

## Fundamentals of programming in Visual Basic

### 1. Data Types

Data Types (Constant and Variable): Data types control of internal storage of data in Visual Basic. There are a number of variable data types that allow you to optimize your code for speed and size.

- 1- **Boolean:** A variable of type Boolean requires 2 bytes of memory and holds either the value (True or False).
- 2- **Currency:** The currency data type is extremely useful for calculations involving money. A variable of type Currency requires 8 bytes of memory.
- 3- **Date:** A variable of type Date requires 8 bytes of memory and holds numbers representing dates for example, 5/12/1996.
- 4- **Single:** A variable of type Single requires 4 bytes of memory and can hold 0, the numbers from  $(1.40129 \times 10^{-45}$  to  $3.40283 \times 10^{38})$  with the most seven significant digits, and the negatives of these numbers.
- 5- **Double:** A variable of type Double requires 8 bytes of memory and can hold 0, the numbers from  $(4.94065 \times 10^{-324}$  to  $1.7976 \times 10^{308})$  with at most 14 significant digits and the negatives of these numbers.
- 6- **Integer:** A variable of type integer requires 2 bytes of memory and can hold the whole numbers from  $(-32,768$  to  $32,767)$ .
- 7- **Long:** A variable of type Long requires 4 bytes of memory and can hold the whole numbers.
- 8- **String:** a variable of type string requires 1 byte of memory per character and can hold a string of up to 32,767 characters.
- 9- **Variant:** A variable of type variant can be assigned numbers, Strings and several other types of data. A variable of type variant requires 16 bytes of memory and can hold any type of data.

## 2. Variables

In Visual Basic, uses variable for storage values must start with character and maximum length 255 characters and not contain any point.

### Declaration of a variable

The declaration means defining the variable type. The variable has to be declared with the Dim Statement, supplying a name for the variable:

```
Dim variable name [As type]
```

Variables declared with the Dim statement within a procedure exist only as long as the procedure is executing. When the procedure finishes the value of the variable disappears. In addition, the value of a variable in a procedure is local to that procedure can't access a variable in one procedure from another procedure.

### Conditions about variables name:

- ✓ Must begin with letter.
- ✓ Can't contain an embedded period or embedded type-declaration character.
- ✓ Must not exceed 255 characters. The names of controls, forms, and modules must not exceed 40 characters.
- ✓ They can't be the same as restricted keywords (a restricted keyword is a word that Visual Basic uses as part of its language. This includes predefined statements such as "If and Loop", functions such as "Len and Abs", and operators such as "Or and Mod").

### **Examples:**

```
Dim X As Integer  
Dim Balance As Currency  
Dim Y As Long  
Dim A AS Double, B As Double  
Dim Month As Date  
Dim Max As Single  
Dim Name As String
```

### Error examples:

```
Dim x As string : Dim A, B, C, X (Two Dim statement)
Dim 1st As date (first character is number)
Dim (Ad#1) As string (symbol)
Dim MyName.is As string (point)
Dim Num one As long (space)
```

The types of variables are used the corresponding suffix shown below in the data type table.

Variable Type	Suffix	Example
Boolean, Variant, and Date	None	-----
Integer	%	Dim A%
Long(Integer)	&	Dim Ab&
Single	!	Dim Ac!
Double	#	Dim ACC#
Currency	@	Dim AB1@
String	\$	Dim AA\$

### 3. Constants

Constant also store values, but as the name implies, those values remains constant throughout the execution of an application. Using constants can make your code more readable by providing meaningful names instead of numbers. There are a number of built in constants in Visual Basic. There are two sources for constants:

- ✓ System-defined constants are provided by applications and controls.
- ✓ User-defined constants are declared using the **Const** statement. It is a space in memory filled with fixed value that will not be changed. For example

Constant for procedure	Const X=3.14156
Constant for form and all procedure	Private Const X=3.14156
Constant for all forms	Public Const X=3.14156