

# Lecture 29. An Introduction to VBA

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- ABC of VBA
  1. What is VBA?
  2. What are VBA used for?
  3. How does VBA program work?
  4. How to write VBA program ?
  5. How to run VBA?
  6. VBA examples
  7. What need to know about VBA programming?

# 1. What is VBA?

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- **Visual Basic for Applications (VBA)** is
  - an implementation of Microsoft's Visual Basic
  - built into most Microsoft Office applications, and many other applications, such as AutoCAD, WordPerfect
  - an event driven programming language
  - associated integrated development environment (IDE)

## 2. What are VBA used for?

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- **VBA** can be used to
  - control almost all aspects of the host application, including manipulating user interface features
    - menus and toolbars
  - work with customized user forms or dialog boxes.
  - create import and export filters for various file formats
  - It can be used to control one application from another using Automation.
    - For example, it is used to automatically create a Word report from Excel data

# VBA applications

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1. Automating documents
2. Customizing user interface
3. Performing calculations
4. Getting stuff from database
5. Adding new application features
6. Making special tools
7. Having things your ways

# Automation

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- VBA programs, or *macros*, can be attached to a menu button, a keyboard shortcut, or an event in the application
- The language also provides a user interface in the form of UserForms, which can host ActiveX controls for added functionality.

### 3. How does VBA work?

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- VBA is closely related to Visual Basic, but can normally only run code from within a host application rather than as a standalone application
- VBA is an interpreted language, meaning its instructions are *interpreted*, when the source code is run
- VBA is compatible with Microsoft Visual Basic 6, where source-code of VBA Modules can be directly imported
- VBA is not compatible with VB.NET

## 4. How to write VBA program?

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- VBA IDE is an VBA editor come with application program supporting VBA
- For MS office applications  
Tools -> Macro -> Visual Basic Editor
- In the VBA IDE  
Insert -> Module

# First VB program

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- Type in the VBA code, the same as VB syntax

```
Sub HelloWorld()  
Result = MsgBox("Click a button", vbYesNoCancel, "A message")  
MsgBox Result  
End Sub
```

# 5. How to run an VBA program

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## 1. Using Macro dialog box

Tools -> Macro -> Macros (or Alt + F8 )

Highlight the macro name and click run button

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## 2. Using quick launch method

- Creating a short cut key
  1. Tools -> Macro -> Macros
  2. Highlight the macro name
  3. Click option button (with excel)
  4. Type a letter in the box
  5. Click OK

# Creating a toolbar button

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1. Right-click in the toolbar area and then choose Customize from the context menu
2. Select the Commands tab and scroll through the Categories and find Macros
3. To add a custom button, drag a Custom Item objects from to standard toolbar
4. Right-click the new button on the toolbar and then select the Name option
5. Name the field, type &Hello
6. Right-click the new button on the toolbar and then select Assign Macro
7. Highlight the Hello entry and then click OK
8. Click Close the Customize dialog box

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- Accessing VBA program from other VBA code
    - Create another macro, which calls the given macro

```
Sub HelloWorld2()  
    MsgBox ("Hello World")  
    HelloWorld  
End Sub
```

# Executing VBA program automatically

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- If the Macro name is one of the following, it executes automatically

AutoClose, when the user closes the document

AutoExec, when the application starts

AutoExit, when the application ends

AutoNew, when the user creates a new document

AutoOpen, when the use opens an existing document

## 6. VBA program examples

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```
Option Explicit
```

```
Public Sub OptionCheck2()
```

```
    ' Define the variable.
```

```
    Dim MyVar As String
```

```
    ' Add a value to the variable.
```

```
    MyVar = "Hello"
```

```
    ' Display a message box.
```

```
    MsgBox MyVar
```

```
End Sub
```

## 7. What need to know about VBA programming?

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1. Data types
2. Variables
3. Operations and expressions
4. Flow controls
5. Procedures/functions
6. Complex data type
7. File I/O, DB I/O

# Data types

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- Data types are the same as VB
  - Integer, single, double
  - String
  - Boolean
  - Array

# Variables and Declaration

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Option Explicit

```
' This variable is visible to other modules.
Public MyPublicVariable As String
' This variable is visible only to this module.
Private MyPrivateVariable As String
' Using Dim is the same as making the variable private.
Dim MyDimVariable As String

' A constant only used for conditional compilation.
#Const MyConditionalConstant = "Hello"
' This constant is visible to other modules.
Public Const MyPublicConstant = "Hello"
' This constant is visible only to this module.
Private Const MyPrivateConstant = "Hello"

Public Sub DataDeclarations()
    ' Only this Sub can see these variables.
    Dim MyDimSubVariable As String

    ' Only this Sub can see this constant.
    Const MySubConstant = "Hello"
End Sub
```

# Variable, constant

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```
Public MyPublicVariable As String      ' This variable is visible to other modules.

Private MyPrivateVariable As String    ' This variable is visible only to this module.

Dim MyDimVariable As String           ' Using Dim is the same as making the variable private.

#Const MyConditionalConstant = "Hello" ' A constant only used for conditional compilation.

Public Const MyPublicConstant = "Hello" ' This constant is visible to other modules.

Private Const MyPrivateConstant = "Hello" ' This constant is visible only to this module.

Public Sub DataDeclarations()
    Dim MyDimSubVariable As String      ' Only this Sub can see these variables

    Const MySubConstant = "Hello"      ' Only this Sub can see this constant.

End Sub
```