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VB.Net Tutorial for Beginners

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VB.Net Tutorial for Beginners

Visual Basic is an easy-to-learn programming language that is type-safe. Get the fundamentals to gain expertise in web development through this VB.Net tutorial.

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Introduction to VB.Net

An object-oriented programming language called Visual Basic.NET (VB.NET) is used to create .net programs, including Windows, Web, and mobile apps. We cover the following in this VB.Net tutorial:

- Overview of VB.Net
- Environment Setup
- VB.Net Basic Syntax
- Data Types in VB.Net
- Variables in VB.Net
- Classes and Objects in VB.Net
- Advantages of VB.Net

Overview of VB.Net

VB.net facilitates the creation of various online, client-server, and mobile apps. Microsoft's .NET framework is used to implement VB.NET.

It can access every library in the .Net Framework to the fullest extent possible. VB.NET programs can also be

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executed on Mono, the open-source substitute for .NET, on Linux or Mac OS X in addition to Windows. Check out our [DotNet course syllabus](#).

Features of VB.Net

VB.Net is a professional language that is extensively used for the reasons listed below.

- Easy to learn.
- Object-oriented.
- Structured language.
- It produces efficient programs.
- Modern and general-purpose.
- Component oriented.
- Part of .Net Framework.
- Numerous computer platforms are capable of compiling it.

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Environment Setup

With the revolutionary .Net framework, you may develop the following kinds of applications:

- Windows applications
- Web applications
- Web services

The apps built with the .Net framework are cross-platform. The framework can be utilized with Visual Basic, C#, C++, Jscript, COBOL, and other languages because of the way it has been developed. Learn the computer fundamentals through our [C and C++ training in Chennai](#).

- Each of these languages can interact with the framework and with other languages.
 - The client languages, such as VB.Net, leverage a vast library of codes that make up the .Net framework.
- These languages follow an object-oriented approach.

Some of the components of VB.Net:

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- The .Net Framework Class Library
- Common Language Runtime (CLR)
- Common Language Specification
- Windows Forms
- Common Type System
- ASP.Net and ASP.Net AJAX
- Metadata and Assemblies
- ADO.Net
- Windows Workflow Foundation (WF)
- Windows Communication Foundation (WCF)
- Windows Presentation Foundation
- LINQ

Integrated Development Environment (IDE) For VB.Net

The following development tools are offered by Microsoft for VB.Net programming:

- Visual Studio 2010 (VS)
- Visual Basic 2010 Express (VBE)
- Visual Web Developer

You can create a wide range of VB.Net applications with these tools, from straightforward command-line programs to intricate ones.

Writing VB.Net Programs on Linux or Mac OS

While the Windows operating system is the primary platform for the .NET Framework, there exist alternate versions that are compatible with other operating systems.

- Mono is a free and open-source variant of the .NET Framework that functions on multiple platforms, such as Linux and Mac OS and comes with a Visual Basic compiler.
- VB 2012 is the most recent version.

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[VB.Net Course Syllabus](#)

VB.Net Basic Syntax

VB.Net is an object-oriented programming language. A program using the object-oriented programming paradigm is made up of different objects that communicate with one another through actions.

- **Object:** An object is a specific instance of a class. Objects possess states and actions.
 - An example of a dog's state would be its color, breed, and behaviors, such as its wagging, barking, eating, etc.
- **Class:** A class is an outline or template that specifies the states and behaviors that objects of that type are capable of supporting.
- **Methods:** A method is a behavior. Numerous methods can be found in a class. It is in the procedures that all of the activities are carried out, data is altered, and logic is expressed.
- **Instance Variables:** Every object possesses a distinct collection of instance variables. An object's state is determined by the values that are assigned to these instance variables.

Example: Rectangle Class in VB.Net

Let us have a look at a rectangle object as an example. It has dimensions such as width and length. Depending on the design, methods for showing details, computing area, and accepting the values of various attributes may be required.

Imports System

```
Public Class Rectangle
```

```
Private length As Double
```

```
Private width As Double
```

```
'Public methods
```

```
Public Sub AcceptDetails()
```

```
length = 4.5
```

width = 3.5

End Sub

Public Function GetArea() As Double

*GetArea = length * width*

End Function

Public Sub Display()

Console.WriteLine("Length: {0}", length)

Console.WriteLine("Width: {0}", width)

Console.WriteLine("Area: {0}", GetArea())

End Sub

Shared Sub Main()

Dim r As New Rectangle()

r.Acceptdetails()

r.Display()

Console.ReadLine()

End Sub

End Class

Output

Length: 4.5

Width: 3.5

Area: 15.75

To create things, you utilize classes. For instance, r is a rectangle object in the code.

```
Dim r As New Rectangle()
```

If indicated, a class may contain members who are reachable from outside the classroom. Fields are members of a data set, whereas methods are members of a procedure.

It is possible to call static or shared methods without first establishing a class object. Instance methods are called using a class object:

```
Shared Sub Main()
```

```
    Dim r As New Rectangle()
```

```
    r.Acceptdetails()
```

```
    r.Display()
```

```
    Console.ReadLine()
```

```
End Sub
```

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Data Types in VB.Net

An elaborate framework for declaring variables or functions of various sorts is referred to as data types. A variable's type affects both how much storage space it takes up and how the bit pattern it stores is interpreted.

A vast array of data types are available in VB.Net. Some of the popular data types are as follows:

- **Integer (4 bytes):** -2,147,483,648 through 2,147,483,647 (signed)
- **Char (2 bytes):** 0 through 65535 (unsigned)
- **Boolean:** True or False
- **Byte (1 byte):** 0 to 255
- **String:** 0 to approximately 2 billion Unicode

characters

- **Single (4 bytes):** -3.4028235E+38 through -1.401298E-45 for negative values; 1.401298E-45 through 3.4028235E+38 for positive values.
- **User-Defined** (depends on the platform being used): Every component of the structure has a range that is distinct from the ranges of the other components and is based on the type of data it contains.

Example

Module DataTypes

Sub Main()

Dim b As Byte

Dim n As Integer

Dim si As Single

Dim d As Double

Dim da As Date

Dim c As Char

Dim s As String

Dim bl As Boolean

b = 1

n = 1234567

si = 0.12345678901234566

d = 0.12345678901234566

da = Today

c = "U"c

s = "Me"

If ScriptEngine = "VB" Then

bl = True

Else

bl = False

End If

If bl Then

'the oath taking

Console.Write(c & " and," & s & vbCrLf)

*Console.WriteLine("declaring on the day
of: {0}", da)*

*Console.WriteLine("Learn VB.Net at
SLA")*

*Console.WriteLine("Considering the
outcome for the floating point variables:")*

*Console.WriteLine("The Single: {0}, The
Double: {1}", si, d)*

End If

Console.ReadKey()

End Sub

Output

U and, Me

declaring on the day of: 10/10/2024 08:00:00 PM

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Considering the outcome for the floating point variables:

The Single:0.1234568, The Double: 0.123456789012346

The Type Conversion Functions in VB.Net

The following are some of the in-line type conversion routines that are available in VB.Net:

- CBool(expression): The expression is converted to a Boolean data type.
- CByte(expression): It transforms the expression into a data type of byte.
- CChar(expression): The expression is converted to the Char data type.
- CDate(expression): The expression is converted to the Date data type.
- CDbI(expression): The expression is converted to the Double data type.
- CDec(expression): The expression is converted to a Decimal data type.
- CInt(expression): The expression is converted to an integer data type.
- CLng(expression): The expression is converted to the Long data type.

Example

Module DataTypes

Sub Main()

Dim n As Integer

Dim da As Date

```
Dim bl As Boolean = True
```

```
n = 1234567
```

```
da = Today
```

```
Console.WriteLine(bl)
```

```
Console.WriteLine(CSByte(bl))
```

```
Console.WriteLine(CStr(bl))
```

```
Console.WriteLine(CStr(da))
```

```
Console.WriteLine(CChar(CChar(CStr(n))))
```

```
Console.WriteLine(CChar(CStr(da)))
```

```
Console.ReadKey()
```

```
End Sub
```

```
End Module
```

Output

True

-1

True

10/10/2024

1

1

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Variable Declaration in VB.Net

Variable declaration and storage allocation for one or

more variables are handled by the Dim statement. At the module, class, structure, function, or block level, the Dim statement is utilized.

Syntax:

```
[ < attributelist > ] [ accessmodifier ] [[ Shared ] [ Shadows ] | [ Static ]]
```

```
[ ReadOnly ] Dim [ WithEvents ] variablelist
```

- **attributelist:** The attributes that apply to the variable are listed in the attributelist. Optional.
- **accessmodifier:** The values of this variable, Public, Protected, Friend, Protected Friend, and Private, indicate the various access levels. Optional.
- **Shared:** By using the “shared” declaration, a shared variable is created that is accessible to all instances of the class or structure and is not linked to any particular instance. Optional.
- **Shadows:** Shadows show that a base class variable re-declares and obscures a group of overloaded elements, or an identically named element. Optional.
- **Static:** The term “static” denotes that the variable will hold its value even after the declared method has ended. Optional.
- **ReadOnly:** The variable is marked as ReadOnly if it can only be read, not written. Optional
- **WithEvents:** The variable is used to respond to events raised by the instance that is assigned to it, as specified by the WithEvents parameter. Optional.
- **Variablelist:** The list of declared variables is provided by variablelist.

The syntax for declaring a variable:

```
variablename[ ( [ boundslist ] ) ] [ As [ New ] datatype ] [ = initializer ]
```

- **variablename:** It is the variable’s name.
- **boundslist (optional):** It gives an array variable’s boundaries for each dimension.
- **New (optional):** The Dim statement launches a new instance of the class.
- **Datatype:** necessary when Option Strict is enabled. The variable’s data type is specified.

- **initializer:** Optional. if New is not given. When a variable is created, it is assigned an expression that is evaluated.

Example

Dim StudentID As Integer

Dim StudentName As String

Dim Salary As Double

Dim count1, count2 As Integer

Dim status As Boolean

Dim exitButton As New System.Windows.Forms.Button

Dim lastTime, nextTime As Date

Dim pi As Double

pi = 3.14159

VB.NET Coding Challenges

Considering the User's Values

A function called ReadLine is available in the System namespace's Console class to take user input and save it in a variable.

Syntax

Dim message As String

message = Console.ReadLine

Example

Module variablesNdatatypes

Sub Main()

Dim message As String

Console.Write("Enter message: ")

```
message = Console.ReadLine
```

```
Console.WriteLine()
```

```
Console.WriteLine("Your Message: {0}", message)
```

```
Console.ReadLine()
```

```
End Sub
```

```
End Module
```

R- and L-values

Two categories of expressions exist:

- **lvalue:** An expression that represents a lvalue can occur on the left or right side of an arrangement.
- **rvalue:** An expression that is a rvalue can be found on an assignment's right side but not its left.

Because they are lvalues, variables can be found on the left side of an assignment. Since numeric literals are rvalues, they cannot be assigned values or appear on the left side of the screen.

Example

```
Dim g As Integer = 20
```

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Classes and Objects in VB.Net

The term "Class" appears first in a class definition, then the class name, the class body, and the End Class statement. The general format for a class definition is as follows:

```
[ <attributelist> ] [ accessmodifier ] [ Shadows  
][ MustInherit | NotInheritable ] [ Partial ] _
```

```
Class name [ ( Of typelist ) ]
```

```
[ Inherits classname ]
```

```
[ Implements interfacenames ]
```

[statements]

End Class

A Box class with three data members, length, width, and height, is shown in the example below.

Module mybox

Class Box

Public length As Double ' Length of a box

Public breadth As Double ' Breadth of a box

Public height As Double ' Height of a box

End Class

Sub Main()

*Dim Box1 As Box = New Box() ' Declare
Box1 of type Box*

*Dim Box2 As Box = New Box() ' Declare
Box2 of type Box*

*Dim volume As Double = 0.0 ' Store the
volume of a box here*

' box 1 specification

Box1.height = 5.0

Box1.length = 6.0

Box1.breadth = 7.0

'box 2 specification

Box2.height = 10.0

Box2.length = 12.0

Box2.breadth = 13.0

'volume of box 1

*volume = Box1.height * Box1.length *
Box1.breadth*

*Console.WriteLine("Volume of Box1 : {0}",
volume)*

'volume of box 2

*volume = Box2.height * Box2.length *
Box2.breadth*

*Console.WriteLine("Volume of Box2 : {0}",
volume)*

Console.ReadKey()

End Sub

End Module

Output

Volume of Box1 : 210

Volume of Box2 : 1560

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Member Functions and Encapsulation

A function that has its prototype or definition included in the class declaration, just like any other variable, is called a member function of a class.

It has access to all other members of a class for that object and can operate on any object within the class of which it is a member.

From a design standpoint, member variables are characteristics of an object that are kept secret to achieve encapsulation. It is only possible to access these variables using the public member functions.

Example

Module mybox

Class Box

Public length As Double 'Length of a box

*Public breadth As Double 'Breadth of a
box*

Public height As Double 'Height of a box

Public Sub setLength(ByVal len As Double)

length = len

End Sub

*Public Sub setBreadth(ByVal bre As
Double)*

breadth = bre

End Sub

Public Sub setHeight(ByVal hei As Double)

height = hei

End Sub

Public Function getVolume() As Double

*Return length * breadth * height*

End Function

End Class

Sub Main()

*Dim Box1 As Box = New Box() ' Declare
Box1 of type Box*

*Dim Box2 As Box = New Box() ' Declare
Box2 of type Box*

*Dim volume As Double = 0.0 ' Store the
volume of a box here*

' box 1 specification

Box1.setLength(6.0)

Box1.setBreadth(7.0)

Box1.setHeight(5.0)

' box 2 specification

Box2.setLength(12.0)

Box2.setBreadth(13.0)

Box2.setHeight(10.0)

```
'volume of box 1

volume = Box1.getVolume()

Console.WriteLine("Volume of Box1 : {0}",
volume)

'volume of box 2

volume = Box2.getVolume()

Console.WriteLine("Volume of Box2 : {0}",
volume)

Console.ReadKey()

End Sub

End Module
```

Output

Volume of Box1 : 210

Volume of Box2 : 1560

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Advantages of VB.Net

Among the many benefits of Visual Basic.NET (VB.NET) are the following:

- **Database connectivity:** Database connections such as SQL Server, MySQL, and Oracle can be made with VB.NET.
- **Security features:** To improve application security, VB.NET comes with built-in security capabilities, including code access security.
- **Interoperability:** Developers may operate within the same application with other .NET languages, such as C# and F#, thanks to VB.NET.

- **Development environment:** Code debugging, IntelliSense, and a visual designer are just a few of the VB.NET development tools available in Microsoft's integrated development environment (IDE), Visual Studio.
- **Community and resources:** VB.NET boasts a sizable developer community with a wealth of online resources, including libraries, forums, documentation, and tutorials.
- **Game Development:** Using GUI tools, game developers can write gaming software in VB.NET.

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Conclusion

We have covered the basic concepts in this VB.Net tutorial. Enrich your development skills with our [VB.Net training in Chennai](#).

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