



## [VB .NET Language in a Nutshell](#)

Steven Roman

Ron Petruscha

Paul Lomax

Publisher: O'Reilly

First Edition August 2001

ISBN: 0-596-00092-8, 654 pages

Need to make sense of the many changes to Visual Basic for the new .NET platform? *VB .NET Language in a Nutshell* introduces the important aspects of the language and explains the .NET framework. An alphabetical reference covers the functions, statements, directives, objects, and object members that make up the VB .NET language. To ease the transition, each language element includes a "VB .NET/VB 6 Differences" section.

---

Preface.....	14
Why Another VB Book? .....	26
Who This Book Is For.....	26
Readers New to Visual Basic.....	26
VB and VBScript Developers New to VB .NET.....	26
Existing VB .NET Developers .....	27
How This Book Is Structured.....	27
The Format of the Language Reference.....	28
Conventions Used in This Book.....	29
How to Contact Us .....	30
Acknowledgments .....	30
Part I: The Basics.....	33
Chapter 1. Introduction.....	33
1.1 Why VB .NET?.....	34
1.2 What Is VB .NET?.....	37
1.2.1 Object Orientation.....	37
1.2.2 A Common Type System.....	38
1.2.3 Access to System Services: The Framework Class Library .....	39
1.2.4 A Common Runtime Environment .....	41
1.3 What Can You Do with VB .NET?.....	42
Chapter 2. Variables and Data Types.....	43
2.1 Variables .....	43
2.1.1 Variable Scope.....	43
2.1.2 Variable Lifetime.....	45
2.2 Declaring Variables and Constants.....	47
2.3 Data Types.....	48
2.3.1 Value and Reference Types.....	49
2.3.2 VB Data Types: A Summary .....	51
2.3.3 Simple Data Types in Visual Basic.....	54
2.3.4 Data Type Conversion .....	62
2.4 Arrays.....	64
2.4.1 Definition of Array.....	64
2.4.2 Dimension of an Array.....	64
2.4.3 Size of an Array .....	64
2.4.4 Arrays in VB .NET.....	65
2.5 Object Variables and Their Binding.....	67
2.5.1 Late Binding Versus Early Binding.....	68
2.6 The Collection Object.....	69
2.7 Parameters and Arguments.....	70
2.7.1 Passing Arguments .....	70
2.7.2 Passing Objects.....	71
2.7.3 Optional Arguments.....	73
2.7.4 ParamArray.....	73
Chapter 3. Introduction to Object-Oriented Programming.....	75
3.1 Why Learn Object-Oriented Techniques? .....	75

3.2 Principles of Object-Oriented Programming.....	75
3.2.1 Abstraction .....	75
3.2.2 Encapsulation .....	76
3.2.3 Interfaces.....	77
3.3 Classes and Objects.....	79
3.3.1 Class Modules in VB .NET .....	79
3.3.2 Class Members .....	79
3.3.3 The Public Interface of a VB .NET Class .....	81
3.3.4 Objects.....	81
3.3.5 Properties.....	82
3.3.6 Instance and Shared Members.....	83
3.3.7 Class Constructors.....	84
3.3.8 Finalize, Dispose, and Garbage Collection .....	85
3.4 Inheritance .....	86
3.4.1 Permission to Inherit .....	88
3.4.2 Overriding .....	88
3.4.3 Rules of Inheritance.....	89
3.4.4 MyBase, MyClass, and Me .....	89
3.5 Interfaces, Abstract Members, and Classes.....	91
3.5.1 Interfaces Revisited .....	93
3.6 Polymorphism and Overloading .....	93
3.6.1 Overloading .....	93
3.6.2 Polymorphism.....	94
3.7 Scope and Accessibility in Class Modules.....	95
Chapter 4. The .NET Framework: General Concepts.....	97
4.1 Namespaces.....	97
4.2 Common Language Runtime (CLR), Managed Code, and Managed Data.....	97
4.3 Managed Execution .....	98
4.4 Assemblies.....	98
4.5 Assemblies and VB .NET .....	100
Chapter 5. The .NET Framework Class Library.....	103
5.1 The System Namespace.....	104
5.1.1 Data Type Conversion.....	104
5.1.2 The Array Class.....	105
5.1.3 The Math Class.....	106
5.1.4 The String Class .....	107
5.2 Other Namespaces .....	108
5.2.1 System.Collections .....	110
5.2.2 System.Data .....	110
5.2.3 System.IO.....	111
5.2.4 System.Text.RegularExpressions .....	111
5.2.5 System.Windows.Forms.....	113
Chapter 6. Delegates and Events .....	115
6.1 Delegates .....	115
6.1.1 Using a Delegate to Call a Method.....	116
6.1.2 Using a Delegate as a Function Pointer .....	117

6.2 Events and Event Binding .....	118
6.2.1 Control-Related Events .....	119
6.2.2 WithEvents .....	119
6.2.3 AddHandler .....	120
Chapter 7. Error Handling in VB .NET .....	123
7.1 Error Detection and Error Handling.....	123
7.2 Runtime Error Handling .....	124
7.2.1 Unstructured Error Handling .....	124
7.2.2 Structured Exception Handling .....	127
7.3 Dealing with Logical Errors.....	131
7.3.1 Detecting Logical Errors.....	131
7.3.2 Where to Handle a Logical Error .....	132
7.4 Error Constants .....	133
Part II: Reference .....	135
<b>Chapter 8. The Language Reference .....</b>	<b>135</b>
#Const Directive.....	137
#If...Then...#Else Directive .....	139
#Region...#End Region Directive .....	141
Abs Function.....	141
Acos Function.....	143
AddHandler Statement.....	143
AddressOf Operator .....	144
AppActivate Procedure .....	145
Application Class.....	147
Application.CompanyName Property .....	148
Application.DoEvents Method .....	149
Application.ExecutablePath Property.....	150
Application.ProductName Property.....	151
Application.ProductVersion Property .....	152
Array Class.....	152
Array.BinarySearch Method .....	153
Array.Copy Method.....	156
Array.IndexOf Method .....	158
Array.LastIndexOf Method.....	159
Array.Reverse Method .....	161
Array.Sort Method.....	162
Asc, AscW Functions .....	164
Asin Function.....	166
Atan Function.....	167
See Also .....	168
Atan2 Function .....	168
Beep Procedure .....	169
Call Statement.....	170
CallByName Function .....	172
CBool Function.....	174
CByte Function .....	175
CChar Function.....	176

---

CDate Function .....	177
CDBl Function .....	178
CDec Function .....	179
Ceiling Function .....	180
ChDir Procedure .....	181
ChDrive Procedure.....	182
Choose Function .....	184
Chr, ChrW Functions.....	185
CInt Function .....	187
Class Statement .....	188
Clipboard Class .....	190
Clipboard.GetDataObject Method.....	190
Clipboard.SetDataObject Method .....	192
CLng Function.....	192
CObj Function.....	194
Collection Class.....	195
Collection.Add Method .....	198
Collection.Count Property.....	199
Collection.Item Method .....	200
Collection.Remove Method.....	202
ColorDialog Class .....	203
Command Function .....	205
Const Statement .....	207
Cos Function .....	208
Cosh Function.....	209
CreateObject Function .....	210
CShort Function.....	212
CSng Function .....	214
CStr Function.....	215
CType Function .....	216
CurDir Function.....	218
DateAdd Function.....	219
DateDiff Function .....	221
DatePart Function .....	224
DateSerial Function.....	226
DateString Property .....	228
DateValue Function .....	229
Day Function.....	230
DDB Function.....	231
Debug Class .....	233
Debug.Assert Method.....	234
Debug.AutoFlush Property .....	235
Debug.Close Method.....	235
Debug.Flush Method .....	236
Debug.Indent Method .....	236
Debug.IndentLevel Property.....	237
Debug.IndentSize Property.....	237

Debug.Listeners Property.....	238
Debug.Unindent Method.....	238
Debug.Write Method.....	239
Debug.Writeln Method.....	240
Debug.WriteLine Method.....	241
Debug.WriteLineIf Method.....	242
Declare Statement.....	243
Delegate Statement.....	248
DeleteSetting Procedure.....	249
Dim Statement.....	251
Dir Function.....	256
Directory Class.....	259
Directory.CreateDirectory Method.....	260
Directory.Delete Method.....	261
Directory.Exists Method.....	262
Directory.GetCreationTime Method.....	263
Directory.GetDirectories Method.....	263
Directory.GetDirectoryRoot Method.....	265
Directory.GetFiles Method.....	266
Directory.GetFileSystemEntries Method.....	267
Directory.GetLogicalDrives Method.....	268
Directory.GetParent Method.....	269
Directory.Move Method.....	270
Do... Loop Statement.....	271
E Field.....	274
End→Statement.....	274
Enum Statement.....	276
Environ Function.....	278
EOF Function.....	280
Erase Statement.....	281
Erl Property.....	282
Err Object.....	283
Err.Clear Method.....	284
Err.Description Property.....	285
Err.GetException Method.....	286
Err.HelpContext Property.....	288
Err.HelpFile Property.....	289
Err.LastDLLError Property.....	290
Err.Number Property.....	291
Err.Raise Method.....	293
Err.Source Property.....	295
Error Statement.....	295
ErrorToString Function.....	296
Event Statement.....	297
Exception Class.....	299
Exit Statement.....	302
Exp Function.....	303

---

File Class .....	304
File.Exists Method.....	305
FileAttr Function .....	306
FileClose Procedure .....	307
FileCopy Procedure.....	308
FileDateTime Function.....	309
FileGet, FileGetObject Procedures.....	310
FileLen Function.....	312
FileOpen Procedure .....	313
FilePut, FilePutObject Procedures.....	316
FileWidth Procedure .....	318
Filter Function.....	319
Fix Function.....	321
Floor Function.....	322
FontDialog Class.....	323
For...Next Statement.....	325
For Each...Next Statement.....	327
Format Function .....	329
FormatCurrency, FormatNumber, FormatPercent Functions.....	341
FormatDateTime Function .....	343
FreeFile Function .....	345
Friend Keyword.....	345
Function Statement.....	346
FV Function.....	350
Get Statement.....	352
GetAllSettings Function .....	353
GetAllSettings Function .....	355
GetAttr Function .....	357
GetObject Function.....	359
GetSetting Function .....	361
GetTimer Function .....	363
GoTo Statement .....	364
Handles Keyword .....	365
Hashtable Class .....	366
Hashtable.Add Method.....	368
Hashtable.Clear Method .....	369
Hashtable.ContainsKey Method.....	370
Hashtable.ContainsValue Method .....	371
Hashtable.CopyTo Method.....	371
Hashtable.Count Property .....	372
Hashtable.Item Property.....	373
Hashtable.Keys Property.....	374
Hashtable.Remove Method .....	375
Hashtable.Values Property .....	376
Hex Function.....	377
Hour Function .....	378
IDataObject Interface .....	379

---

IDataObject.GetData Method .....	379
IDataObject.GetDataPresent Method .....	381
IDataObject.GetFormats Method .....	383
IEEERemainder Function .....	384
If...Then...Else Statement .....	384
IIf Function .....	389
Implements Keyword.....	390
Implements Statement .....	391
Imports Statement .....	393
Inherits Statement.....	394
Input Procedure .....	395
InputBox Function.....	397
InputString Function .....	399
InStr Function.....	400
InStrRev Function .....	402
Int Function .....	403
Interface Statement.....	404
IPmt Function.....	407
IRR Function.....	410
Is Operator.....	411
IsArray Function .....	412
IsDate Function.....	413
IsDBNull Function.....	414
IsError Function .....	415
IsNothing Function.....	416
IsNumeric Function.....	417
IsReference Function .....	417
Join Function .....	419
Kill Procedure .....	420
LBound Function .....	421
LCase Function .....	423
Left Function.....	423
Len Function.....	425
Like Operator .....	426
LineInput Function .....	427
Loc Function .....	429
Lock Procedure .....	430
LOF Function .....	431
Log Function.....	432
Log10 Function.....	434
LTrim Function.....	435
Max Function.....	436
Me Operator.....	437
Mid Function .....	438
Mid Statement .....	440
Min Function .....	441
Minute Function.....	442



---

MIRR Function .....	443
MkDir Procedure .....	444
Mod Operator .....	445
Module...End Module Statement .....	446
Month Function .....	447
MonthName Function.....	448
MsgBox Function .....	449
MyBase Keyword .....	452
MyClass Keyword .....	453
Namespace Statement.....	454
Now Property .....	455
NPer Function .....	456
NPV Function.....	458
Oct Function .....	459
On Error Statement.....	460
OpenFileDialog Class .....	463
Option Compare Statement.....	466
Option Explicit Statement.....	466
Option Strict Statement .....	467
Partition Function .....	469
Pi Field.....	471
Pmt Function.....	472
Pow Function.....	473
PPmt Function .....	474
Print, PrintLine Procedures.....	476
Private Statement.....	478
Property Statement.....	480
Protected Keyword .....	485
Public Statement .....	485
PV Function.....	488
QBColor Function .....	490
Queue Class .....	491
Queue.Clear Method .....	493
Queue.Contains Method .....	493
Queue.CopyTo Method.....	494
Queue.Count Property .....	495
Queue.Dequeue Method.....	496
Queue.Enqueue Method .....	497
Queue.Peek Method .....	497
Queue.ToArray Method.....	498
RaiseEvent Statement.....	498
Randomize Procedure.....	500
Rate Function.....	501
ReDim Statement .....	503
Rem Statement.....	505
Rename Procedure .....	506
Replace Function .....	507

---

Reset Procedure.....	509
Resume Statement.....	510
Return Statement.....	511
RGB Function.....	513
Right Function.....	514
Rmdir Procedure.....	515
Rnd Function.....	517
Round Function.....	519
RTrim Function.....	520
SaveFileDialog Class.....	521
SaveSetting Procedure.....	523
ScriptEngine Function.....	524
ScriptEngineBuildVersion Function.....	525
ScriptEngineMajorVersion Function.....	526
ScriptEngineMinorVersion Function.....	527
Return Value.....	527
Second Function.....	528
Seek Function.....	528
Seek Procedure.....	529
Select Case Statement.....	530
Send, SendWait Methods.....	532
Set Statement.....	535
SetAttr Procedure.....	537
Shadows Keyword.....	539
Shell Function.....	541
Sign Function.....	544
Sin Function.....	545
Sinh Function.....	546
SLN Function.....	547
Space Function.....	548
Spc Function.....	549
Split Function.....	550
Sqrt Function.....	551
Stack Class.....	552
Stack.Clear Method.....	554
Stack.Contains Method.....	554
Stack.CopyTo Method.....	555
Stack.Count Property.....	556
Stack.Peek Method.....	557
Stack.Pop Method.....	557
Stack.Push Method.....	558
Stack.ToArray Method.....	559
Static Statement.....	559
Stop Statement.....	562
Str Function.....	563
StrComp Function.....	564
StrConv Function.....	565

StrDup Function.....	567
StrReverse Function.....	568
Structure...End Structure Statement.....	568
Sub Statement.....	570
Switch Function.....	574
SYD Function.....	575
SyncLock Statement.....	576
SystemTypeName Function.....	577
Tab Function.....	579
Tan Function.....	580
Tanh Function.....	581
Throw Statement.....	582
TimeOfDay Property.....	582
Timer Property.....	583
TimeSerial Function.....	584
TimeString Property.....	585
TimeValue Function.....	586
Today Property.....	587
Trim Function.....	588
Try...Catch...Finally Statement.....	589
TypeName Function.....	591
UBound Function.....	593
UCase Function.....	594
Unlock Procedure.....	594
Val Function.....	596
ValDec Function.....	597
VarType Function.....	598
VbTypeName Function.....	599
Weekday Function.....	601
WeekdayName Function.....	602
While...End While Statement.....	604
With Statement.....	605
WithEvents Keyword.....	606
Write Procedure.....	608
WriteLine Procedure.....	609
Year Function.....	610
Part III: Appendixes.....	613
Appendix A. What's New and Different in VB .NET.....	615
A.1 Language Changes for VB .NET.....	615
A.1.1 Data Types.....	615
A.1.2 Variables and Their Declaration.....	616
A.1.3 Boolean and Bitwise Operators.....	619
A.1.4 Changes Related to Procedures.....	620
A.1.5 Miscellaneous Language Changes.....	621
A.2 Changes to Programming Elements.....	622
A.2.1 Constants.....	622
A.2.2 String Functions.....	623

A.2.3 Emptiness.....	623
A.2.4 Graphical Functionality.....	623
A.2.5 Mathematical Functionality.....	623
A.2.6 Diagnostics.....	623
A.2.7 Miscellaneous.....	624
A.3 Obsolete Programming Elements.....	624
A.4 Structured Exception Handling.....	627
A.5 Changes in Object-Orientation.....	627
A.5.1 Inheritance.....	628
A.5.2 Overloading.....	628
A.5.3 Object Creation.....	628
A.5.4 Properties.....	629
Appendix B. Language Elements by Category.....	631
B.1 Array Handling.....	631
B.2 Clipboard.....	631
B.3 Collection Objects.....	632
B.4 Common Dialogs.....	632
B.5 Conditional Compilation.....	632
B.6 Conversion.....	633
B.6.1 Data Type Conversion.....	633
B.6.2 Other Conversion.....	633
B.7 Date and Time.....	633
B.8 Debugging.....	634
B.9 Declaration.....	634
B.10 Error Handling.....	635
B.11 Filesystem.....	635
B.12 Financial.....	636
B.13 IDataObject Interface.....	636
B.14 Information.....	637
B.15 Input/Output.....	637
B.16 Integrated Development Environment.....	638
B.17 Interaction.....	638
B.18 Mathematics.....	638
B.19 Program Structure and Flow.....	639
B.20 Programming.....	640
B.20.1 Object Programming.....	640
B.20.2 Miscellaneous Programming.....	640
B.21 Registry.....	640
B.22 String Manipulation.....	641
Appendix C. Operators.....	643
C.1 Arithmetic Operators.....	643
C.2 Assignment Operators.....	644
C.3 Concatenation Operators.....	646
C.4 Comparison Operators.....	646
C.4.1 The Is Operator.....	647
C.4.2 The Like Operator.....	647
C.5 Logical and Bitwise Operators.....	647

---

Eqv and Imp.....	650
C.6 Operator Precedence.....	650
Appendix D. Constants and Enumerations.....	653
D.1 Visual Basic Intrinsic Constants.....	653
D.2 ControlChars Class.....	656
D.3 Visual Basic Enumerations.....	656
D.3.1 AppWinStyle Enumeration .....	656
D.3.2 CallType Enumeration.....	656
D.3.3 CompareMethod Enumeration.....	656
D.3.4 DateFormat Enumeration.....	657
D.3.5 DateInterval Enumeration .....	657
D.3.6 DueDate Enumeration .....	657
D.3.7 FileAttribute Enumeration .....	657
D.3.8 FirstDayOfWeek Enumeration .....	657
D.3.9 FirstWeekOfYear Enumeration .....	658
D.3.10 MsgBoxResult Enumeration .....	658
D.3.11 MsgBoxStyle Enumeration .....	658
D.3.12 OpenAccess Enumeration.....	658
D.3.13 OpenMode Enumeration.....	659
D.3.14 OpenModeTypes Enumeration .....	659
D.3.15 OpenShare Enumeration.....	659
D.3.16 PrintFlags Enumeration .....	659
D.3.17 TriState Enumeration .....	659
D.3.18 VariantType Enumeration.....	659
D.3.19 VbStrConv Enumeration.....	660
Appendix E. The VB .NET Command-Line Compiler .....	661
E.1 Compiler Basics .....	661
E.2 Command-Line Switches.....	661
E.2.1 Output Filename and File Type.....	661
E.2.2 Input Files .....	662
E.2.3 Resources.....	662
E.2.4 Code Generation.....	663
E.2.5 Debugging.....	663
E.2.6 Errors and Warnings .....	663
E.2.7 Language.....	663
E.2.8 Miscellaneous.....	664
E.2.9 Advanced.....	664
E.3 Using a Response File .....	665
Appendix F. VB 6 Language Elements Not Supported by VB .NET .....	667
Colophon .....	670

---

## **VB .NET Language in a Nutshell**

### **Preface**

- Why Another VB Book?**
- Who This Book Is For**
- How This Book Is Structured**
- Conventions Used in This Book**
- How to Contact Us**
- Acknowledgments**

### **I: The Basics**

#### **1. Introduction**

- 1.1 Why VB .NET?**
- 1.2 What Is VB .NET?**
- 1.3 What Can You Do with VB .NET?**

#### **2. Variables and Data Types**

- 2.1 Variables**
- 2.2 Declaring Variables and Constants**
- 2.3 Data Types**
- 2.4 Arrays**
- 2.5 Object Variables and Their Binding**
- 2.6 The Collection Object**
- 2.7 Parameters and Arguments**

#### **3. Introduction to Object-Oriented Programming**

- 3.1 Why Learn Object-Oriented Techniques?**
- 3.2 Principles of Object-Oriented Programming**
- 3.3 Classes and Objects**
- 3.4 Inheritance**
- 3.5 Interfaces, Abstract Members, and Classes**
- 3.6 Polymorphism and Overloading**
- 3.7 Scope and Accessibility in Class Modules**

#### **4. The .NET Framework: General Concepts**

- 4.1 Namespaces**
- 4.2 Common Language Runtime (CLR), Managed Code, and Managed Data**
- 4.3 Managed Execution**
- 4.4 Assemblies**
- 4.5 Assemblies and VB .NET**

#### **5. The .NET Framework Class Library**

- 5.1 The System Namespace**
- 5.2 Other Namespaces**

#### **6. Delegates and Events**

- 6.1 Delegates**
- 6.2 Events and Event Binding**

- 
- 7. Error Handling in VB .NET**
    - 7.1 Error Detection and Error Handling**
    - 7.2 Runtime Error Handling**
    - 7.3 Dealing with Logical Errors**
    - 7.4 Error Constants**

## **II: Reference**

### **8. The Language Reference**

- #Const Directive**
- #If...Then...#Else Directive**
- #Region...#End Region Directive**
- Abs Function**
- Acos Function**
- AddHandler Statement**
- AddressOf Operator**
- AppActivate Procedure**
- Application Class**
- Application.CompanyName Property**
- Application.DoEvents Method**
- Application.ExecutablePath Property**
- Application.ProductName Property**
- Application.ProductVersion Property**
- Array Class**
- Array.BinarySearch Method**
- Array.Copy Method**
- Array.IndexOf Method**
- Array.LastIndexOf Method**
- Array.Reverse Method**
- Array.Sort Method**
- Asc, AscW Functions**
- Asin Function**
- Atan Function**
- Atan2 Function**
- Beep Procedure**
- Call Statement**
- CallByName Function**
- CBool Function**
- CByte Function**
- CChar Function**
- CDate Function**
- CDbl Function**
- CDec Function**
- Ceiling Function**
- ChDir Procedure**
- ChDrive Procedure**
- Choose Function**
- Chr, ChrW Functions**
- CInt Function**
- Class Statement**

---

**Clipboard Class**  
**Clipboard.GetDataObject Method**  
**Clipboard.SetDataObject Method**  
**CLng Function**  
**CObj Function**  
**Collection Class**  
**Collection.Add Method**  
**Collection.Count Property**  
**Collection.Item Method**  
**Collection.Remove Method**  
**ColorDialog Class**  
**Command Function**  
**Const Statement**  
**Cos Function**  
**Cosh Function**  
**CreateObject Function**  
**CShort Function**  
**CSng Function**  
**CStr Function**  
**CType Function**  
**CurDir Function**  
**DateAdd Function**  
**DateDiff Function**  
**DatePart Function**  
**DateSerial Function**  
**DateString Property**  
**DateValue Function**  
**Day Function**  
**DDB Function**  
**Debug Class**  
**Debug.Assert Method**  
**Debug.AutoFlush Property**  
**Debug.Close Method**  
**Debug.Flush Method**  
**Debug.Indent Method**  
**Debug.IndentLevel Property**  
**Debug.IndentSize Property**  
**Debug.Listeners Property**  
**Debug.Unindent Method**  
**Debug.Write Method**  
**Debug.WriteIf Method**  
**Debug.WriteLine Method**  
**Debug.WriteLineIf Method**  
**Declare Statement**  
**Delegate Statement**  
**DeleteSetting Procedure**  
**Dim Statement**  
**Dir Function**  
**Directory Class**  
**Directory.CreateDirectory Method**



---

**Directory.Delete Method**  
**Directory.Exists Method**  
**Directory.GetCreationTime Method**  
**Directory.GetDirectories Method**  
**Directory.GetDirectoryRoot Method**  
**Directory.GetFiles Method**  
**Directory.GetFileSystemEntries Method**  
**Directory.GetLogicalDrives Method**  
**Directory.GetParent Method**  
**Directory.Move Method**  
**Do...Loop Statement**  
**E Field**  
**End Statement**  
**Enum Statement**  
**Environ Function**  
**EOF Function**  
**Erase Statement**  
**Erl Property**  
**Err Object**  
**Err.Clear Method**  
**Err.Description Property**  
**Err.GetException Method**  
**Err.HelpContext Property**  
**Err.HelpFile Property**  
**Err.LastDLLError Property**  
**Err.Number Property**  
**Err.Raise Method**  
**Err.Source Property**  
**Error Statement**  
**ErrorToString Function**  
**Event Statement**  
**Exception Class**  
**Exit Statement**  
**Exp Function**  
**File Class**  
**File.Exists Method**  
**FileAttr Function**  
**FileClose Procedure**  
**FileCopy Procedure**  
**FileDateTime Function**  
**FileGet, FileGetObject Procedures**  
**FileLen Function**  
**FileOpen Procedure**  
**FilePut, FilePutObject Procedures**  
**FileWidth Procedure**  
**Filter Function**  
**Fix Function**  
**Floor Function**  
**FontDialog Class**  
**For...Next Statement**

---

**For Each...Next Statement**  
**Format Function**  
**FormatCurrency, FormatNumber, FormatPercent Functions**  
**FormatDateTime Function**  
**FreeFile Function**  
**Friend Keyword**  
**Function Statement**  
**FV Function**  
**Get Statement**  
**GetAllSettings Function**  
**GetAttr Function**  
**GetChar Function**  
**GetObject Function**  
**GetSetting Function**  
**GetTimer Function**  
**GoTo Statement**  
**Handles Keyword**  
**Hashtable Class**  
**Hashtable.Add Method**  
**Hashtable.Clear Method**  
**Hashtable.ContainsKey Method**  
**Hashtable.ContainsValue Method**  
**Hashtable.CopyTo Method**  
**Hashtable.Count Property**  
**Hashtable.Item Property**  
**Hashtable.Keys Property**  
**Hashtable.Remove Method**  
**Hashtable.Values Property**  
**Hex Function**  
**Hour Function**  
**IDataObject Interface**  
**IDataObject.GetData Method**  
**IDataObject.GetDataPresent Method**  
**IDataObject.GetFormats Method**  
**IEEERemainder Function**  
**If...Then...Else Statement**  
**IIf Function**  
**Implements Keyword**  
**Implements Statement**  
**Imports Statement**  
**Inherits Statement**  
**Input Procedure**  
**InputBox Function**  
**InputString Function**  
**InStr Function**  
**InStrRev Function**  
**Int Function**  
**Interface Statement**  
**IPmt Function**  
**IRR Function**

---

**Is Operator**  
**IsArray Function**  
**IsDate Function**  
**IsDBNull Function**  
**IsError Function**  
**IsNothing Function**  
**IsNumeric Function**  
**IsReference Function**  
**Join Function**  
**Kill Procedure**  
**LBound Function**  
**LCase Function**  
**Left Function**  
**Len Function**  
**Like Operator**  
**LineInput Function**  
**Loc Function**  
**Lock Procedure**  
**LOF Function**  
**Log Function**  
**Log10 Function**  
**LTrim Function**  
**Max Function**  
**Me Operator**  
**Mid Function**  
**Mid Statement**  
**Min Function**  
**Minute Function**  
**MIRR Function**  
**MkDir Procedure**  
**Mod Operator**  
**Module...End Module Statement**  
**Month Function**  
**MonthName Function**  
**MsgBox Function**  
**MyBase Keyword**  
**MyClass Keyword**  
**Namespace Statement**  
**Now Property**  
**NPer Function**  
**NPV Function**  
**Oct Function**  
**On Error Statement**  
**OpenFileDialog Class**  
**Option Compare Statement**  
**Option Explicit Statement**  
**Option Strict Statement**  
**Partition Function**  
**Pi Field**  
**Pmt Function**

---

**Pow Function**  
**PPmt Function**  
**Print, PrintLine Procedures**  
**Private Statement**  
**Property Statement**  
**Protected Keyword**  
**Public Statement**  
**PV Function**  
**QBColor Function**  
**Queue Class**  
**Queue.Clear Method**  
**Queue.Contains Method**  
**Queue.CopyTo Method**  
**Queue.Count Property**  
**Queue.Dequeue Method**  
**Queue.Enqueue Method**  
**Queue.Peek Method**  
**Queue.ToArray Method**  
**RaiseEvent Statement**  
**Randomize Procedure**  
**Rate Function**  
**ReDim Statement**  
**Rem Statement**  
**Rename Procedure**  
**Replace Function**  
**Reset Procedure**  
**Resume Statement**  
**Return Statement**  
**RGB Function**  
**Right Function**  
**Rmdir Procedure**  
**Rnd Function**  
**Round Function**  
**RTrim Function**  
**SaveFileDialog Class**  
**SaveSetting Procedure**  
**ScriptEngine Function**  
**ScriptEngineBuildVersion Function**  
**ScriptEngineMajorVersion Function**  
**ScriptEngineMinorVersion Function**  
**Second Function**  
**Seek Function**  
**Seek Procedure**  
**Select Case Statement**  
**Send, SendWait Methods**  
**Set Statement**  
**SetAttr Procedure**  
**Shadows Keyword**  
**Shell Function**  
**Sign Function**

---

**Sin Function**  
**Sinh Function**  
**SLN Function**  
**Space Function**  
**Spc Function**  
**Split Function**  
**Sqrt Function**  
**Stack Class**  
**Stack.Clear Method**  
**Stack.Contains Method**  
**Stack.CopyTo Method**  
**Stack.Count Property**  
**Stack.Peek Method**  
**Stack.Pop Method**  
**Stack.Push Method**  
**Stack.ToArray Method**  
**Static Statement**  
**Stop Statement**  
**Str Function**  
**StrComp Function**  
**StrConv Function**  
**StrDup Function**  
**StrReverse Function**  
**Structure...End Structure Statement**  
**Sub Statement**  
**Switch Function**  
**SYD Function**  
**SyncLock Statement**  
**SystemTypeName Function**  
**Tab Function**  
**Tan Function**  
**Tanh Function**  
**Throw Statement**  
**TimeOfDay Property**  
**Timer Property**  
**TimeSerial Function**  
**TimeString Property**  
**TimeValue Function**  
**Today Property**  
**Trim Function**  
**Try...Catch...Finally Statement**  
**TypeName Function**  
**UBound Function**  
**UCase Function**  
**Unlock Procedure**  
**Val Function**  
**ValDec Function**  
**VarType Function**  
**VbTypeName Function**  
**Weekday Function**

---

**WeekdayName Function**  
**While...End While Statement**  
**With Statement**  
**WithEvents Keyword**  
**Write Procedure**  
**WriteLine Procedure**  
**Year Function**  
**8. The Language Reference**

### **III: Appendixes**

#### **A. What's New and Different in VB .NET**

**A.1 Language Changes for VB .NET**  
**A.2 Changes to Programming Elements**  
**A.3 Obsolete Programming Elements**  
**A.4 Structured Exception Handling**  
**A.5 Changes in Object-Orientation**

#### **B. Language Elements by Category**

**B.1 Array Handling**  
**B.2 Clipboard**  
**B.3 Collection Objects**  
**B.4 Common Dialogs**  
**B.5 Conditional Compilation**  
**B.6 Conversion**  
**B.7 Date and Time**  
**B.8 Debugging**  
**B.9 Declaration**  
**B.10 Error Handling**  
**B.11 Filesystem**  
**B.12 Financial**  
**B.13 IDataObject Interface**  
**B.14 Information**  
**B.15 Input/Output**  
**B.16 Integrated Development Environment**  
**B.17 Interaction**  
**B.18 Mathematics**  
**B.19 Program Structure and Flow**  
**B.20 Programming**  
**B.21 Registry**  
**B.22 String Manipulation**

#### **C. Operators**

**C.1 Arithmetic Operators**  
**C.2 Assignment Operators**  
**C.3 Concatenation Operators**  
**C.4 Comparison Operators**  
**C.5 Logical and Bitwise Operators**  
**C.6 Operator Precedence**

---

## **D. Constants and Enumerations**

### **D.1 Visual Basic Intrinsic Constants**

### **D.2 ControlChars Class**

### **D.3 Visual Basic Enumerations**

## **E. The VB .NET Command-Line Compiler**

### **E.1 Compiler Basics**

### **E.2 Command-Line Switches**

### **E.3 Using a Response File**

## **F. VB 6 Language Elements Not Supported by VB .NET**

## **Colophon**





- [\*\*Western Herbs According to Traditional Chinese Medicine: A Practitioner's Guide here\*\*](#)
- [read online Prozac Nation book](#)
- [read \*The Bold Vegetarian Chef: Adventures in Flavor with Soy, Beans, Vegetables, and Grains\*](#)
- [The Encyclopedia of Crystals, Herbs, and New Age Elements: An A to Z Guide to New Age Elements and How to Use Them book](#)
  
- <http://aircon.servicessingaporecompany.com/?lib/Rage-and-Time--A-Psychopolitical-Investigation--Insurrections--Critical-Studies-in-Religion--Politics--and-Culture>
- <http://nautickim.es/books/Prozac-Nation.pdf>
- <http://yachtwebsitedemo.com/books/Lighting-Photo-Workshop.pdf>
- <http://yachtwebsitedemo.com/books/The-Encyclopedia-of-Crystals--Herbs--and-New-Age-Elements--An-A-to-Z-Guide-to-New-Age-Elements-and-How-to-Use-The>