

COMP1022Q
Introduction to Computing with Excel VBA

Basic GUI Controls

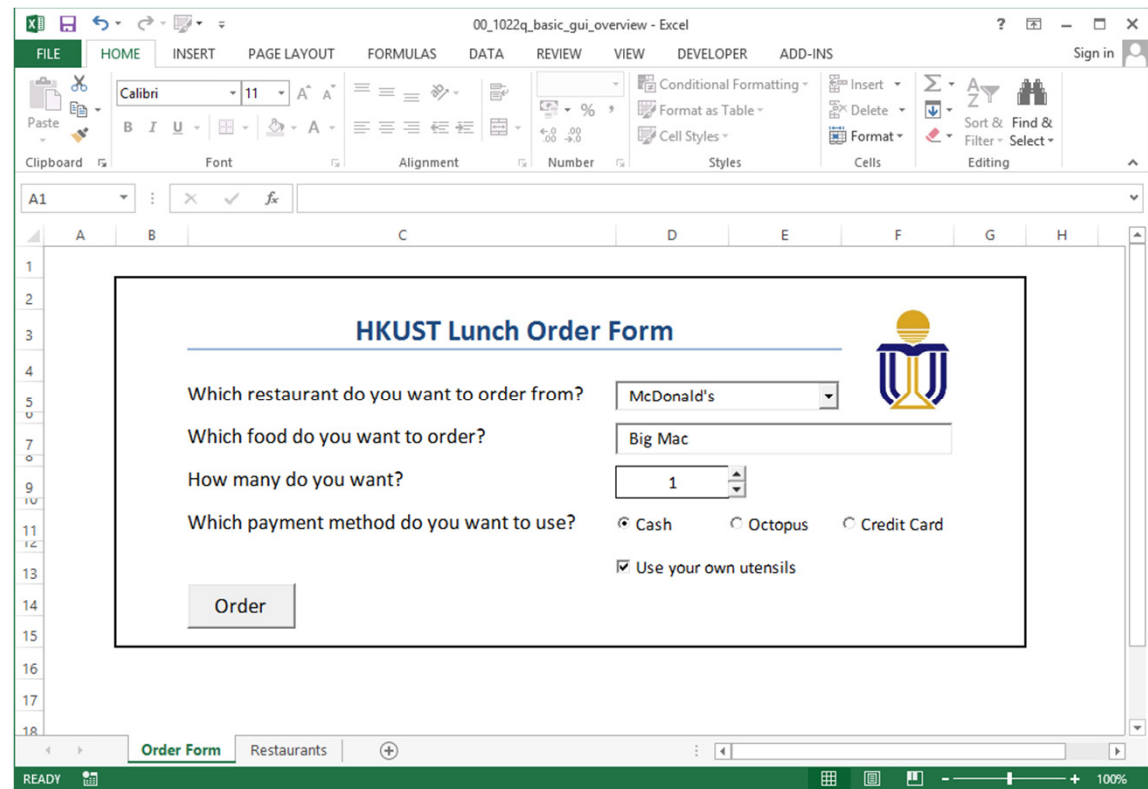
Gibson Lam and David Rossiter

Outcomes

- After completing this presentation, you are expected to be able to:
 1. Understand how to use GUI controls in Excel

What is a GUI?

- A Graphical User Interface (GUI) is a set of visual elements that a user can interact with
- Example GUI components are shown in 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

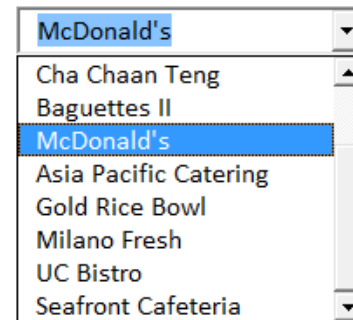


Image Control



HKUST Lunch Order Form

Which restaurant do you want to order from?

Which food do you want to order?

How many do you want?

Which payment method do you want to use? ☒ Cash ☐ Octopus ☐ Credit Card

☒ Use your own utensils

Examples of GUI Components 2/2

The screenshot shows the 'HKUST Lunch Order Form' with the following fields and controls:

- Which restaurant do you want to order from? (Dropdown menu showing 'McDonald's')
- Which food do you want to order? (Text input field showing 'Big Mac')
- How many do you want? (Spin button showing '1')
- Which payment method do you want to use? (Radio buttons for 'Cash', 'Octopus', and 'Credit Card')
- ☒ Use your own utensils
- Order button

Callouts from the bottom of the slide point to specific components in the form:

- Button**: Points to the 'Order' button in the form.
- Spin Button**: Points to the quantity input field showing '1'.
- Check Box**: Points to the 'Use your own utensils' checkbox.
- Option Buttons**: Points to the radio buttons for payment methods.

Below the callouts are examples of each component:

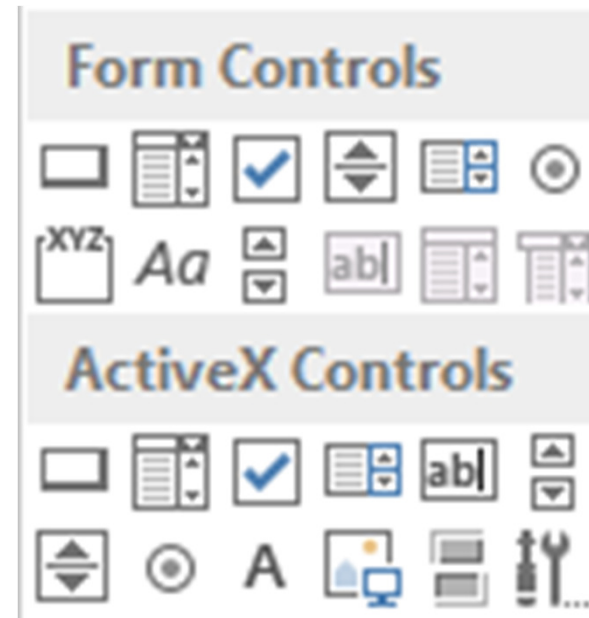
- Button**: A rectangular button labeled 'Order'.
- Spin Button**: A small control with up and down arrows and a central display area.
- Check Box**: A checkbox with a checkmark and the text 'Use your own utensils'.
- Option Buttons**: Three radio buttons labeled 'Cash', 'Octopus', and 'Credit Card'.

One Way to Build a GUI

- Create the required GUI components e.g.
 - Add the GUI components, such as buttons and combo boxes
 - Set up the properties of the components e.g.
 - Basic data, such as name and text shown
 - Visual style, such as font color and size
- Write the VBA code in a subroutine
- Do the mapping from the GUI component to the subroutine

Excel GUI Components

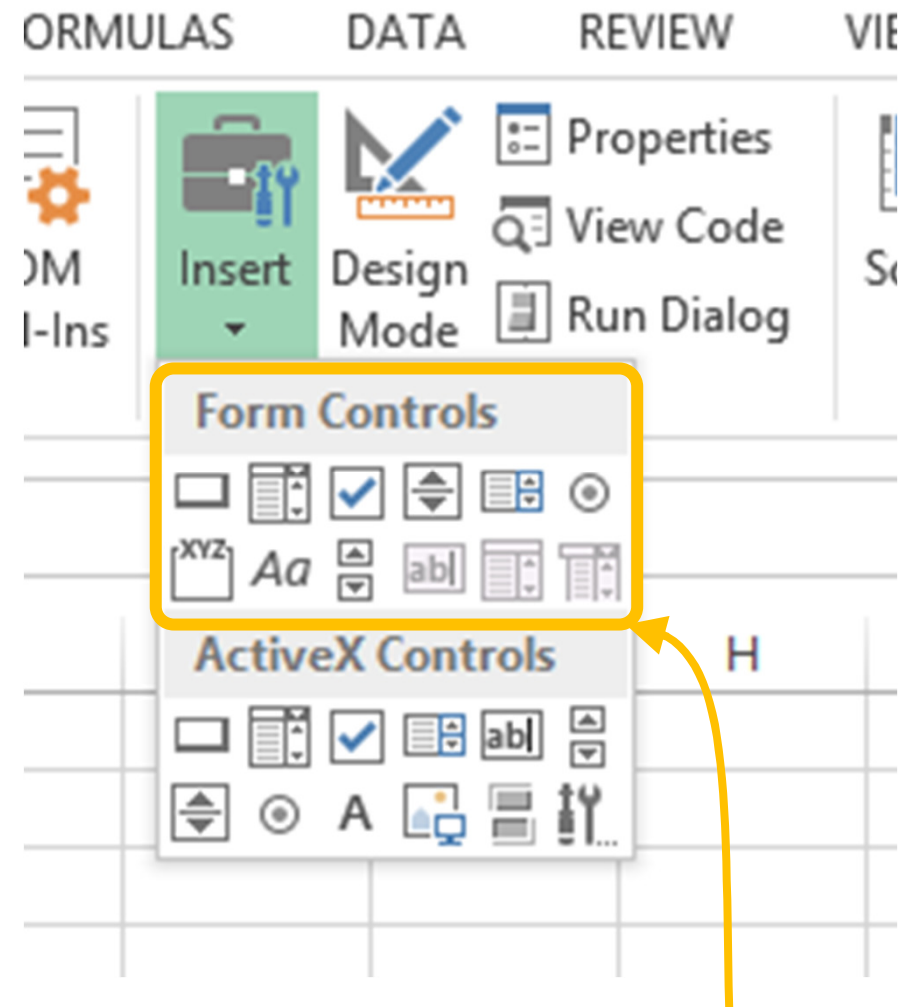
- The Excel GUI panel has all sorts of GUI components such as buttons, combo boxes, option buttons that can be added to a worksheet
- On a PC, you will see two categories:
 - Form Controls
 - ActiveX Controls
- The two categories of controls are very similar but they have some important differences



ActiveX controls aren't included in the course

Form Controls

- You can easily run a subroutine from a Form control
- However, it's not possible to change some of the visual style of Form controls, so sometimes Form controls look a bit 'simple'



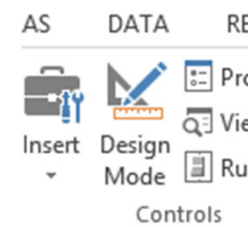
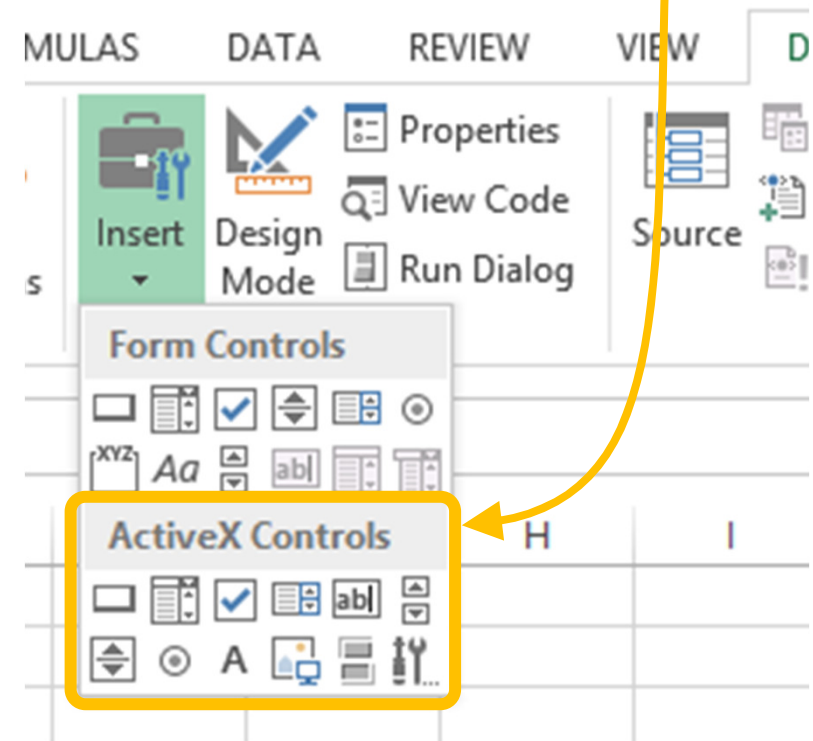
Form controls

ActiveX controls aren't included in the course

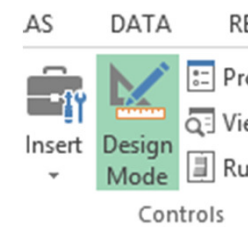
ActiveX Controls

- Similar to Form controls, any VBA code can be run from an ActiveX control
- ActiveX controls provide greater flexibility than Form controls
- For example, their visual style can be easily changed in many different ways
- To change any ActiveX controls the GUI panel has to be in *Design Mode*

ActiveX controls



Design
mode off



Design
mode on

Form or ActiveX Control?

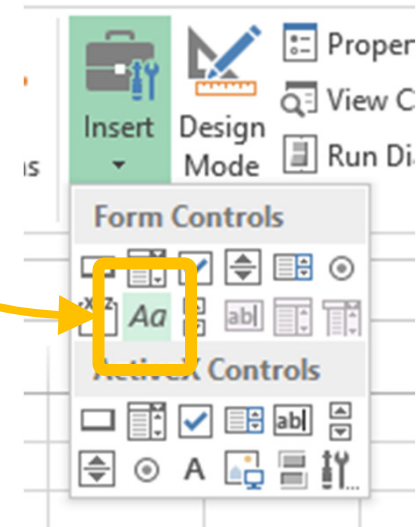
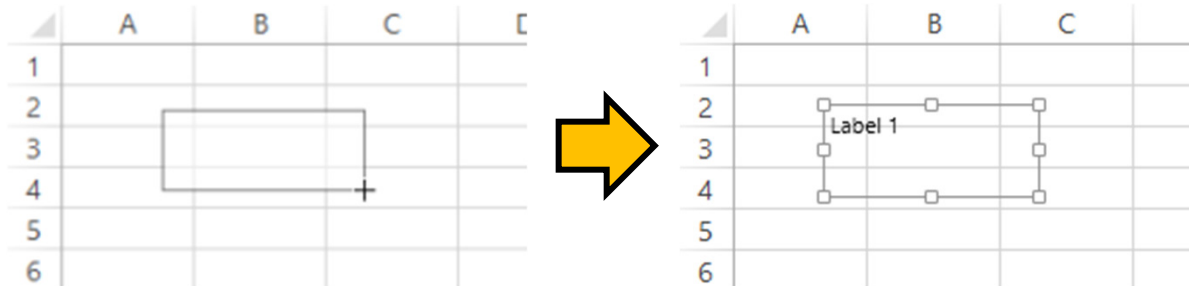
- Both Windows and Mac have Form controls
- ActiveX controls are only available in Windows
- Form controls are easy to create and use but they are not as flexible as ActiveX controls
- Because they don't work on a Mac, ActiveX controls aren't part of this course
- In the rest of this presentation we will look at handling some Form controls

The Rest of This Presentation

- Here are the Form GUI controls we will look at:
 - Creating a label Form control
 - Possibly not very useful, but our first simple example
 - Creating a button Form control
 - Simply a button which triggers some VBA code
 - Creating a combo box Form control
 - For selecting one thing from a group of a few things
 - Creating a scrollbar Form control
 - This is a slider, for easy selection of a number in a range

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 appropriate location, like this:

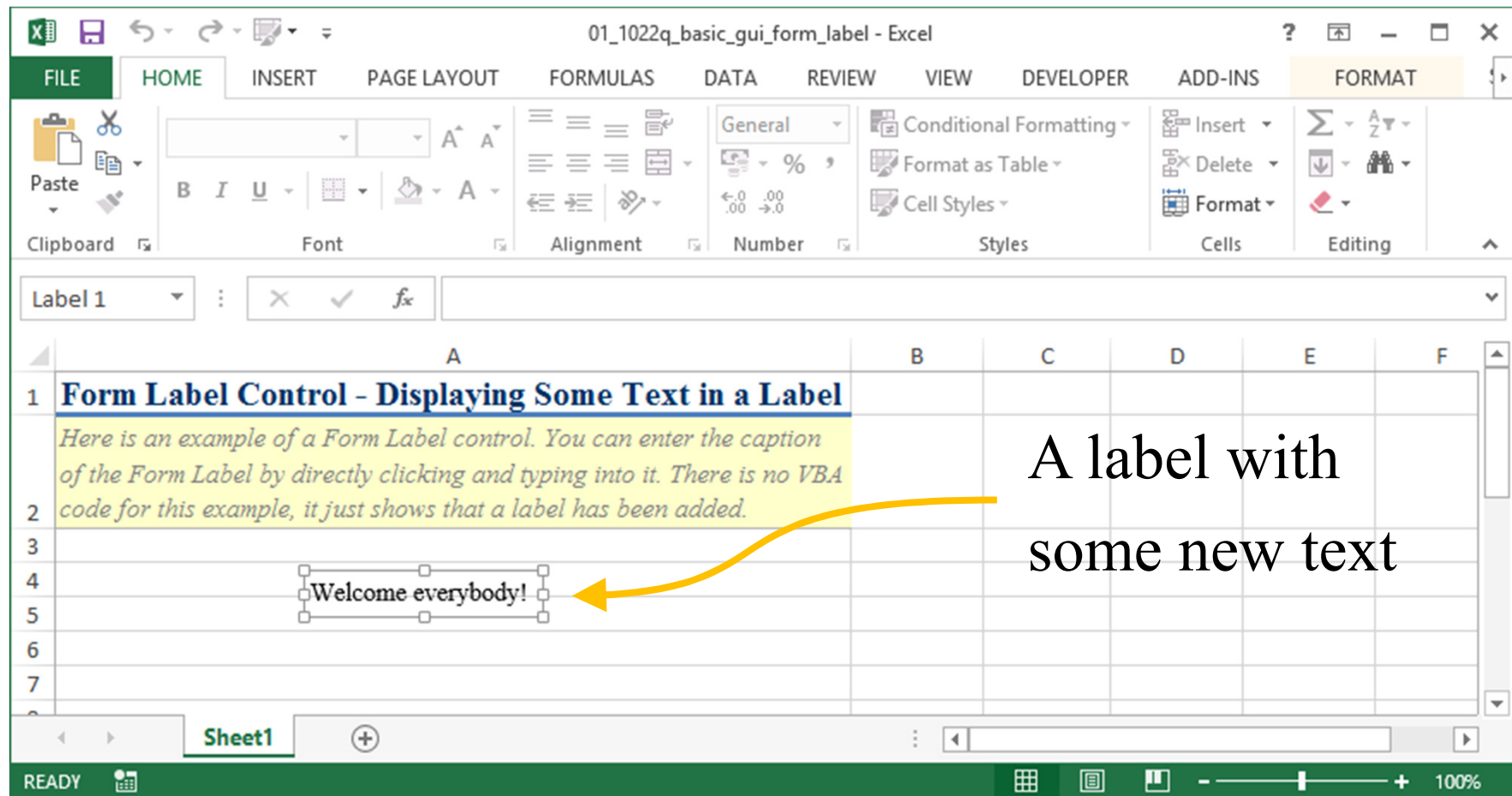


- A label isn't very exciting! We are simply using it for our first example

- The label is just some text which goes on top of the cells

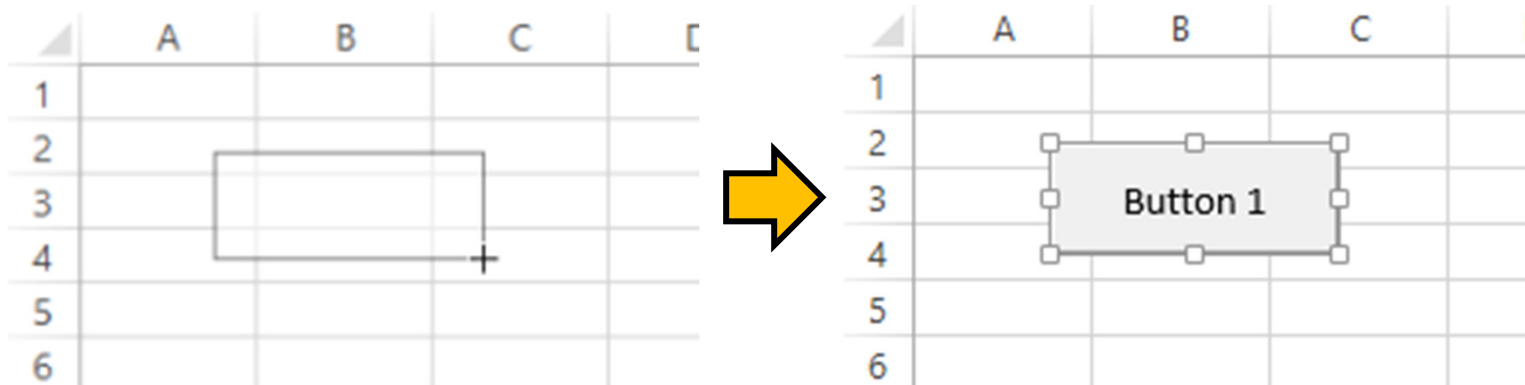
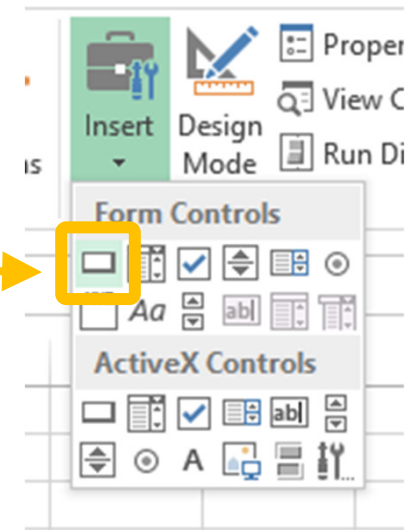
Creating a Label Form Control 2/2

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



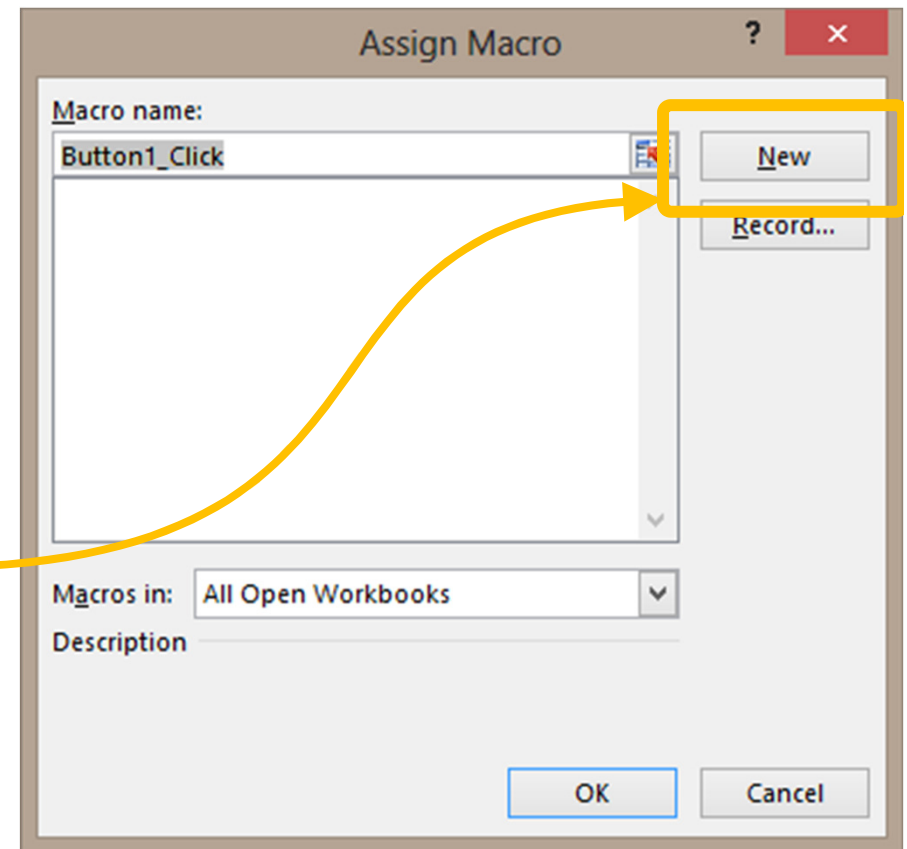
Creating a Button Form Control 1/3

- To add a button Form control we select the button Form control icon
- Then click and drag the button at the desired location:



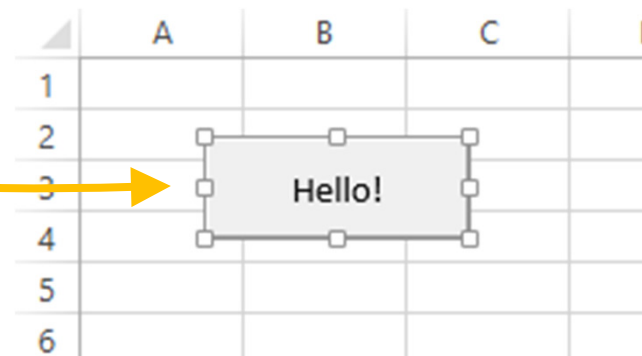
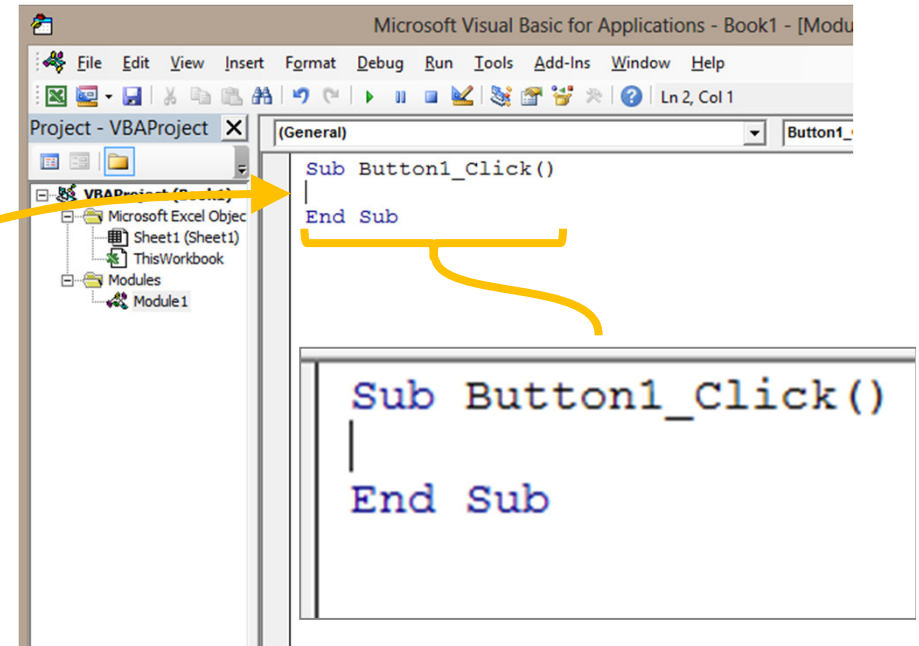
Creating a Button Form Control 2/3

- 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 executed when the button is clicked
- If the macro does not exist you can select the 'New' button to create it



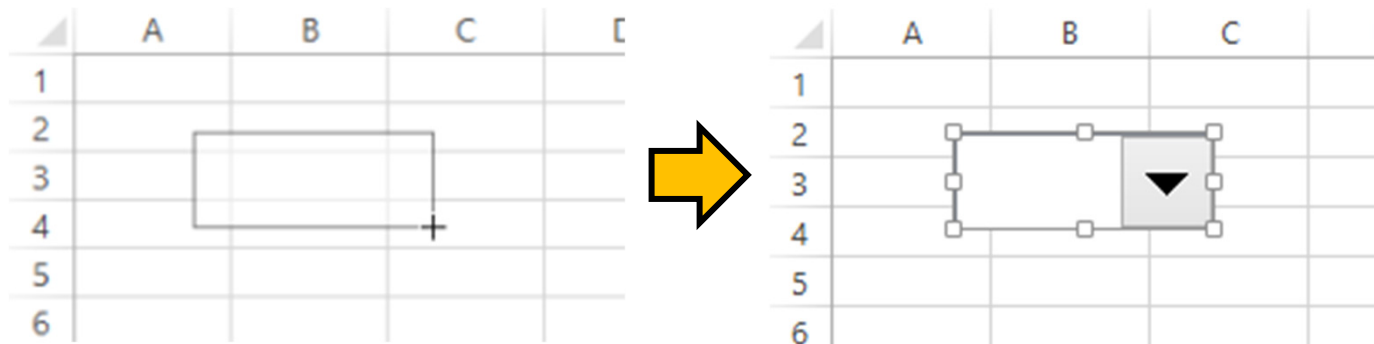
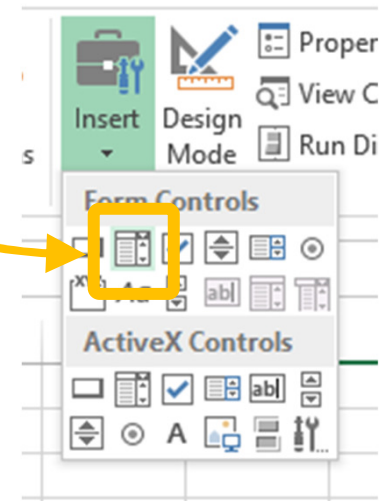
Creating a Button Form Control 3/3

- We can start to write the VBA code for the button here
- We can also right click on the button and change the text



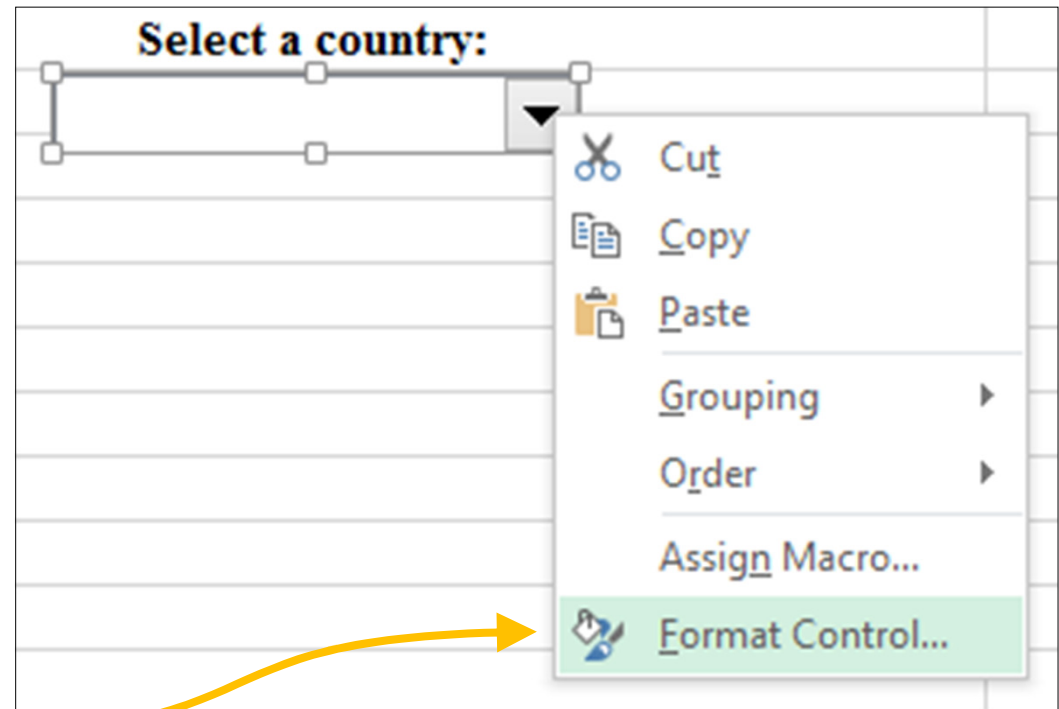
Creating a Combo Box Form Control 1/5

- To add a combo box Form control we select the combo box Form control icon
- Click and drag the combo box at the desired location:



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 some cells
- 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. $SD\$5:SD\8 , in the same worksheet here:

The screenshot shows an Excel worksheet with a table and a 'Format Control' dialog box. The table has two columns: 'Key' and 'Location'. The 'Location' column contains the following data:

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

The 'Format Control' dialog box is open, showing the 'Control' tab. The 'Input range' is set to $SD\$5:SD\8 . A yellow box highlights the 'Input range' field, and a yellow arrow points from it to the 'Location' column of the table. Another yellow box highlights the 'Location' column data, and a yellow arrow points from it to the 'Input range' field. The 'Drop down lines' are set to 8.

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:

The screenshot shows an Excel spreadsheet with a form control. The form control is a text box labeled "Select a country:" containing the text "Taiwan". Below it, a label "The item number you have selected:" is followed by the number "3". Further down, a label "The text of the item you have selected:" is followed by the text "Taiwan". To the right, a table lists countries and their indices:

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

A yellow bracket on the right side of the table indicates that the index of "Taiwan" is 3 within the list. A yellow arrow points from the "3" in the spreadsheet to the "Cell link" field in the "Format Control" dialog box. The "Format Control" dialog box has tabs for "Size", "Protection", "Properties", "Alt Text", and "Control". The "Control" tab is selected, showing the "Input range" as "SD\$5:SD\$8" and the "Cell link" as "\$A\$9". The "Drop down lines" are set to "8", and the "3-D shading" checkbox is unchecked.

The index of 'Taiwan' is 3 within the list

Creating a Combo Box Form Control 5/5

- If you want to display the selected item text in a cell you could use a *VLOOKUP* to search for the item text, using the item list in the worksheet

The diagram shows a worksheet layout with a Combo Box and a data table. The Combo Box is labeled "Select a country:" and displays "Taiwan". Below it, a text box labeled "The item number you have selected:" contains the number "3". Another text box labeled "The text of the item you have selected:" displays "Taiwan". To the right, a table with two columns, "Key" and "Location", lists the following data:

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

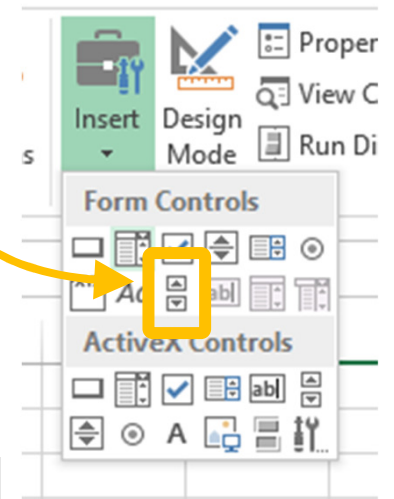
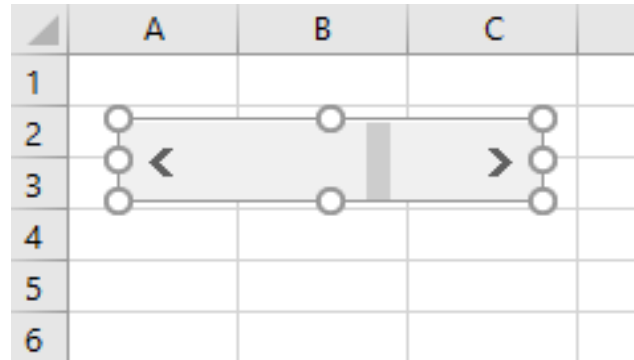
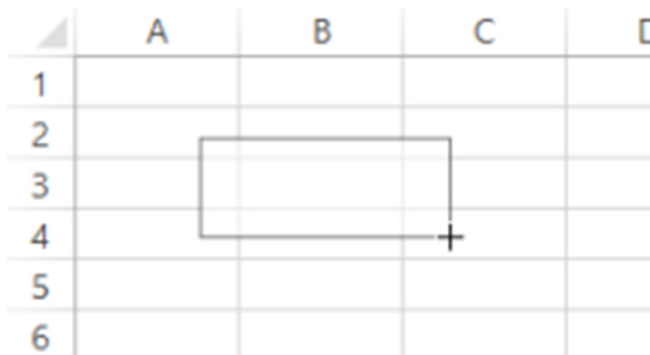
Yellow arrows indicate the flow of data: one arrow points from the "3" in the text box to the first argument of the VLOOKUP formula, and another arrow points from the "Taiwan" in the text box to the second argument. The VLOOKUP formula is shown in a cell:

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

- VBA code can read the result of the Combo Box (the number, or the actual item after VLOOKUP) and use it

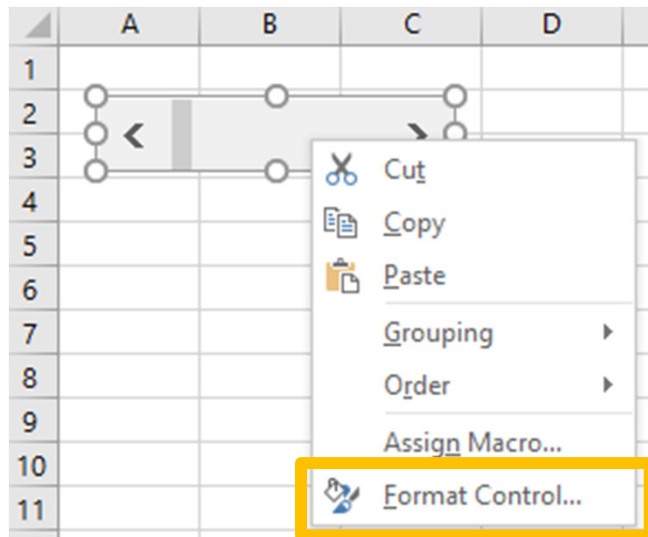
Creating a Scrollbar Form Control 1/3

- To add a scrollbar Form control we select the scrollbar Form control icon
- Click and drag the scrollbar at the desired location:

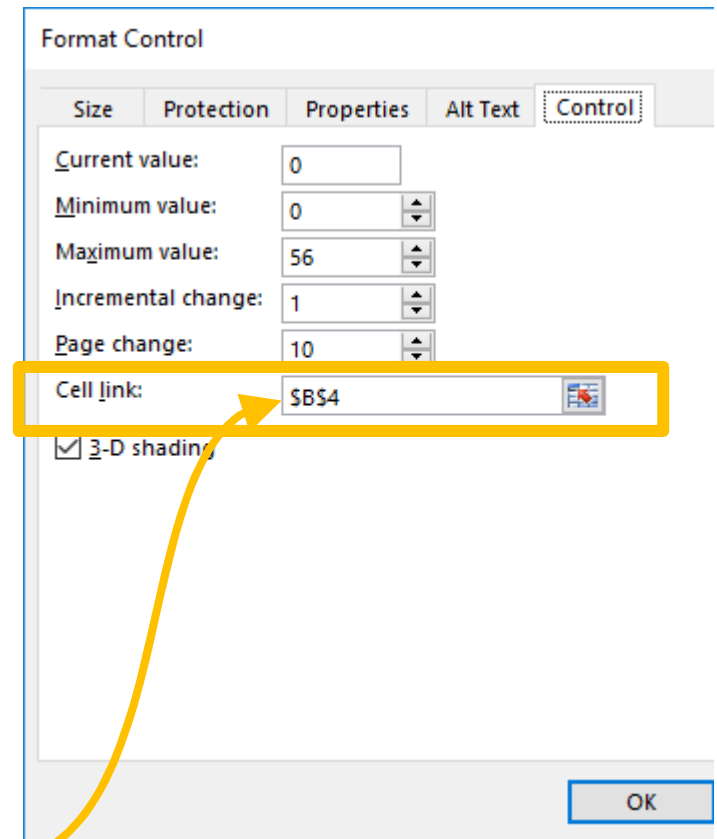


Creating a Scrollbar Form Control 2/3

- Right click on the scrollbar and select Format Control:



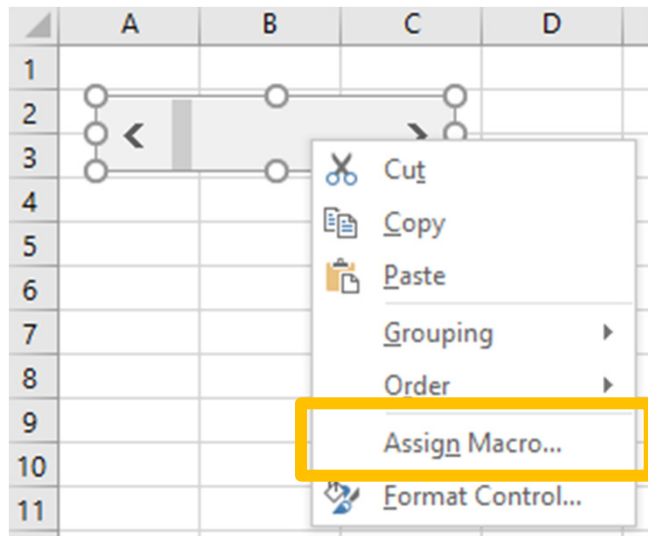
Fix the
minimum
and
maximum
values of
the slider

A screenshot of the 'Format Control' dialog box. The 'Control' tab is selected. The dialog has several sections: 'Size', 'Protection', 'Properties', 'Alt Text', and 'Control'. In the 'Control' section, there are fields for 'Current value' (0), 'Minimum value' (0), 'Maximum value' (56), 'Incremental change' (1), and 'Page change' (10). Below these is the 'Cell link' field, which is highlighted with a yellow rectangular box and contains the text '\$B\$4'. An arrow points from the text 'The result of the slider will be displayed in the cell mentioned here' to this field. There is also a checkbox for '3-D shading' which is checked. An 'OK' button is at the bottom right.

The result of the slider
will be displayed in the cell mentioned here

Creating a Scrollbar Form Control 3/3

- Right click on the scrollbar and select Assign Macro:
- Then select/create the subroutine which will be executed when you click on the slider
- E.g. this subroutine will change the background colour of all cells in the worksheet, using the number made by the slider:



```
Sub ScrollBar1_Change()  
    Cells.Interior.ColorIndex = Range("B4").Value  
End Sub
```