

COMP1022Q
Introduction to Computing with Excel VBA

Basic GUI Controls

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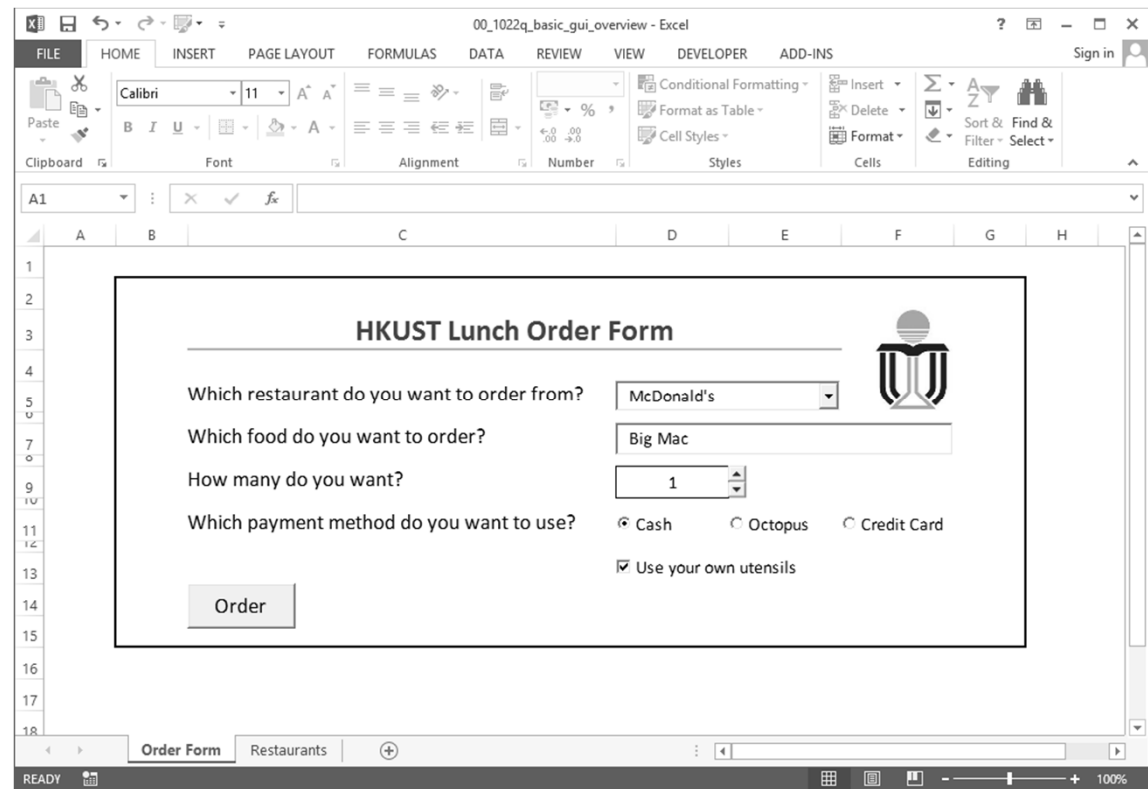
Outcomes

- 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

Combo Box




Image Control



Labels

Which restaurant do you want to order from?

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 diagram illustrates the HKUST Lunch Order Form, a web-based interface for ordering lunch. The form is titled "HKUST Lunch Order Form" and includes the HKUST logo. It contains the following fields and controls:

- Which restaurant do you want to order from?**: A dropdown menu with "McDonald's" selected.
- Which food do you want to order?**: A text input field containing "Big Mac".
- How many do you want?**: A spin button (up/down arrows) with the value "1".
- Which payment method do you want to use?**: Three radio buttons labeled "Cash", "Octopus", and "Credit Card".
- Use your own utensils**: A checked checkbox.
- Order**: A button to submit the order.

Callouts identify specific GUI components:

- Button**: Points to the "Order" button.
- Spin Button**: Points to the quantity input field.
- Check Box**: Points to the "Use your own utensils" checkbox.
- Option Buttons**: Points to the payment method radio buttons.

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

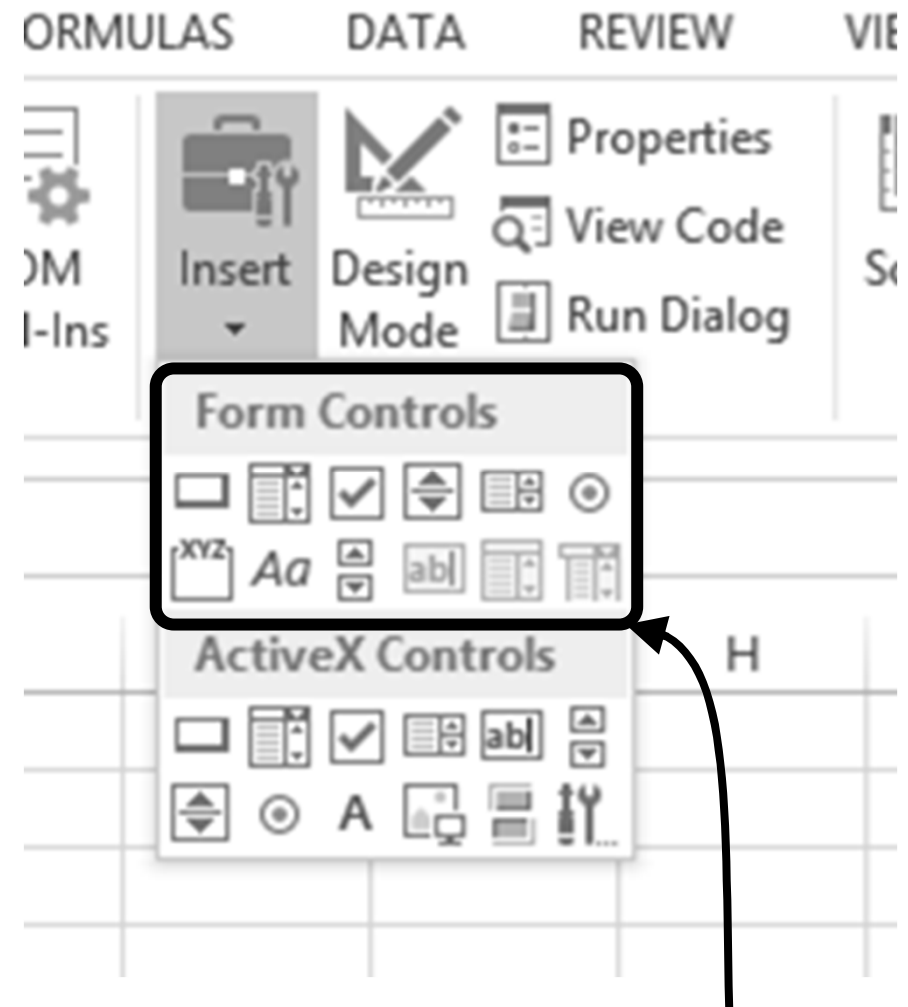
- The Excel GUI panel has all sorts of GUI components such as buttons, combo boxes, option buttons that can be added to a worksheet
- On a PC, you will see two categories:
 - Form Controls
 - ActiveX Controls
- The two categories of controls are very similar but they have some important differences



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'



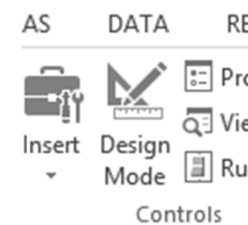
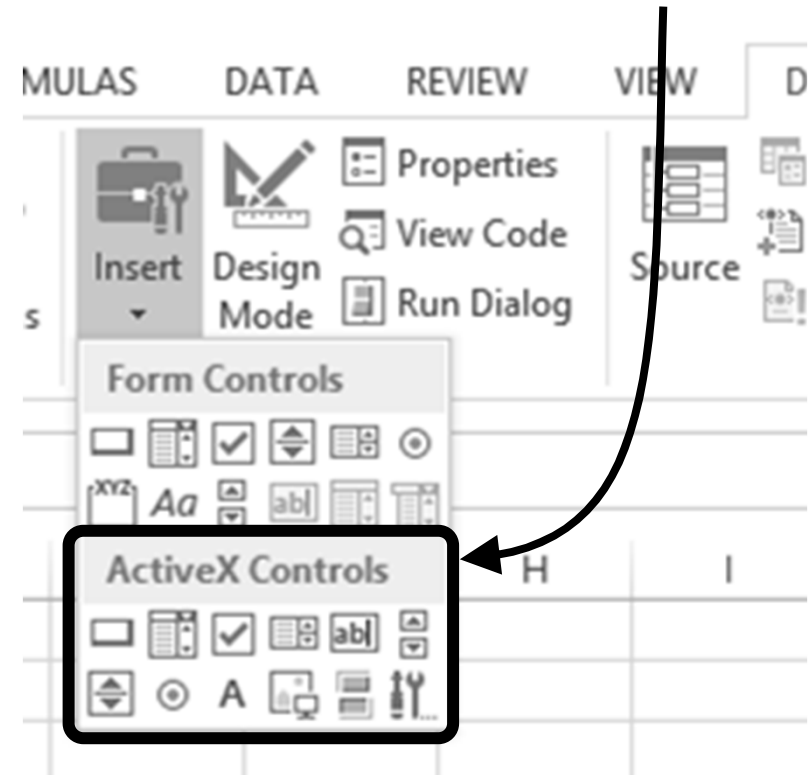
Form controls

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?

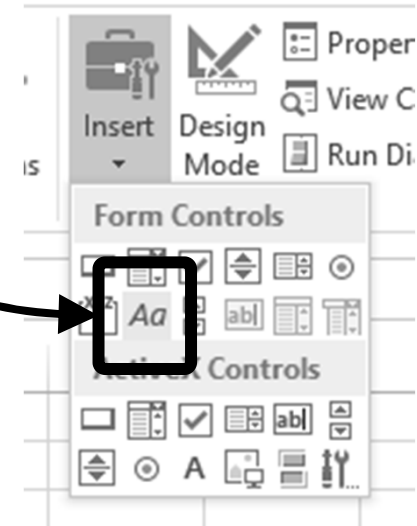
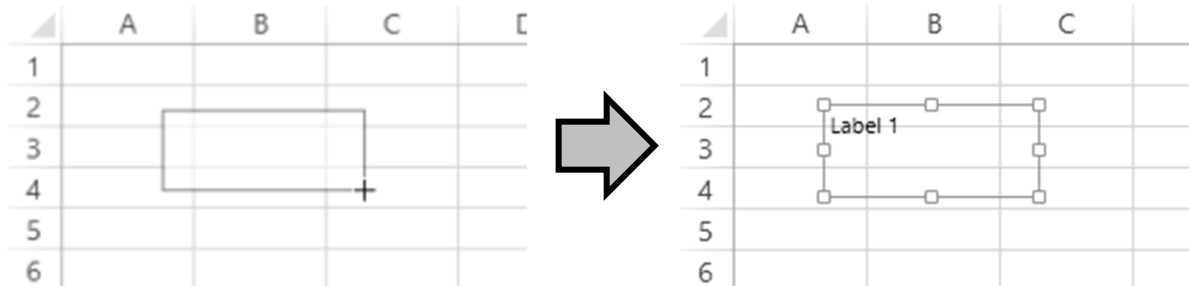
- Both Windows and Mac have Form controls
- ActiveX controls are only available in Windows
- Form controls are easy to create and use but they are not as flexible as ActiveX controls
- Because they don't work on a Mac, ActiveX controls aren't part of this course
- In the rest of this presentation we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

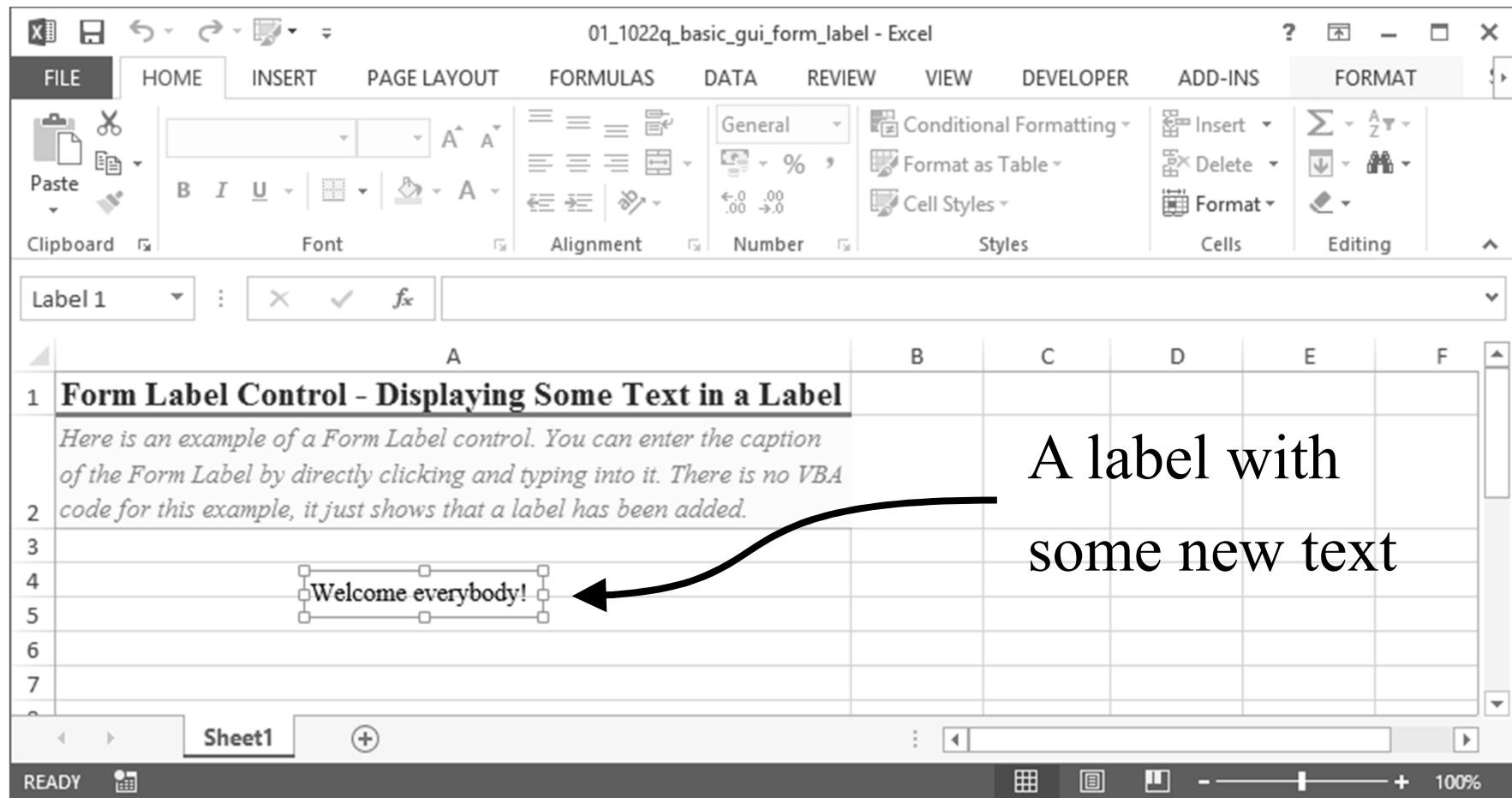


- A label isn't very exciting! We are simply using it for our first example

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

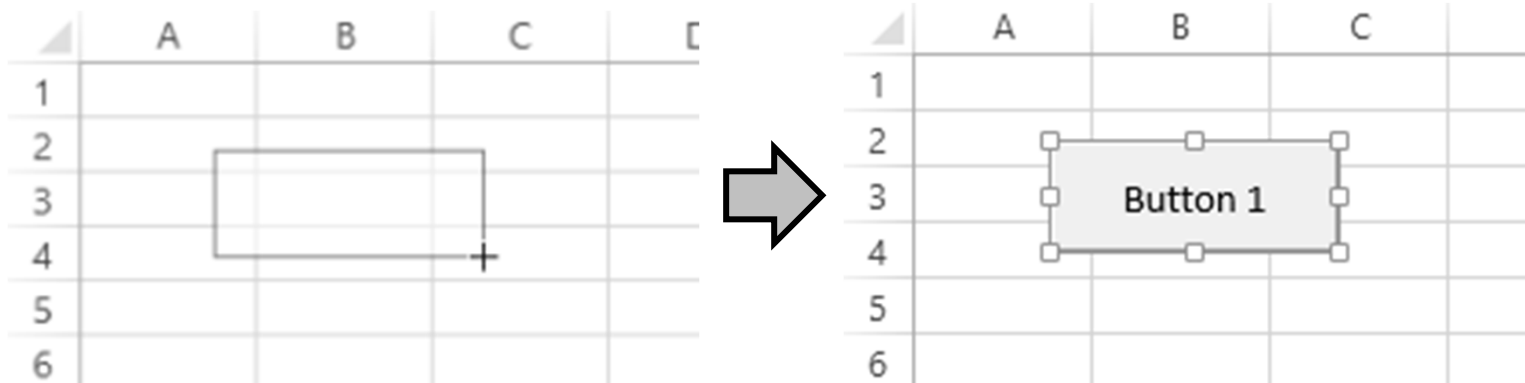
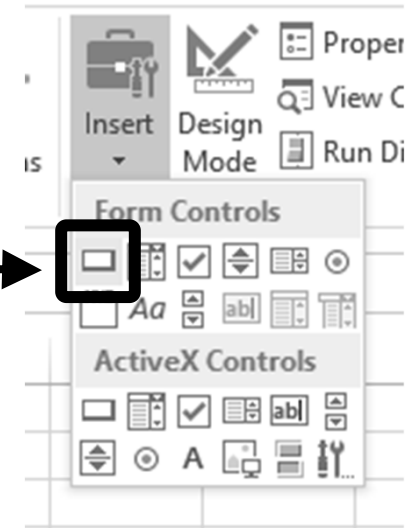
Creating a Label Form Control 2/2

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



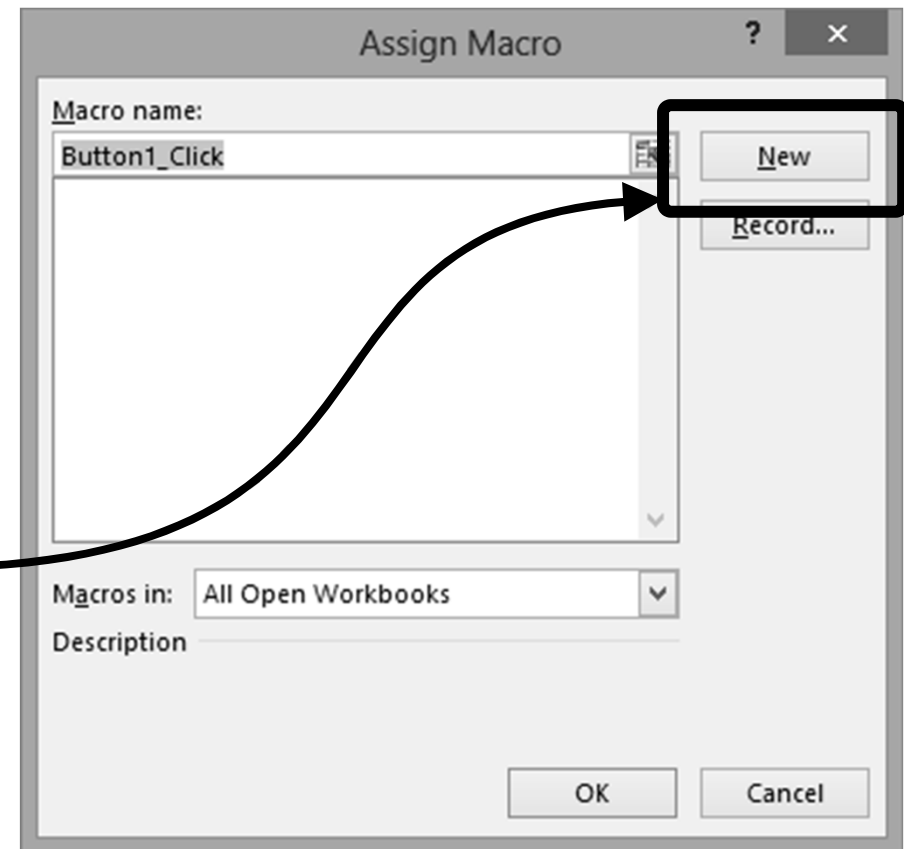
Creating a Button Form Control 1/3

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



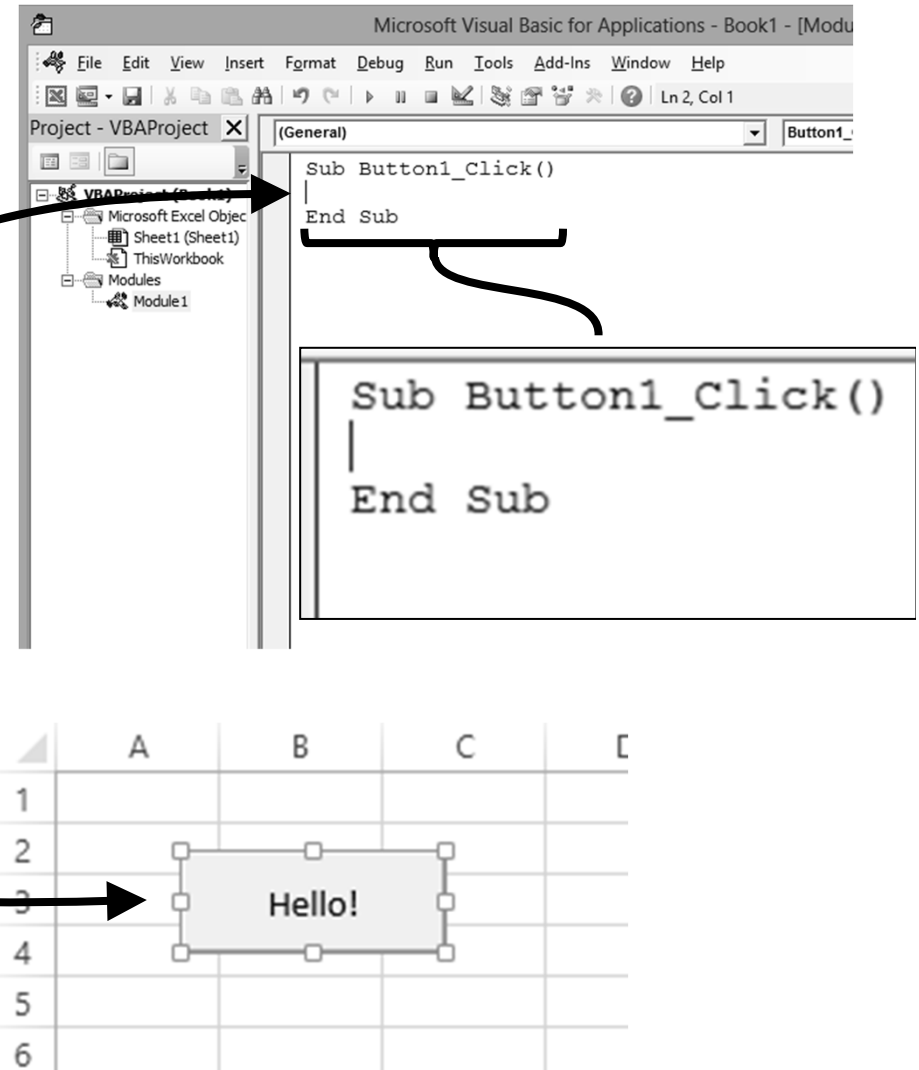
Creating a Button Form Control 2/3

- 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



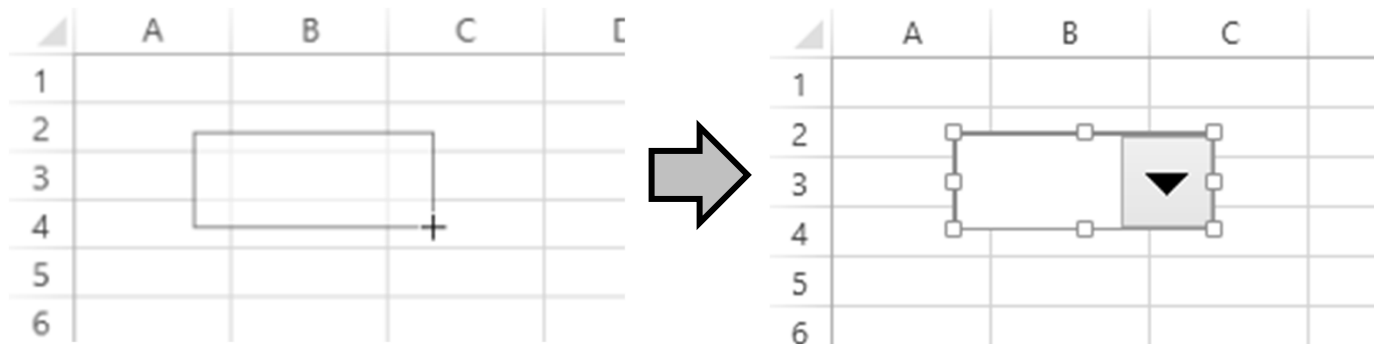
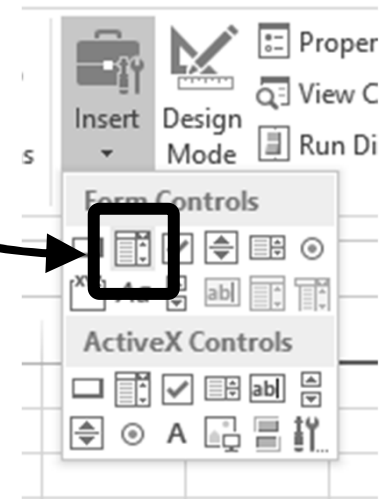
Creating a Button Form Control 3/3

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



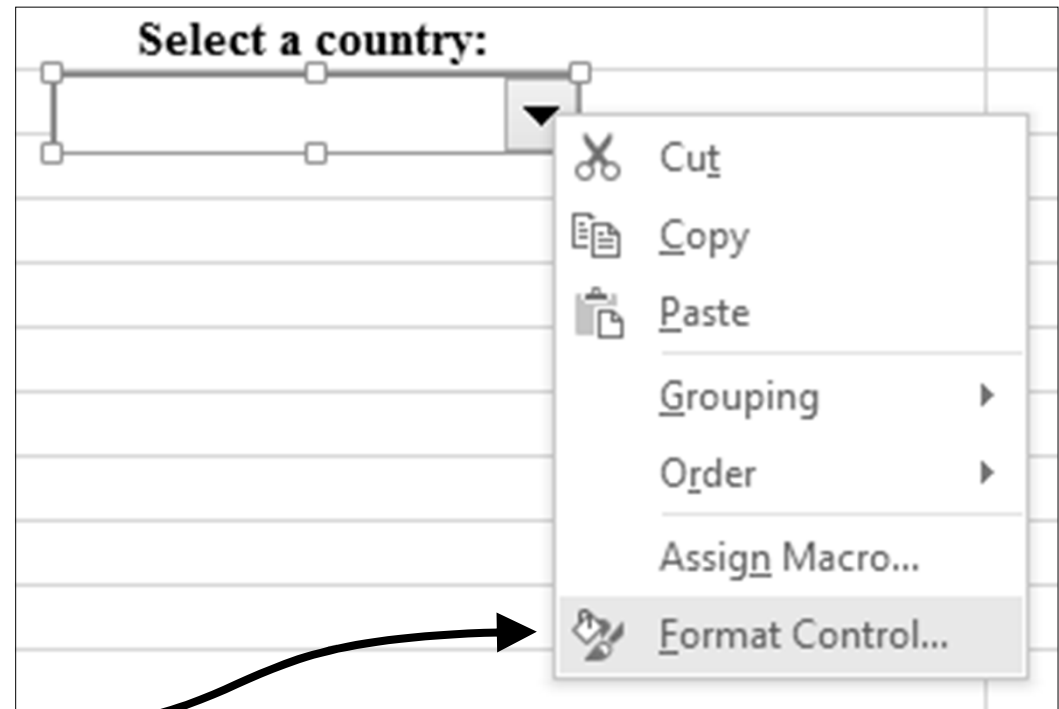
Creating a Combo Box Form Control 1/5

- 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 combo box and the 'Format Control' dialog box. The combo box is labeled 'Select a country:' and currently displays 'Hong Kong'. The 'Format Control' dialog box is open, showing the 'Control' tab. The 'Input range' is set to '\$D\$5:\$D\$8'. An arrow points from the 'Input range' field to a list of locations in the worksheet. The list is as follows:

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

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" and a dropdown arrow. 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 bracket on the right side of the table indicates that the index of 'Taiwan' is 3 within the list. The "Format Control" dialog box is open, showing the "Control" tab. The "Input range" is set to "SD\$5:SD\$8" and the "Cell link" is set to "SA\$9". The "Drop down lines" are set to 8. The "3-D shading" checkbox is unchecked.

The index of 'Taiwan' is 3 within the list

Creating a Combo Box Form Control 5/5

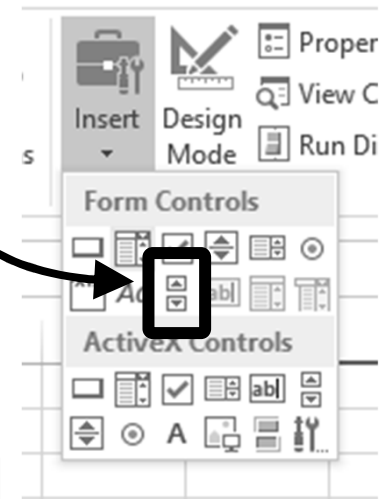
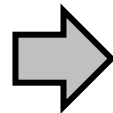
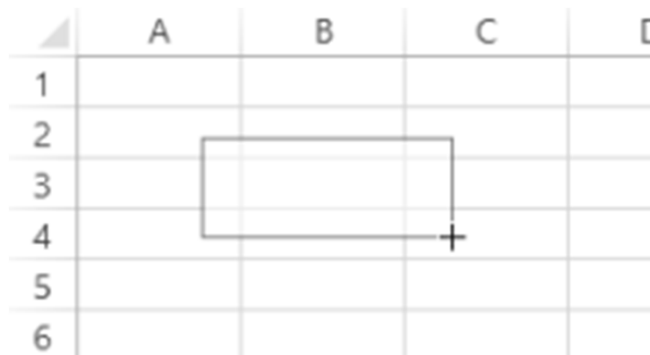
- If you want to display the selected item text in a cell you could use a *VLOOKUP* to search for the item text, using the item list in the worksheet



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

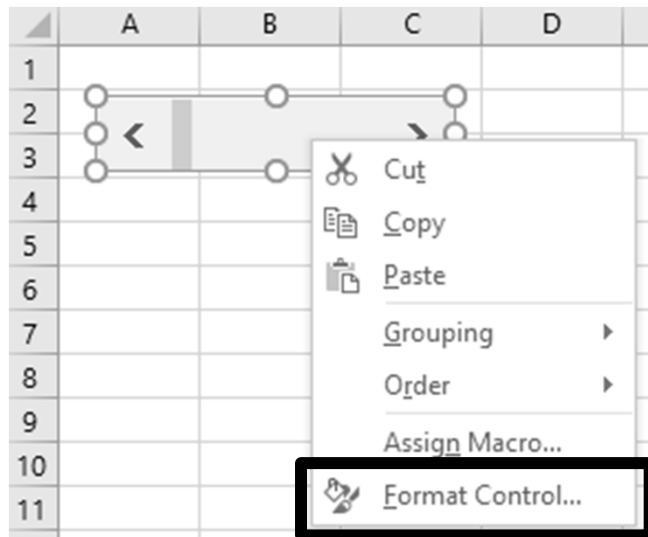
Creating a Scrollbar Form Control 1/3

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

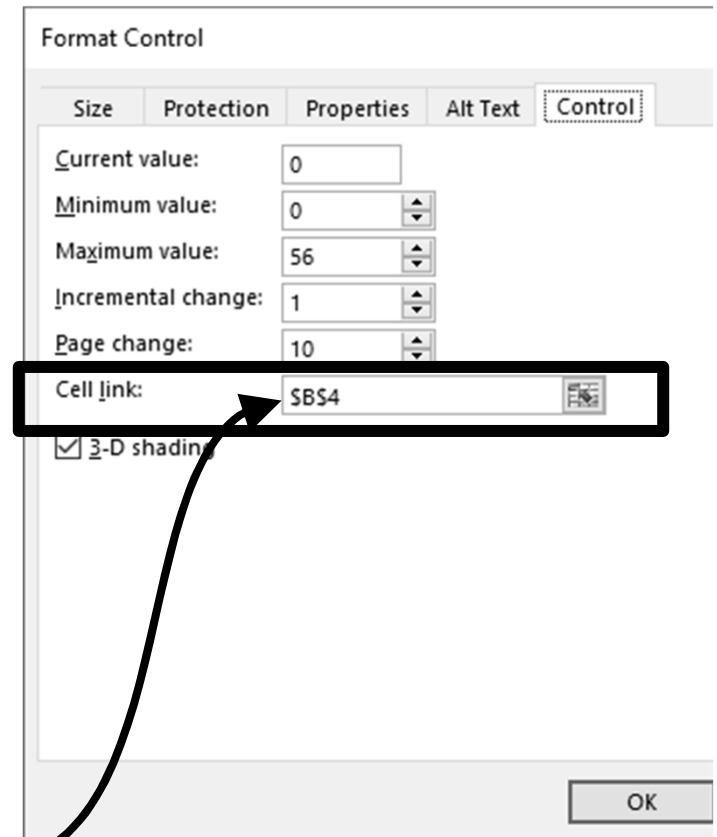


Creating a Scrollbar Form Control 2/3

- Right click on the scrollbar and select Format Control:



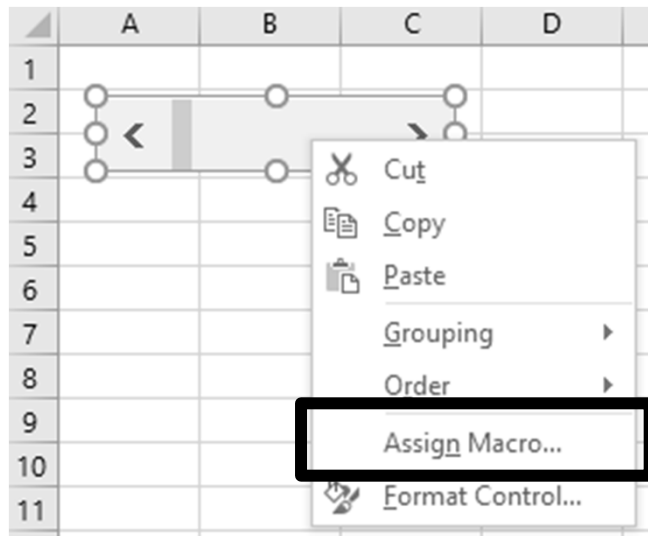
Fix the {
minimum
and
maximum
values of
the slider



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
```