Macro Programming

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Macro Programming

Creating UserForms & Event-driven Programming — Interacting with Users via Forms

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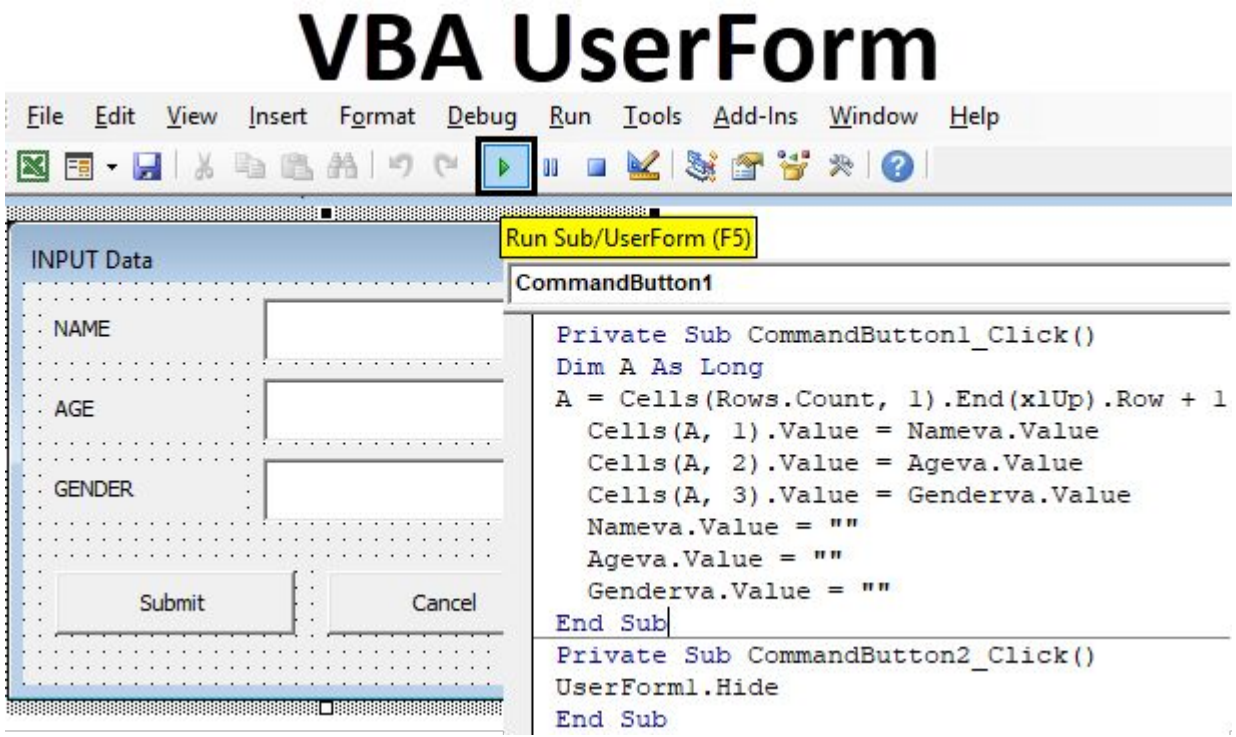
UserForm

- A **UserForm** is a dialog box that enables interaction between users and VBA.
- It can capture input, trigger automation, or display information.
- Enhances user experience with structured input.

Example:

A “Customer Entry Form” for Name, Age, Country, and Save button

UserForm


VBA UserForm
File Edit View Insert Format Debug Run Tools Add-Ins Window Help
Run Sub/UserForm (F5)
INPUT Data
NAME
AGE
GENDER
Submit
Cancel
CommandButton1
Private Sub CommandButton1_Click()
Dim A As Long
A = Cells(Rows.Count, 1).End(xlUp).Row + 1
Cells(A, 1).Value = Nameva.Value
Cells(A, 2).Value = Ageva.Value
Cells(A, 3).Value = Genderva.Value
Nameva.Value = ""
Ageva.Value = ""
Genderva.Value = ""
End Sub
Private Sub CommandButton2_Click()
UserForm1.Hide
End Sub

Inserting a UserForm

Steps:

1. Open VBA Editor (**Alt + F11**).
2. Go to **Insert** → **UserForm**.
3. Toolbox and Properties windows appear.
4. Save the workbook as `.xlsm`.

Explanation:

This creates a blank canvas for your form design.

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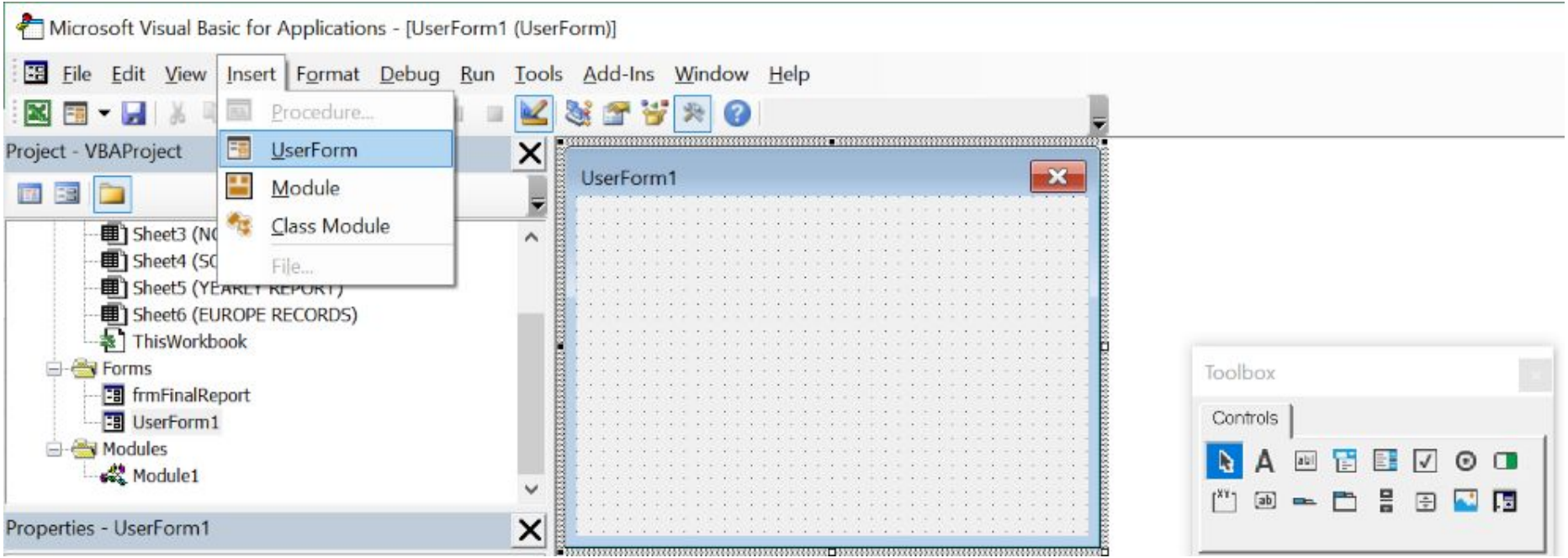
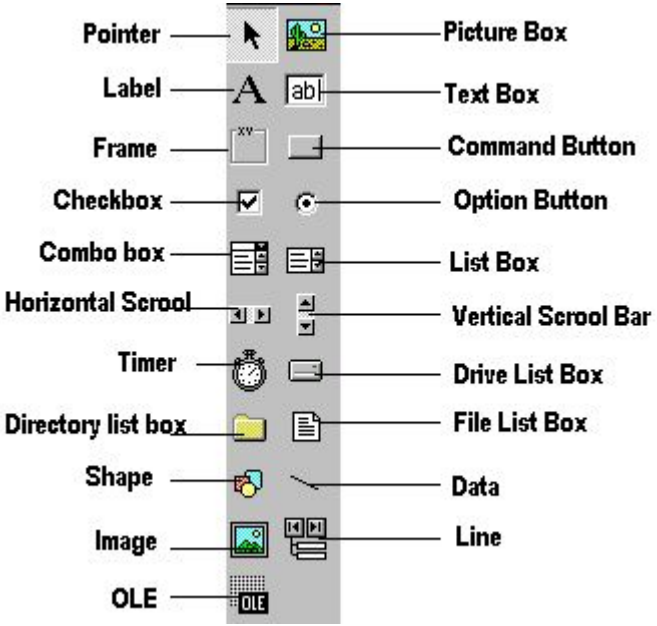
Inserting a UserForm



Common Controls Overview

Control	Description	Example Property
Label	Static text captions	Caption
TextBox	Input text	Text
ComboBox	Drop-down list	RowSource
CommandButton	Executes code	Caption
OptionButton	Radio choice	GroupName
CheckBox	Yes/No selection	Value

Common Controls Overview



Setting Control Properties

Steps:

1. Select a control (e.g., TextBox).
2. Open the **Properties** window.
3. Change:
   - `Name` → `txtName`
   - `Caption` → “Enter Name”
   - `TabIndex` → 0

Setting Control Properties

Naming and ordering controls systematically improves code readability.

Event-driven Programming Concept

- Traditional VBA runs sequentially.
- **Event-driven VBA** runs only when triggered (e.g., a button click).
- Events include:
  - `Click`
  - `Change`
  - `Initialize`
  - `Activate`

Example: Button Click Event

```
Private Sub cmdSubmit_Click()
    MsgBox "Form submitted successfully!"
End Sub
```

- When the user clicks **Submit**, this event procedure executes automatically.

Initializing a Form

```
Private Sub UserForm_Initialize()
    Me.cboCountry.AddItem "India"
    Me.cboCountry.AddItem "USA"
    Me.cboCountry.AddItem "UK"
End Sub
```

- `Initialize` event preloads controls with data before the form appears.

Passing Data to the Worksheet

```
Private Sub cmdSubmit_Click()
    Dim ws As Worksheet
    Set ws = ThisWorkbook.Sheets("Data")
    Dim nextRow As Long
    nextRow = ws.Cells(ws.Rows.Count, "A").End(xlUp).Row + 1
    ws.Cells(nextRow, 1).Value = Me.txtName.Value
    ws.Cells(nextRow, 2).Value = Me.txtAge.Value
    ws.Cells(nextRow, 3).Value = Me.cboCountry.Value
    MsgBox "Record added!"
End Sub
```

Clearing Form Data

```
Private Sub cmdClear_Click()
    Me.txtName.Value = ""
    Me.txtAge.Value = ""
    Me.cboCountry.Value = ""
End Sub
```

- Prevents residual data; gives users a reset option.

Modal vs Modeless Forms

```
Sub ShowModal()
    UserForm1.Show
End Sub
Sub ShowModeless()
    UserForm1.Show vbModeless
End Sub
```

Experiential Task 1: Build a Data Entry Form

Task:

Create a form to capture Name, Age, and Country, and store it in “Data” sheet.

Experiential Task 2: Edit/Search Form

Task:

Create a form to search by Name, edit details, and update sheet.

Input Validation Example

```
If Me.txtAge.Value = "" Or Not IsNumeric(Me.txtAge.Value) Then
    MsgBox "Enter a valid number.", vbExclamation
    Me.txtAge.SetFocus
    Exit Sub
End If
```

Worksheet and Workbook Events

```
Private Sub Workbook_Open()
    MsgBox "Welcome to the Form!"
End Sub
Private Sub Worksheet_Change(ByVal Target As Range)
    If Not Intersect(Target, Me.Range("A1:A10")) Is Nothing Then
        MsgBox "Column A changed!"
    End If
End Sub
```

Debugging UserForms

- Use `F8` to step through event code.
- `Debug.Print` to log form values.
- Use Watch/Immediate windows for variables.

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