

# VB and ArcGIS VBA Environment

## Computer Language Components

- Syntax
  - Expressions and statements
  - Keywords
  - Naming convention
- Variables / constants
  - Data types
  - Declaration
  - Assignment and retrieval
- Operands / operators
  - Arithmetic, logical, assignment, bitwise, ...
- Subroutines and functions
  - Intrinsic and external
- Scope
- Exception / error handling

## VBA Data Types

<i>Data type</i>	<i>Storage size</i>	<i>Range</i>
Boolean	2 bytes	True or False
Byte	1 byte	0 to 255
Integer	2 bytes	-32,768 to 32,767
Long	4 bytes	-2,147,483,648 to 2,147,483,647
Currency		-922,337,203,685,477.5808 to 922,337,203,685,477.5807
Single	4 bytes	-3.402823E38 to -1.401298E-45 for negative values; 1.401298E-45 to 3.402823E38 for positive values
Double	8 bytes	-1.79769313486231E308 to -4.94065645841247E-324 for negative values; 4.94065645841247E-324 to 1.79769313486232E308 for positive values
Date	8 bytes	January 1, 100 to December 31, 9999
String (variable-length)	10 bytes + string length	0 to approximately 2 billion String
String (fixed-length)	Length of string	1 to approximately 65,400
Currency	8 bytes	-922,337,203,685,477.5808 to 922,337,203,685,477.5807
Object	4 bytes	Any Object reference
Variant	16 bytes to variant length	

- Dim X As Boolean
- Dim X As String, Dim Y(10) As String
- If you do not specify a data type, the Variant data type is assigned by default, i.e., Dim X.

## VB Variables Naming Convention

Use the following notation for naming variables and constants:

[<libraryName.>][<scope.>]<type><name>

<name> describes how the variable is used or what it contains. The <scope> and <type> portions should always be lowercase, and the <name> should use mixed case.

Library Name	Library
esriGeometry	ESRI Object Library
stdole	Standard OLE COM Library
<empty>	Simple variable data type

<libraryName>

Prefix	Variable scope
c	constant within a form or class
g	public variable defined in a class form or standard module
m	private variable defined in a class or form
<empty>	local variable

<scope>

Examples:

Global Const cdMyPI = 3.14159

Dim bSelected As Boolean

Public giMapNo As Integer

Prefix	Data Type
b	Boolean
by	byte or unsigned char
d	double
fn	Function
h	handle
i	int (integer)
l	Long
p	a pointer
s	String

## VB Control Naming Convention

Object	Prefix	Example
Form	frm	frmSelect
Label	lbl	SearchString
Combo box	cbo	cboEditFeature
Command button	cmd	cmdCancel
Directory listbox	dir	dirPath
Drive listbox	drv	drvDrive
Image	img	imgBitmap
Listbox	lst	lstSelectedFile
Menu	mnu	mnuFileSaveAs
Option button	opt	optTopology
Timer	tmr	tmrAlarm
Common dialog	dlg	dlgSaveAs

## Procedures

```
Private Sub UserForm_Click()  
    'VB Codes  
    ' ...  
End Sub
```

## How to save your programs in ArcGIS?

- ArcGIS Normal template (Normal.mxt)
- A base template (\*.mxt)
- A map document (\*.mxd)

## Where to Find Help?

- VB
  - .Net2TheMax
    - <http://www.dotnet2themax.com/>
  - MicroSoft Developer Network (MSDN)
    - <http://msdn2.microsoft.com/>
  - Windows API Reference
    - <http://msdn2.microsoft.com/en-us/library/Aa383749.aspx>
- ArcObjects
  - ArcGIS Desktop Help for VB6/VBA Developers
  - ArcScripts
    - <http://arcscripts.esri.com/>
  - ESRI Developer Network (EDN)
    - <http://edndoc.esri.com/arcobjects/9.2/welcome.htm>