compare two expressions and return a Boolean value representing the result of the comparison.
- Following table shows all the comparison operators supported by VB.Net.
- Assume variable A holds 10 and variable B holds 20, then:

Operators	Meaning	Example
=	Checks if the values of two operands are equal or not; if yes, then condition becomes true.	(A = B) is not true.
<>	Checks if the values of two operands are equal or not; if values are not equal, then condition becomes true.two numbers.	(A <> B) is true.
>	Checks if the value of left operand is greater than the value of right operand; if yes, then condition becomes true.	(A > B) is not true.
<	Checks if the value of left operand is less than the value of right operand; if yes, then condition becomes true.	(A < B) is true.
>=	Checks if the value of left operand is greater than or equal to the value of right operand; if yes, then condition becomes true.	(A >= B) is not true.
<=	Checks if the value of left operand is less than or equal to the value of right operand; if yes, then condition becomes true.	(A <= B) is true.

VB.NET provides three more comparison operators

- **Is** Operator - It compares two object reference variables and determines if two object references refer to the same object without performing value comparisons. If object1 and object2 both refer to the exact same object instance, result is **True**; otherwise, result is False.
- **IsNot** Operator - It also compares two object reference variables and determines if two object references refer to different objects. If object1 and object2 both refer to the exact same object instance, result is **False**; otherwise, result is True.
- **Like** Operator - It compares a string against a pattern.

Example : Dim MyCheck

MyCheck = "aBBBa" Like "a*a" ' Returns True.

MyCheck = "F" Like "[A-Z]" ' Returns True.

Logical/Bitwise Operators : in Visual Basic combine Boolean or numeric values and return a result of the same data type as the values. Here bitwise means working bit by bit with numerical values.

Following table shows all the logical operators supported by VB.Net.

Assume variable A holds Boolean value True and variable B holds Boolean value False, then:

- And :It is the logical as well as bitwise AND operator. If both the operands are true, then condition becomes true.

  (A And B) is False.
- OR :It is the logical as well as bitwise OR operator. If any of the two operands is true, then condition becomes true.

  (A Or B) is True.
- Not :It is the logical as well as bitwise NOT operator. Use to reverses the logical state of its operand. If a condition is true, then Logical NOT operator will make false.

  Not(A And B) is True.

- Xor :It is the logical as well as bitwise Logical Exclusive OR operator. It returns True if both expressions are True or both expressions are False; otherwise it returns False.

  A Xor B is True.

- AndAlso : Operator A “Short Circuited” And operator; If the first operand is false ,the second operand is not tested

  (A AndAlso B) is False.

- OrElse : Operator A “Short Circuited” Or operator; If the first operand is True ,the second operand is not tested

  (A Or B) is True.

Assignment Operators

- = Simple assignment operator, Assigns values from right side operands to left side operand

  C = A + B will assign value of A + B into C
- += Add AND assignment operator, It adds right operand to the left operand and assigns the result to left operand C += A is equivalent to C = C + A
- -= Subtract AND assignment operator, It subtracts right operand from the left operand and assigns the result to left operand C -= A is equivalent to C = C - A
- *= Multiply AND assignment operator, It multiplies right operand with the left operand and assigns the result to left operand C *= A is equivalent to C = C * A
- /= Divide AND assignment operator, It divides left operand with the right operand and assigns the result to left operand (floating point division) C /= A is equivalent to C = C / A

Assignment Operators…

- \= Divide AND assignment operator, It divides left operand with the right operand and assigns the result to left operand (Integer division) C \= A is equivalent to C = C \A
- ^= Exponentiation and assignment operator. It raises the left operand to the power of the right operand and assigns the result to left operand. C^=A is equivalent to C = C ^ A
- <<= Left shift AND assignment operator C <<= 2 is same as C = C << 2
- >>= Right shift AND assignment operator C >>= 2 is same as C = C >> 2
- &= Concatenates a String expression to a String variable or property and assigns the result to the variable or property. Str1 &= Str2 is same as Str1 = Str1 & Str2

Miscellaneous Operators

- GetType : It returns a Type object for the specified type. The Type object provides information about the type such as its properties, methods, and events.

```
MsgBox(GetType(Integer).ToString())
```

- AddressOf :Returns the address of a procedure.

```
AddHandler Button1.Click, AddressOf Button1_Click
```

Operators Precedence in VB.NET

Exponentiation (^)	Highest
Unary identity and negation (+, -)	
Multiplication and floating-point division (*, /)	
Integer division (\)	
Modulus arithmetic (Mod)	
Addition and subtraction (+, -)	
Arithmetic bit shift (<<, >>)	
All comparison operators (=, <>, <, <=, >, >=, Is, IsNot, Like, TypeOf)	
Negation (Not)	
Conjunction (And, AndAlso)	
Inclusive disjunction (Or, OrElse)	
Exclusive disjunction (Xor)	Lowest

Paper No.: CSO16 Comp. Sci. (Gen.) **Semester : V** **Paper title: VB.NET**

Unit No.	Contents	Rem.
I	**Introduction:** Introduction to .NET and .NET Framework, Difference between CUI & GUI, Event Driven Programming, the VB IDE, Operators, Conditional statements and looping statements. Sub Procedure, functions and exception handling	
II	**Windows Forms :** General Properties, Events handling events like mouse, keyboard, Types of forms MDI, adding removing controls at run time. **Controls** : The control class, Text Box, Rich Text Box, Label, Buttons, Checkbox, Radio Button, Panels, Group Boxes, List Box, Combo Box, Picture Box, Scroll Bars, Splitters, Track Bars, Pickers, Timer.	
III	**Object-Oriented Programming :** Class and Object, Class Vs. Object Members, Creating Classes, Objects, Structures, Modules, Constructors, Data Members, Methods, Properties, Event	
BOOKS	1) Visual Basic .NET Programming Black Book” by Steven Holzner,Dreamtech Press 2) “Mastering in Visual Basic .NET” by Evangelos Petroutsos, Sybex Publication.	

Thank you !