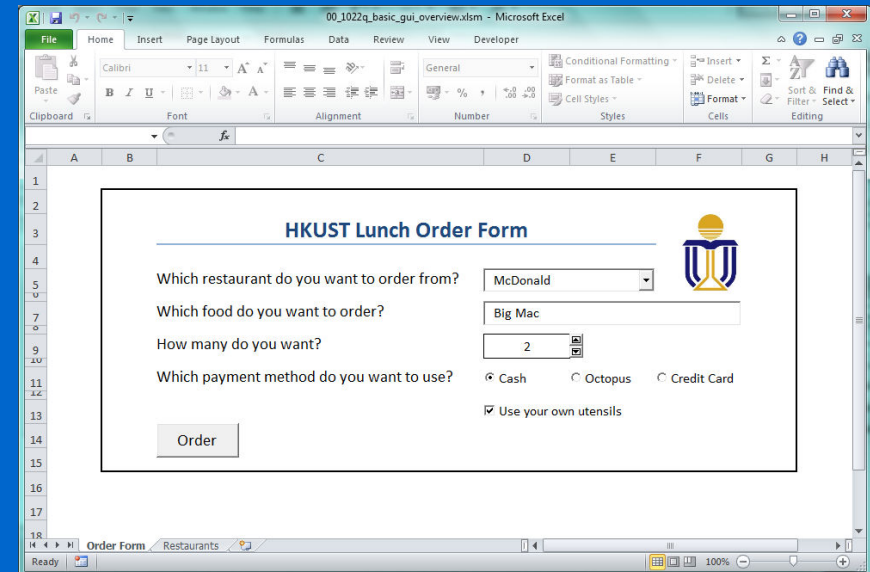COMP1022Q
Introduction to Computing with Excel VBA

Basic GUI Controls

Gibson Lam, David Rossiter and Eddie Chan

What is a GUI?

- A graphical user interface (GUI) is a set of visual elements that a user can interact with

- An example GUI is shown on the right

- For Excel, some of the GUI elements you can use are shown on the next two slides

Examples of GUI Components (1/2)

Text Box

Big Mac

Labels

Which restaurant do you want to order from?

Combo Box

McDonald's
Cha Chaan Teng
Baguettes II
McDonald's
Asia Pacific Catering
Gold Rice Bowl
Milano Fresh
UC Bistro
Seafront Cafeteria

Image Control

HKUST Lunch Order Form

Which restaurant do you want to order from?   McDonald's

Which food do you want to order?   Big Mac

How many do you want?   1

Which payment method do you want to use?   ◉ Cash   ○ Octopus   ○ Credit Card

☑ Use your own utensils

Order

Examples of GUI Components (2/2)

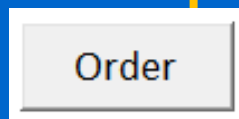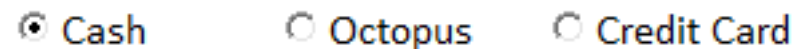**HKUST Lunch Order Form**

Which restaurant do you want to order from? | McDonald's ▼

Which food do you want to order? | Big Mac

How many do you want? | 1 ▲▼

Which payment method do you want to use? | ⦿ Cash | ○ Octopus | ○ Credit Card

☑ Use your own utensils

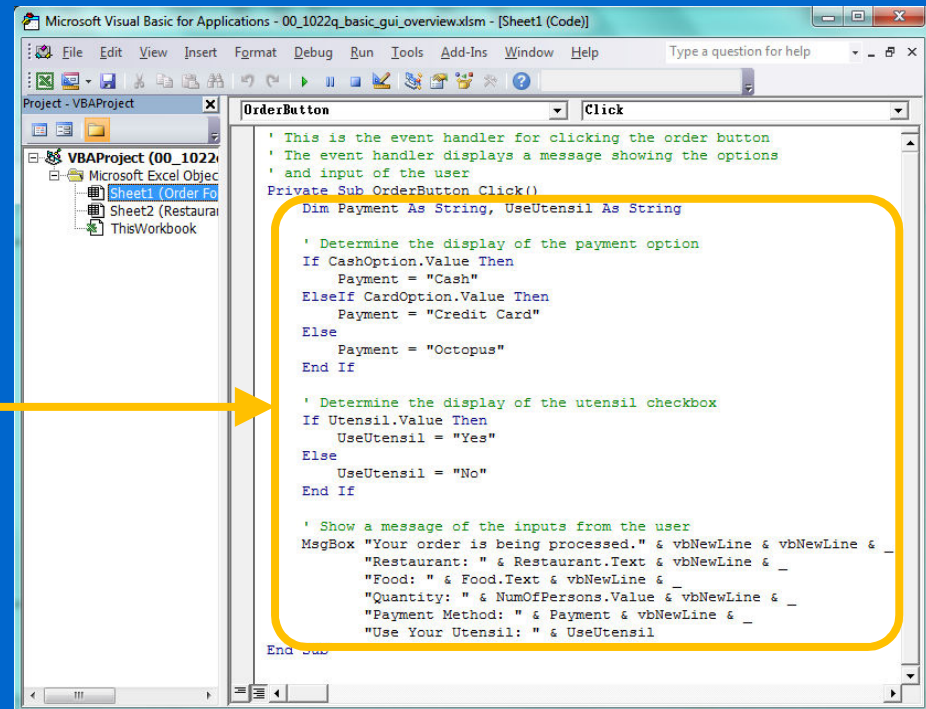Order

Button | Order

Spin Button | ▲▼

Check Box

☑ Use your own utensils

Option Buttons

⦿ Cash | ○ Octopus | ○ Credit Card

Excel GUI Events
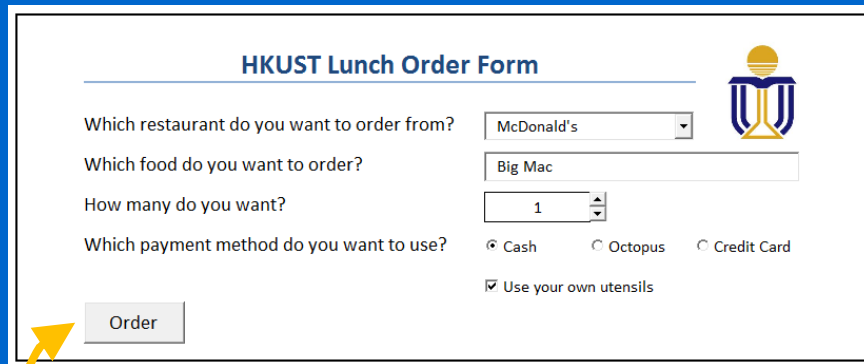
- We have worked on how to handle events in a worksheet or a workbook in the labs
- Similar to that, we can write some VBA code to handle events created when a user does something with a GUI component
- For example, doing all these will trigger an event:
  - Clicking a button
  - Changing the value in a combo box
  - Changing the text of a text box

How to Build an Excel GUI System

- First, create all the required GUI components using the Excel GUI panel, i.e.
    - Add the GUI components such as buttons and text boxes
    - Set up the properties of the components like:
        - Basic data such as name and displayed text
        - Visual style such as font color and size
        - Event handlers
- Then write the VBA code for the event handlers of the GUI components

Building an Excel GUI System

- Step 1 – Create the GUI display using the GUI components

- Step 2 – Write the VBA code for the event handlers

This is the event handler of the 'Click' event of the 'Order' button

Excel GUI Components

- The Excel GUI panel has all sorts of GUI components such as buttons, combo boxes, option buttons that can be added to a worksheet

- These GUI components are divided into two categories:

    – Form Controls

    – ActiveX Controls

- The two categories of controls are very similar but they have some important differences
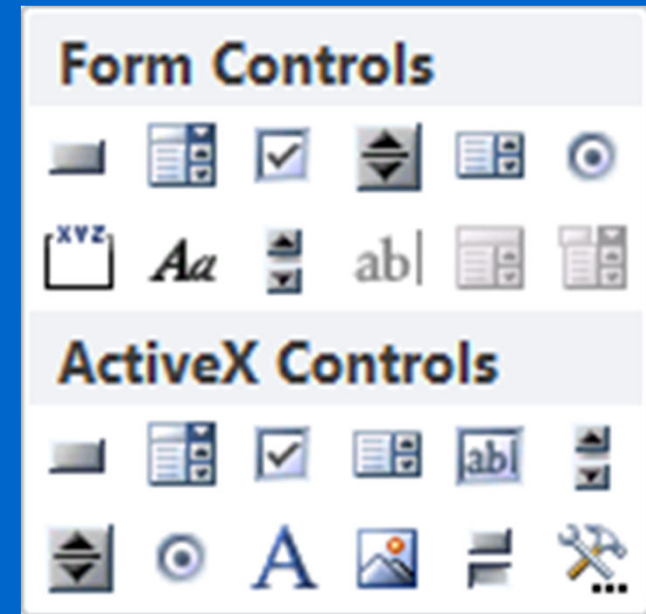
Form Controls

- Any VBA code can be run from a Form control

- Most of the Form controls do not allow any change of their visual style such as font and color

- Form controls can only handle a few events such as the click and the change events
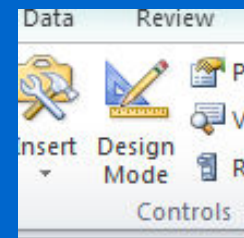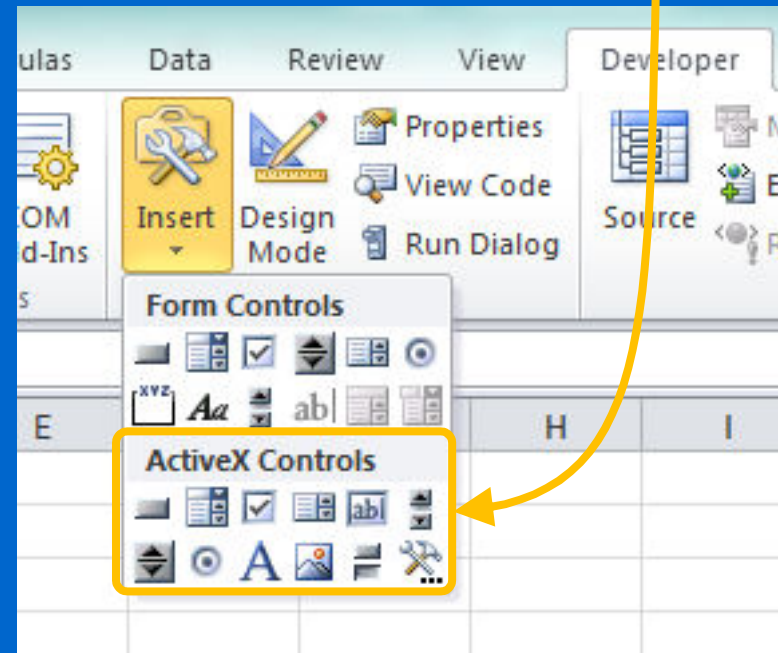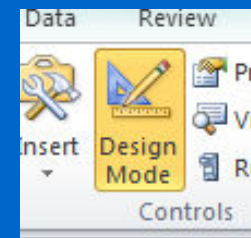

Form controls

ActiveX Controls
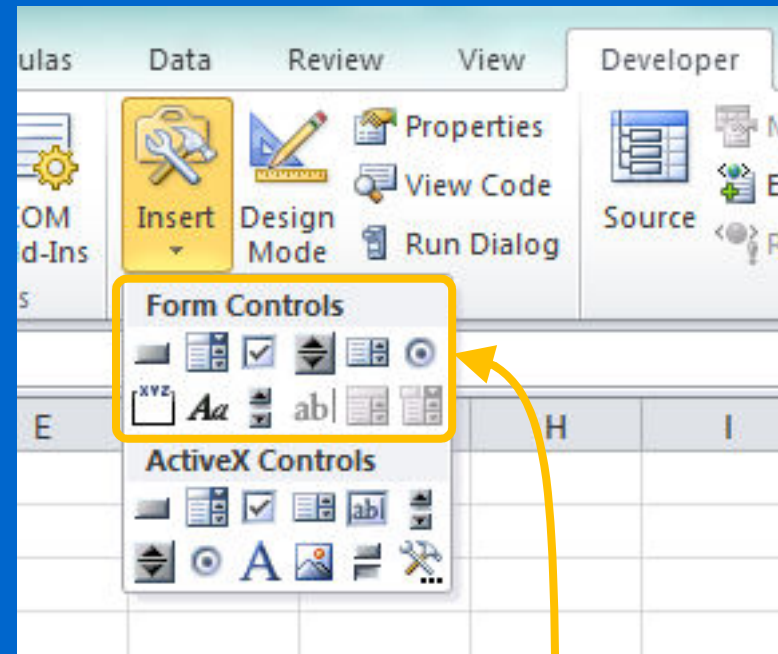
- Similar to Form controls any VBA code can be run from ActiveX controls

- ActiveX controls provide greater flexibility than Form controls

- For example, their visual style can be easily changed and they can handle various events

- However, to change any ActiveX controls the GUI panel has to be in *Design Mode*

Design mode off

Design mode on

GUI Components in This Presentation

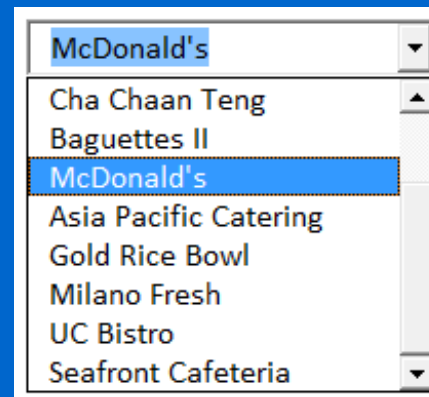- For the rest of this presentation we will focus on the use of three basic GUI components:

Label

Combo Box

Which restaurant do you want to order from?

| McDonald's	▼
Cha Chaan Teng	▲
Baguettes II	
McDonald's	
Asia Pacific Catering	
Gold Rice Bowl	
Milano Fresh	
UC Bistro	
Seafront Cafeteria	▼

Button

Order

- We will show these three components using both Form controls and ActiveX controls

The Rest of This Presentation

- In the rest of this presentation we will look at these things:
    - Creating a label Form control
    - Creating a label ActiveX control
    - Creating a button Form control
    - Creating a button ActiveX control
    - Creating a combo box Form control
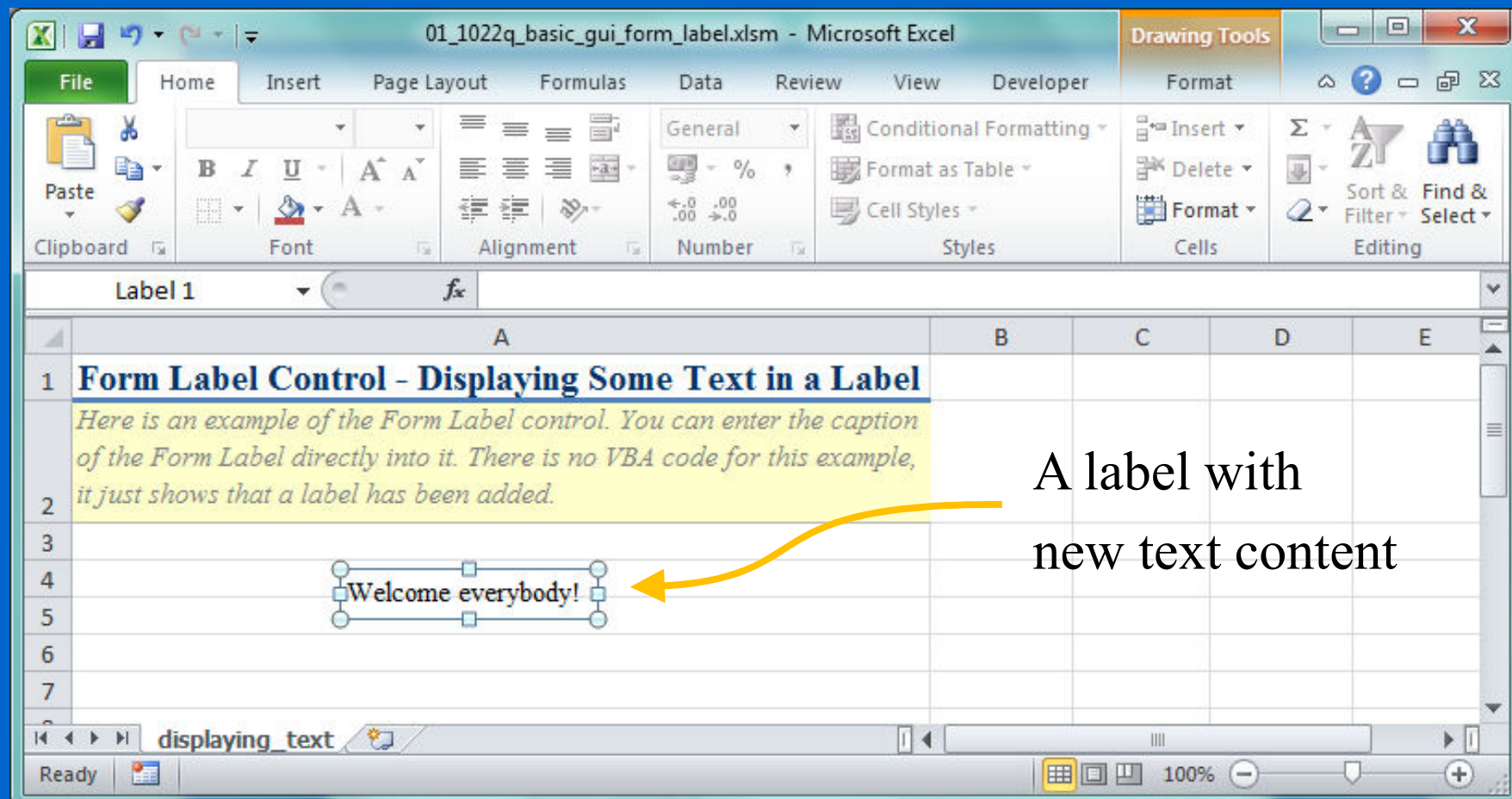   - Creating a combo box ActiveX control

Creating a Label Form Control 1/2

- To add a label Form control we select the label Form control icon

- Then we click and drag the label at the location we want to put it, like this:
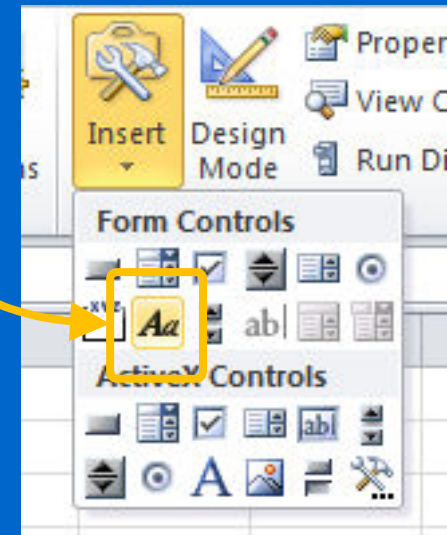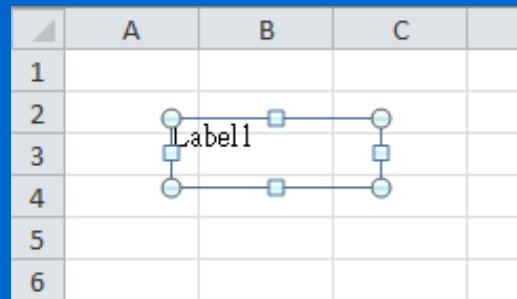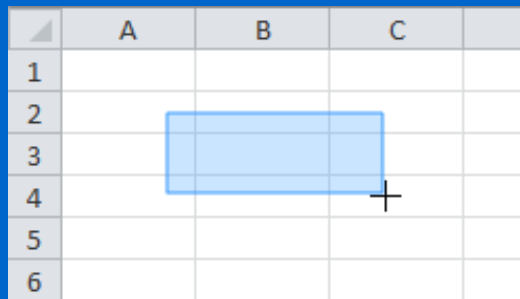
Creating a Label Form Control 2/2

- After adding the label we can then double-click on the label to change the text content, like this:

A label with new text content
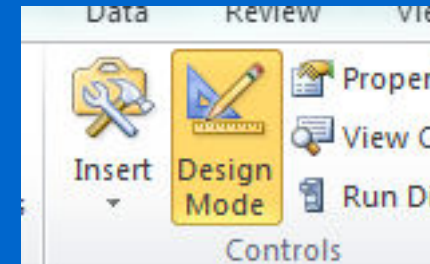
Creating a Label ActiveX Control 1/4

- To add a label ActiveX control we select the label ActiveX control icon

- Then we click and drag the label at the location we want to put it, like this:
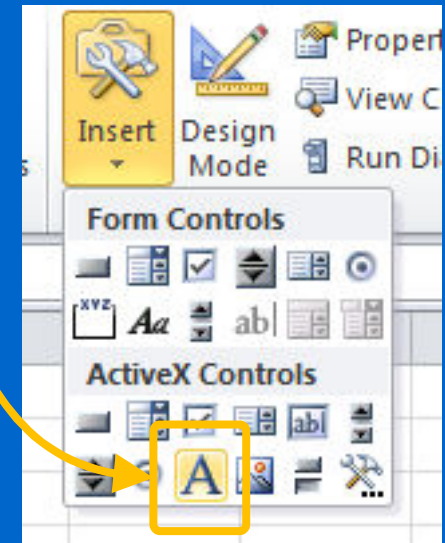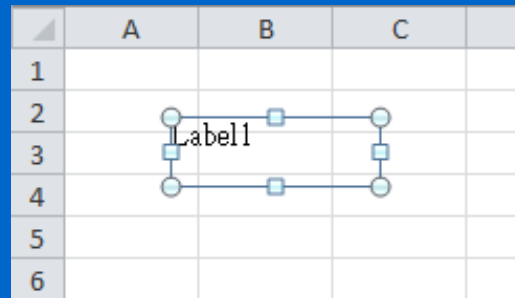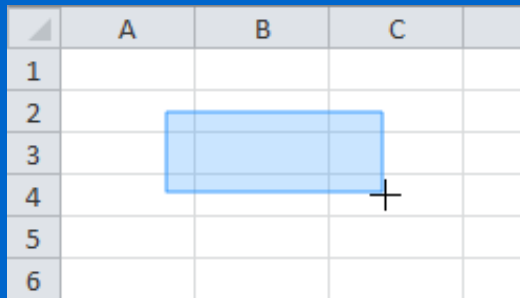
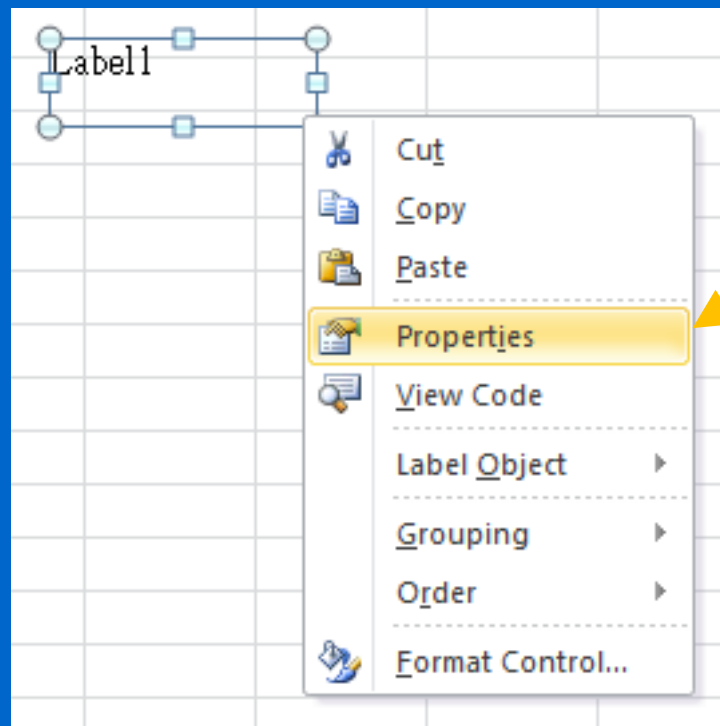# Creating a Label ActiveX Control 2/4

- When we add an ActiveX control Excel will automatically switch to *Design mode*

- After the label is added on the worksheet we can change the text content of the label by doing these:
  – Right-click on the label to bring up a pull-down menu
  – In the pull-down menu select 'Properties' to show the properties window of the label
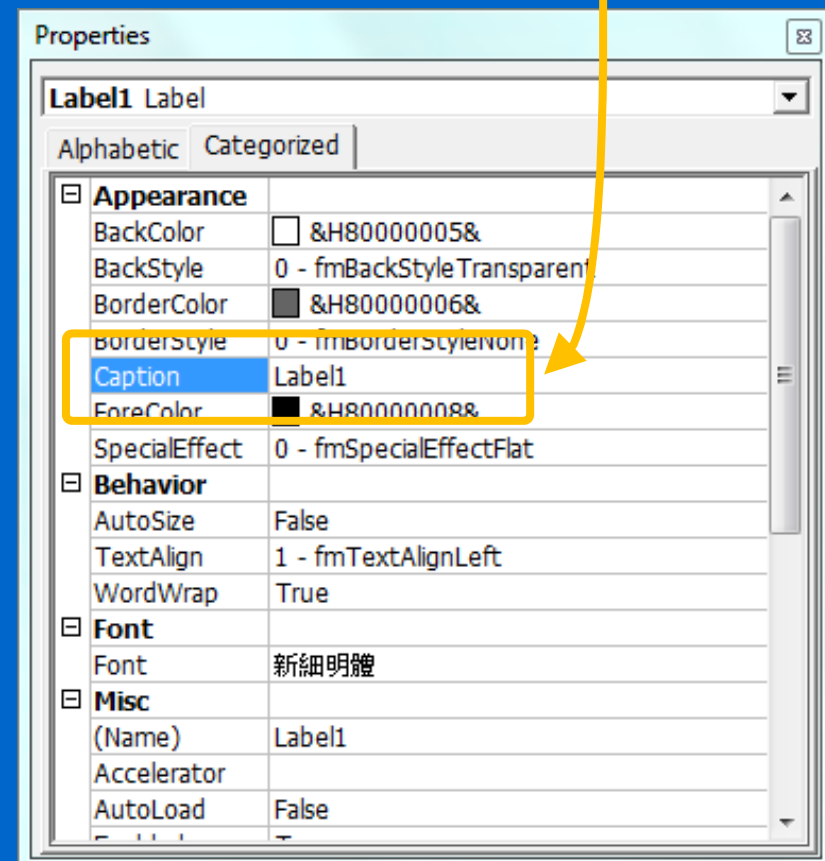 – Change the text content in the 'Caption' property

Creating a Label ActiveX Control 3/4

Bring up the pull-down menu and select 'Properties'

Change the text content of the label using the 'Caption' property

Creating a Label ActiveX Control 4/4

- By changing the 'Caption' property we can see the display of the label changed accordingly, like this:


In this example, the font of the label has been changed

Properties Window of ActiveX Controls

- In the previous example we saw the properties window of the label ActiveX control

- A properties window is used to show the settings of every ActiveX control, not just for a label control

- For example, the visual parameters can be changed here

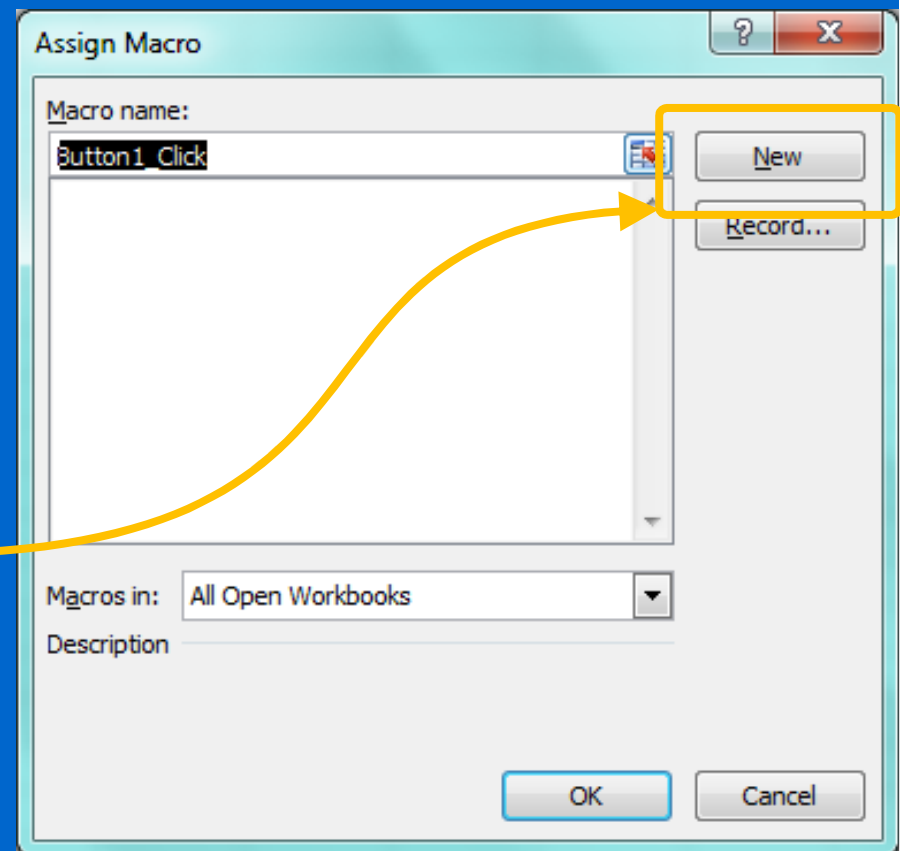- However, Form controls do not enjoy this kind of flexibility
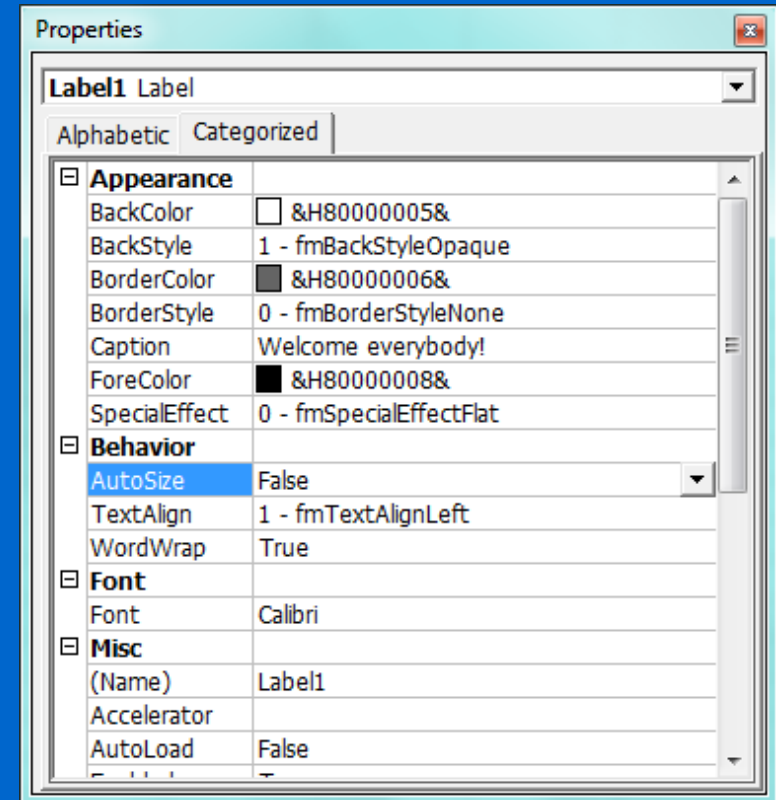
Creating a Button Form Control 1/3

- To add a button Form control we select the button Form control icon

- Then we click and drag the button at the location we want to put it, like this:
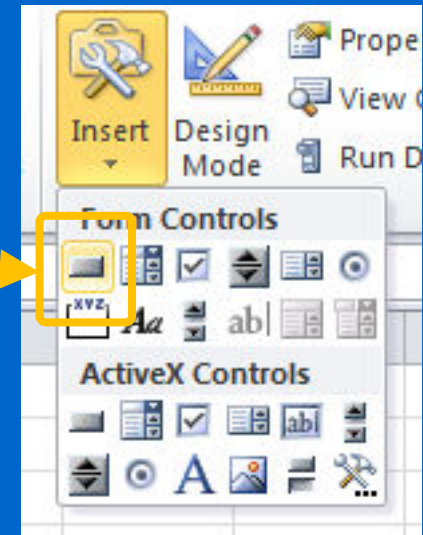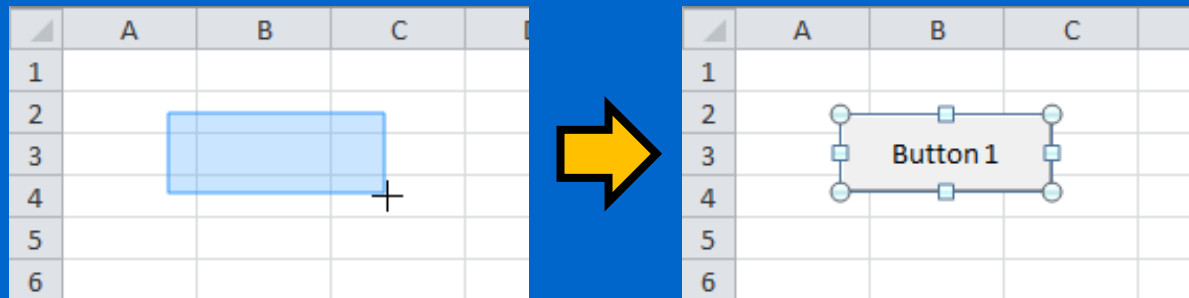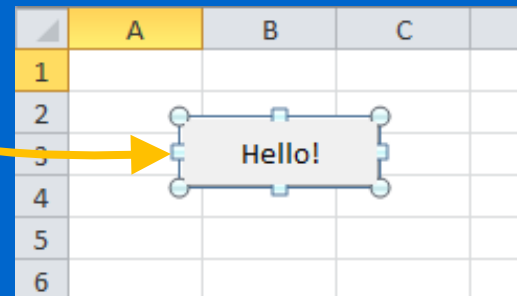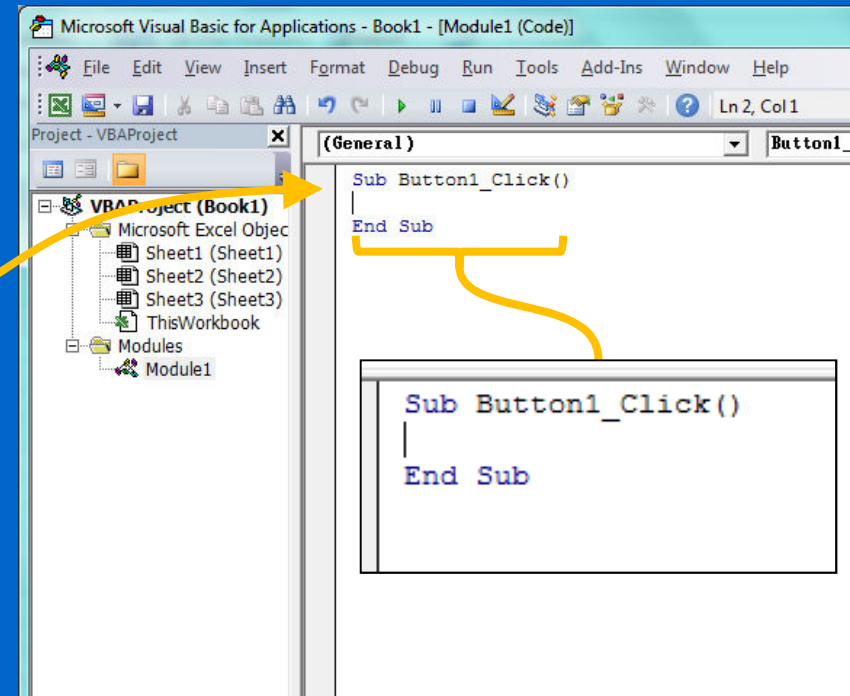
Creating a Button Form Control 2/3

- Before the button is added to the worksheet an 'Assign Macro' window will pop up asking for a macro to be assigned to the button

- This macro will be the function executed by VBA when the button is clicked

- If the macro does not exist it will be useful to click the 'New' button to create it now
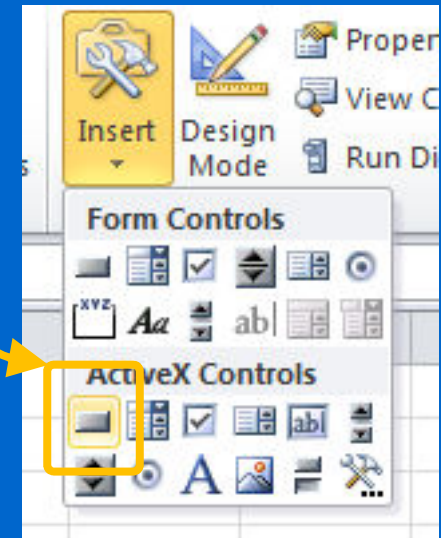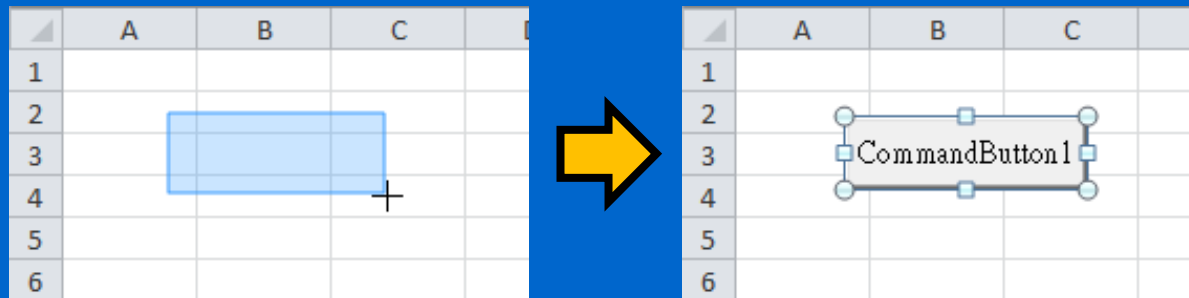
Creating a Button Form Control 3/3

- After the macro shell has been added we can start to write the VBA code for the button there

- In addition, we can change the text of the button by right-clicking on the button and then change the text
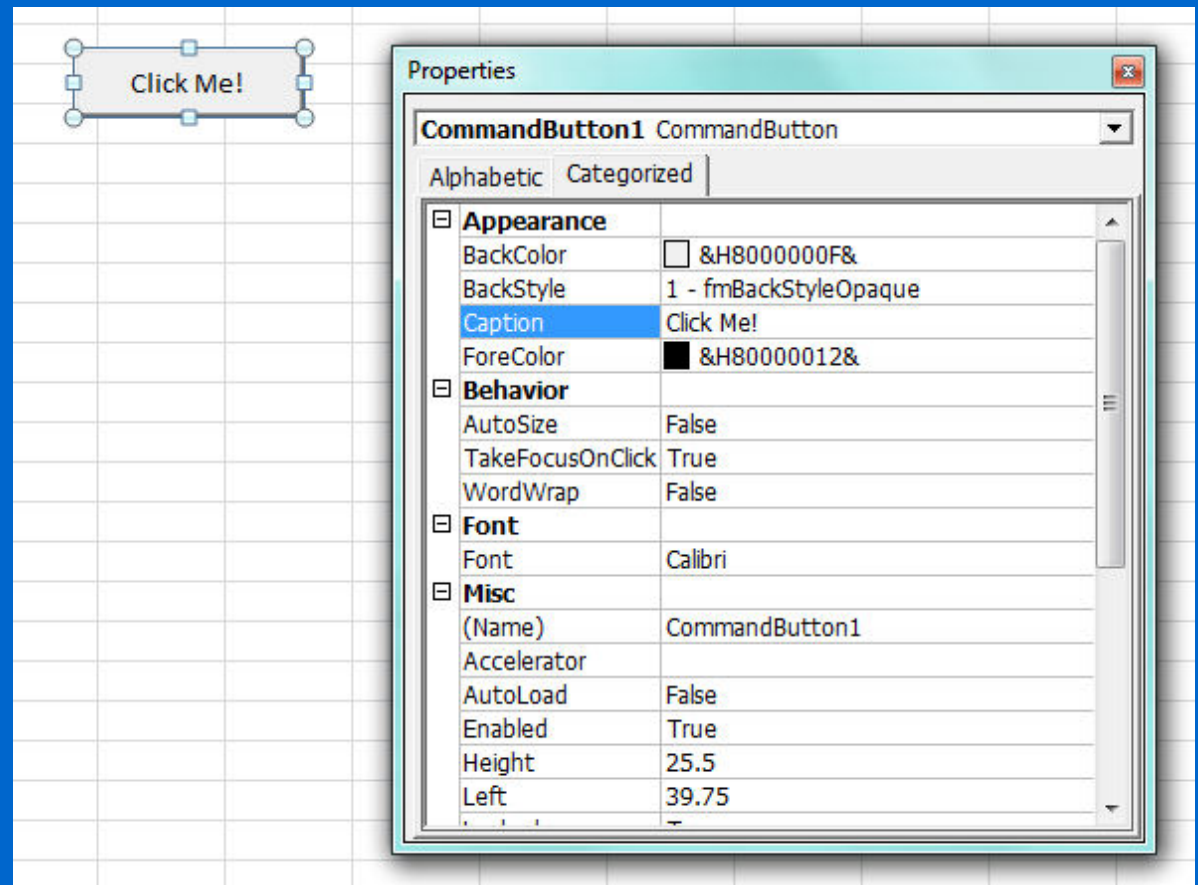
Creating a Button ActiveX Control 1/3

- To add a button ActiveX control we select the button ActiveX control icon

- Then we click and drag the button at the location we want to put it, like this:

# Creating a Button ActiveX Control 2/3

- We can bring up the properties window of the newly created button and give it some new text to display, like this:

Creating a Button ActiveX Control 3/3

- To write VBA code in the event handler of the button we can double-click on the button to edit the default event handler, i.e. the 'Click' event handler

- If the default event is not suitable you can always select another events and write VBA code for them
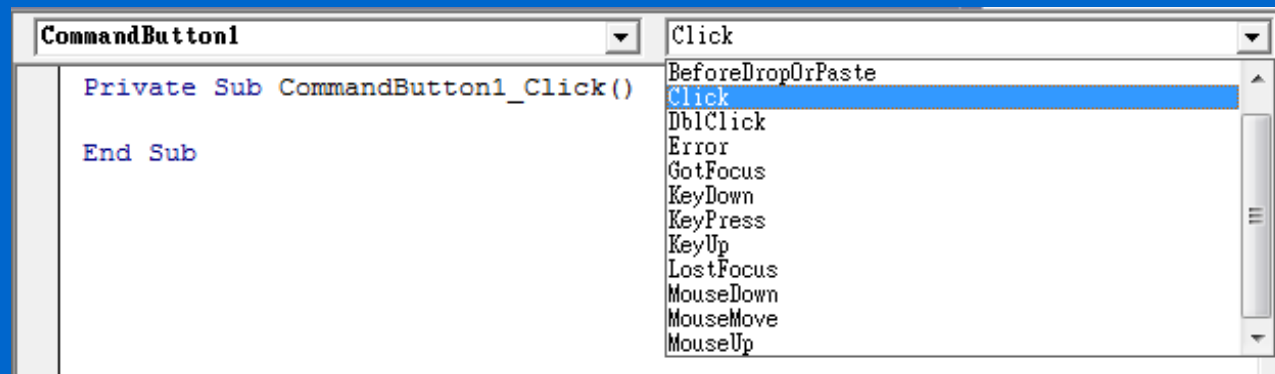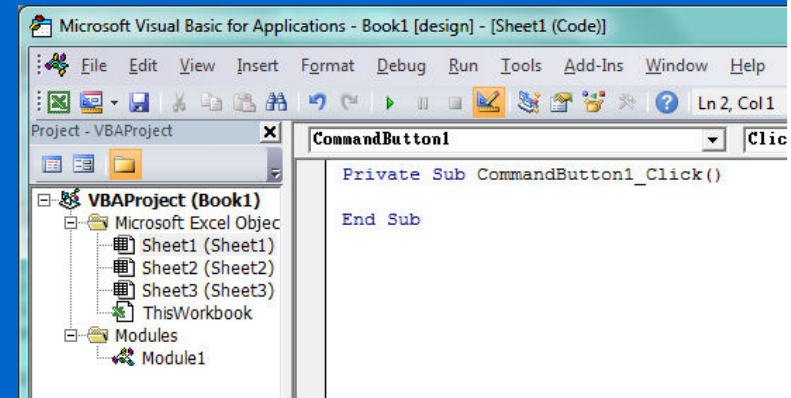
Select another event from the combo box on the right of the editor

Creating a Combo Box Form Control 1/5

- To add a combo box Form control we select the combo box Form control icon

- Then we click and drag the combo box at the location we want to put it, like this:
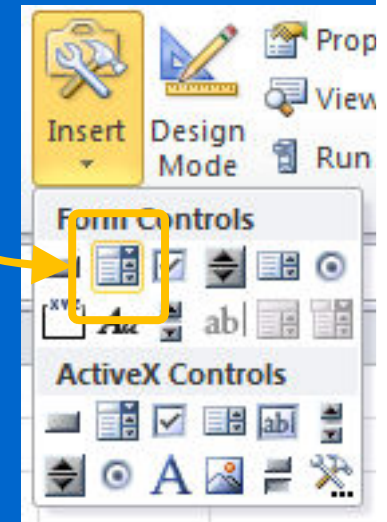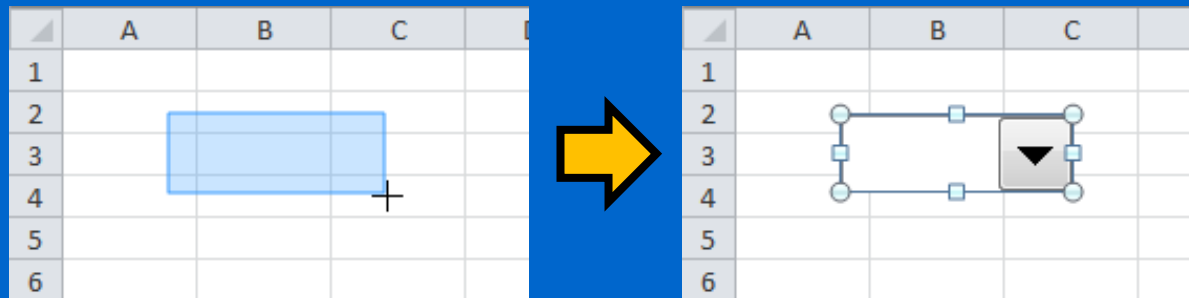
Creating a Combo Box Form Control 2/5

- An item list has to be set up for the combo box

- The list has to come from a worksheet

- To do this we can right-click on the control and then select 'Format Control'
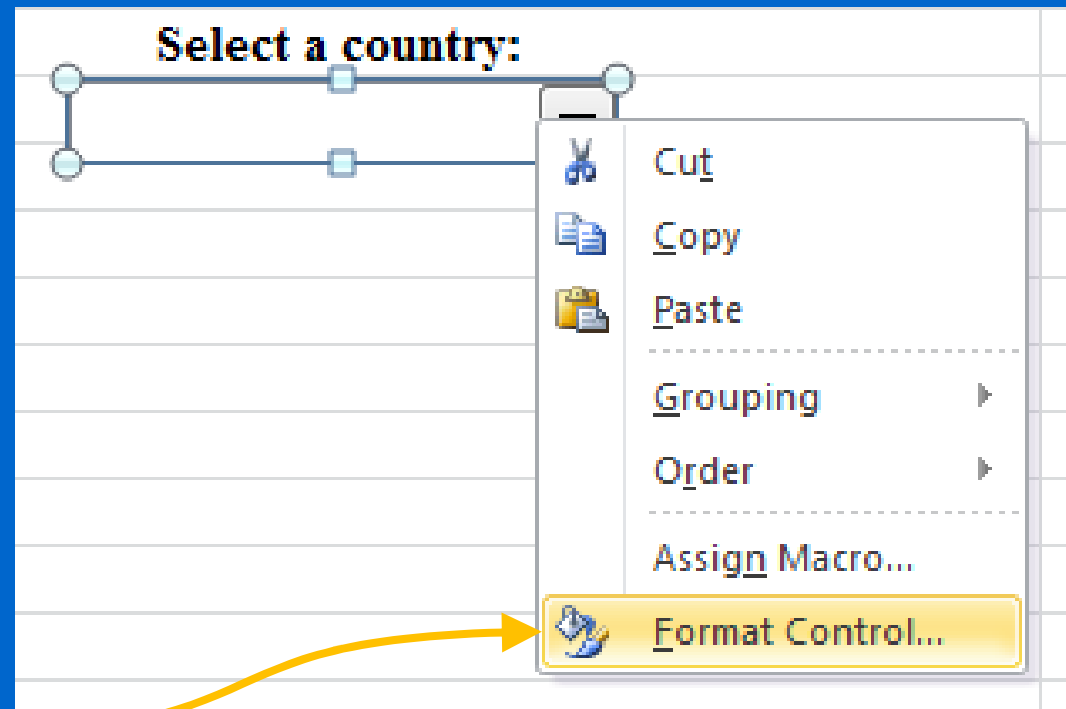
Creating a Combo Box Form Control 3/5

- The input range of the combo box items can be specified in the 'Control' tab of the 'Format Control' window

- For example, the input range is set to the list of locations, i.e. *$D$5:$D$8*, in the same worksheet here:

Creating a Combo Box Form Control 4/5

- Apart from the input range the combo box can display the index (from 1 to the total number of items) of the selected item in a particular cell, like this:

	Key	Location
Select a country:	1	Hong Kong
Taiwan ▼	2	Macau
	3	Taiwan
The result of your selection:	4	Mainland China
3		

The index of 'Taiwan' is 3 within the list

The result of your selection:
Taiwan

Format Control

| Size | Protection | Properties | Alt Text | Control |

Input range: $D$5:$D$8

Cell link: $A$9

Drop down lines: 8

☐ 3-D shading

Creating a Combo Box Form Control 5/5

- How to display the selected item text in a cell?
- We can simply use a *VLOOKUP* to search for the item text using the item list in the worksheet


	Key	Location
	1	Hong Kong
	2	Macau
	3	Taiwan
	4	Mainland China

Select a country:

Taiwan

The result of your selection:
3

The result of your selection:
Taiwan

=VLOOKUP(FormSelectedIndex, Selecting_a_country!C5:D8, 2, TRUE)

Creating a Combo Box ActiveX Control 1/7

- To add a combo box ActiveX control we select the combo box ActiveX control icon

- Then we click and drag the combo box at the location we want to put it, like this:
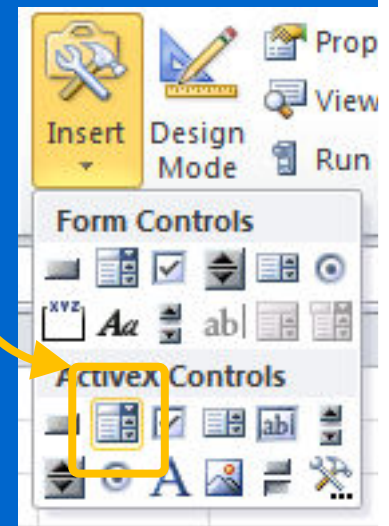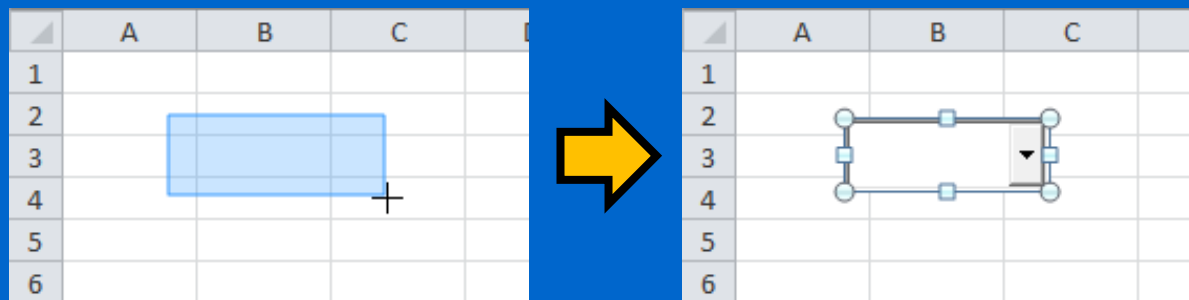
Creating a Combo Box ActiveX Control 2/7

- Similar to the combo box Form control an item list has to be set up first

- For combo box ActiveX control the list is specified in the properties window, like this:

Creating a Combo Box ActiveX Control 3/7

- Similar to the Form control, the combo box ActiveX control can be linked with the content of a cell

- However, as opposed to displaying the index of the selected item, the combo box ActiveX control shows the item text in the linked cell, like this:
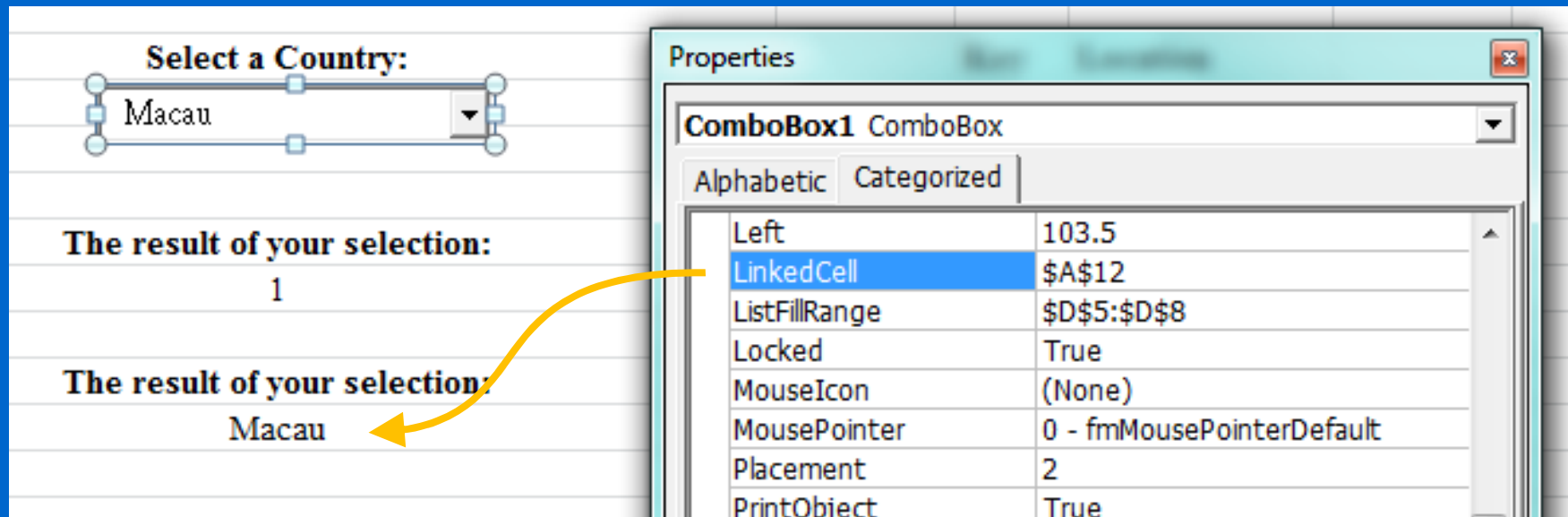
Creating a Combo Box ActiveX Control 4/7

- If you want to show the index of the item in the worksheet you need to do it by yourself

- Similar to the combo box Form control example, you can use a *VLOOKUP* to do that

- However, in this example we will use an event handler to show the index of the item

- The event handler we use is the 'Change' event of the combo box

Creating a Combo Box ActiveX Control 5/7

- To create the event handler we double-click on the combo box ActiveX control

- The default event of the combo box is the 'Change' event as shown below:

```
ComboBox1                    ▼    Change                       ▼

    Private Sub ComboBox1_Change()

    End Sub
```
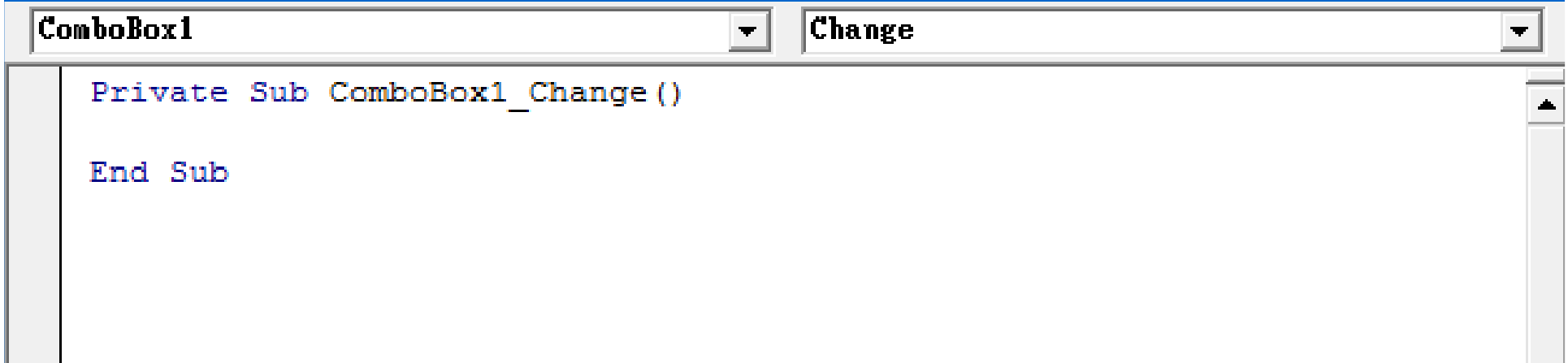
Creating a Combo Box ActiveX Control 6/7

- To display the index of the combo box the following code is used:

```
Private Sub ComboBox1_Change()
     ActiveSheet.Range("A9") = _
                    ComboBox1.ListIndex
End Sub
```

- The above code puts the *ListIndex* value of the combo box in cell A9 of the worksheet

Creating a ComboBox ActiveX Control 7/7

- For example, the following picture shows the index of the selection when the selected text is Macau:

Note that the index for a combo box ActiveX control starts from 0 whereas the index for a Form control starts from 1