



Project Assignment

# EXCEL & TABLEAU ASSIGNMENT

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Data Technician Skills Bootcamp – Just IT



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# Assignment 1 Data Visualisation

## Scenario

Data visualisation has become an essential business capability to help transform information into insights that can drive meaningful business outcomes and improved experiences. Today, most organizations have accumulated a wealth of data from the different corners of their businesses they are then unable to see how this data can help them make better decisions, making actions, and results. You have been asked to Look at the data workbook and familiarize yourself with this data. You have also been asked to create a visual report that will show the data in the form of charts and maps using Tableau to the clients requirements. You will also need to consider data protection and computer misuse policies.

## First Task

### Policies and Procedures

As a Data Analyst, a requirement to working with data is to follow a set of policies as well as procedures. This has been implemented for a number of reasons; ensuring accuracy, integrity and prevent misinformation in the work of analysts. It is also present to ensure data security and maintain the privacy of data collected.

The Data Protection Act 2018 (UK's implementation of the European General Data Protection regulation – GDPR) is a perfect example of this. Everyone responsible for using personal data has to follow the strict rules called 'data protection principles'.

- used fairly, lawfully, and transparently.
- used for specified, explicit purposes.
- used in a way that is adequate, relevant, and limited to only what is necessary.
- accurate and, where necessary, kept up to date.
- kept for no longer than is necessary.
- handled in a way that ensures appropriate security, including protection against unlawful or unauthorised processing, access, loss, destruction, or damage.

There is stronger legal protection for more sensitive information, such as:

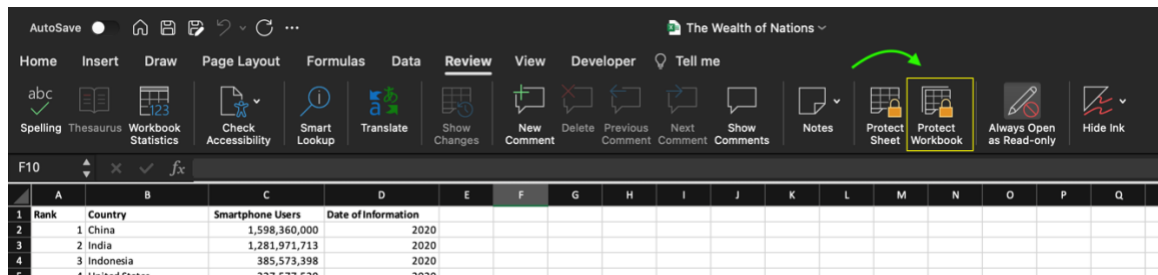
- race
- ethnic background
- political opinions
- religious beliefs
- trade union membership
- genetics
- biometrics (where used for identification)
- health
- sex life or orientation

## SECOND TASK

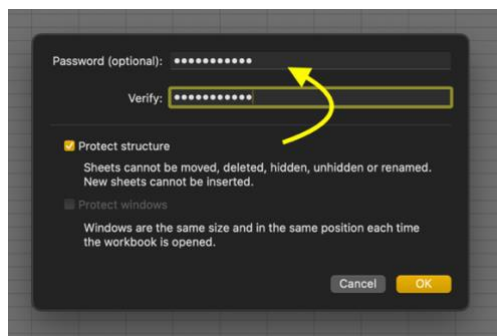
### Excel

#### 1. Set a password to protect the workbook.

To protect the workbook, first go to the 'Review' tab and click the 'Protect Workbook' icon.




Next a window will appear requesting for a password setup as shown below. Input the password you want, verify it by repeating the password and click 'OK'.



After this has been done, the 'Protect workbook' icon will appear highlighted to show that the protection is active. Unprotecting the workbook will require you to input the password you had setup earlier.

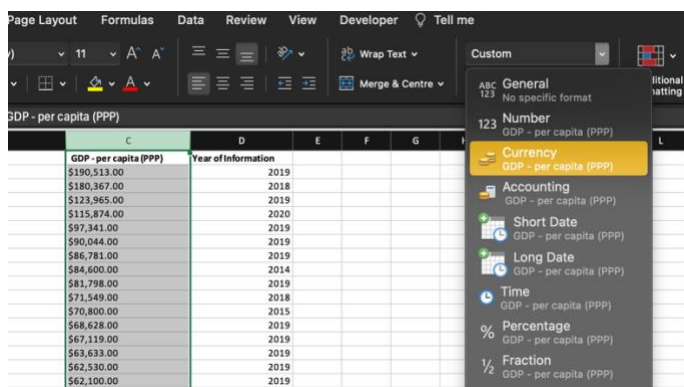
#### 2. Highlight column C and change the data to display in British Pound symbol.

Click on the column letter 'C', you will see the entire column of this category highlighted.



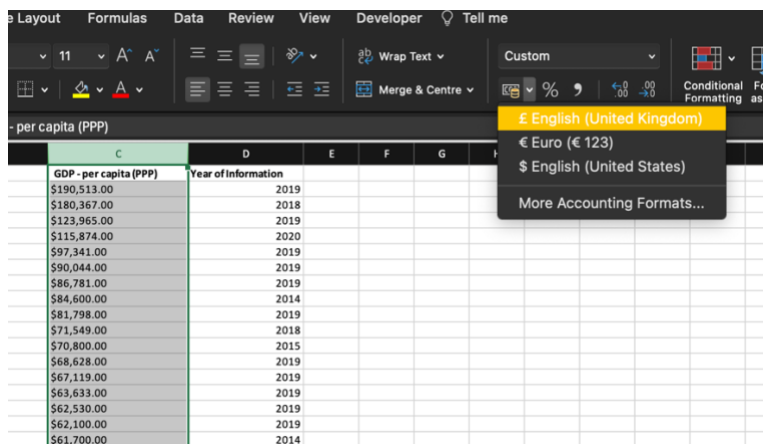
Rank	Country	GDP - per capita (PPP)	Year of Information
1	Monaco	\$190,513.00	2019
2	Liechtenstein	\$180,367.00	2018
3	Macau	\$123,965.00	2019
4	Luxembourg	\$115,874.00	2020
5	Singapore	\$97,341.00	2019
6	Qatar	\$90,044.00	2019
7	Ireland	\$86,781.00	2019
8	Isle of Man	\$84,600.00	2014
9	Bermuda	\$81,798.00	2019
10	Cayman Islands	\$71,549.00	2018
11	Falkland Islands	\$70,800.00	2015
12	Switzerland	\$68,628.00	2019
13	United Arab Emirates	\$67,119.00	2019
14	Norway	\$63,633.00	2019

Next click on the 'format' icon located in the home tab of the ribbon; select 'Currency' and it will convert the value units within that column to the British Pound symbol automatically.



GDP - per capita (PPP)	Year of Information
\$190,513.00	2019
\$180,367.00	2018
\$123,965.00	2019
\$115,874.00	2020
\$97,341.00	2019
\$90,044.00	2019
\$86,781.00	2019
\$84,600.00	2014
\$81,798.00	2019
\$71,549.00	2018
\$70,800.00	2015
\$68,628.00	2019
\$67,119.00	2019
\$63,633.00	2019
\$62,530.00	2019
\$62,100.00	2019
\$61,700.00	2014

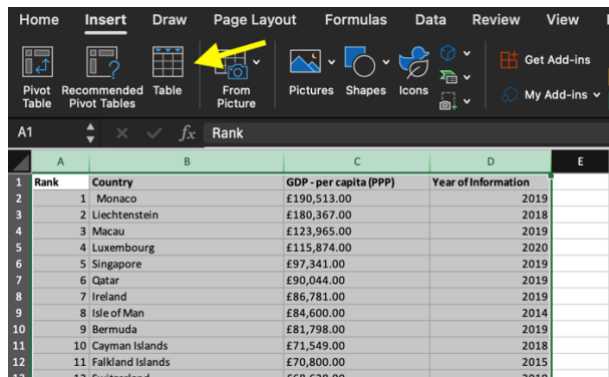
Alternatively, if this has not changed the symbol the British Pound automatically, click on the small icon below which arranges the accounting format.



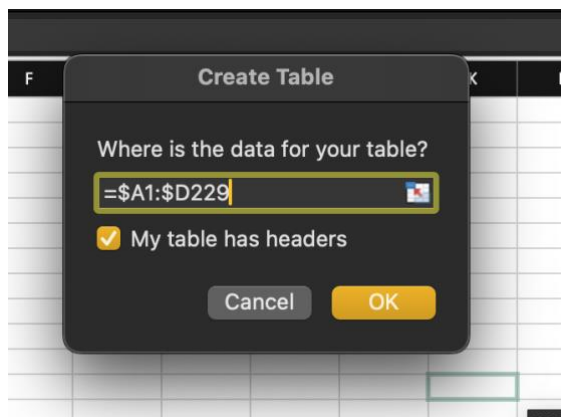
GDP - per capita (PPP)	Year of Information
\$190,513.00	2019
\$180,367.00	2018
\$123,965.00	2019
\$115,874.00	2020
\$97,341.00	2019
\$90,044.00	2019
\$86,781.00	2019
\$84,600.00	2014
\$81,798.00	2019
\$71,549.00	2018
\$70,800.00	2015
\$68,628.00	2019
\$67,119.00	2019
\$63,633.00	2019
\$62,530.00	2019
\$62,100.00	2019
\$61,700.00	2014

### 3. Turn the GDP sheet into a table.

Highlight all the relevant columns (in this case columns A-D), and click on the 'Table' icon located in the 'Insert' tab of the ribbon.

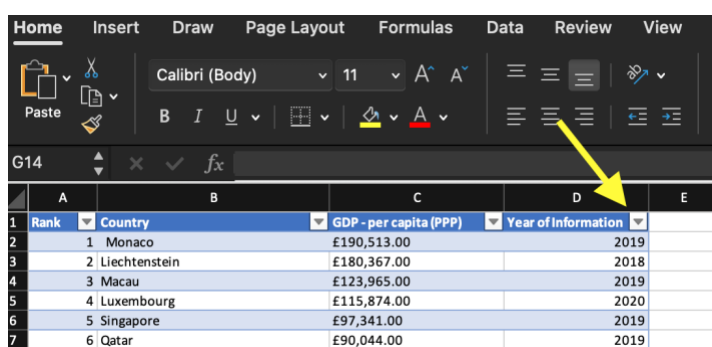


Next specify the relevant cells that cover this range of data (in this case A1 and D229 which is the last row and cell of data in the table). Make sure to tick the first column as headers.

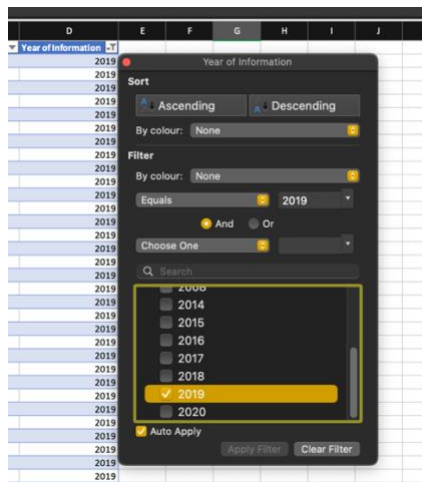


#### 4. Filter the table to display only the information for 2019.

Click on the small arrow which is at the end of the 'Year of Information' header.



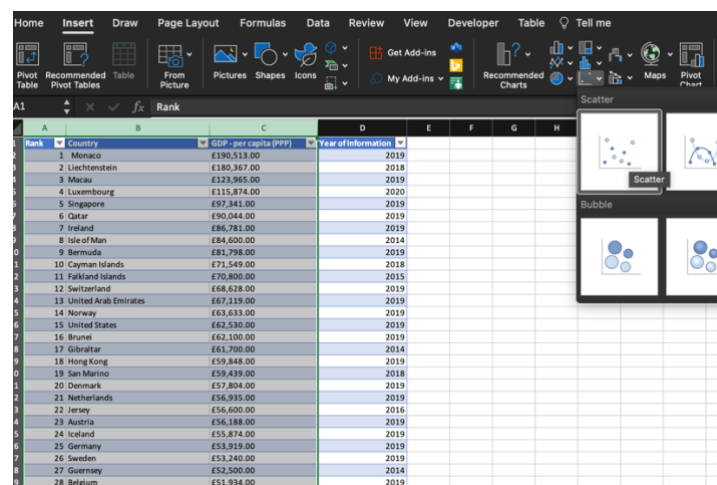
Uncheck the 'Select all' option and only check the year which we want which is '2019' as shown below. This will show data only corresponding to 2019.



This will display only data corresponding to 2019 year of information.

5. Next create a chart that will only display the following data 'Rank, Country, and GDP – per capita (PPP)'. The chart can be anything as long as it is suitable.

Highlight the columns for each of the three values we want to be included in a chart, which is columns A,B and C as shown below. Navigate to the 'Insert' tab and finally click on the scatter plot chart.

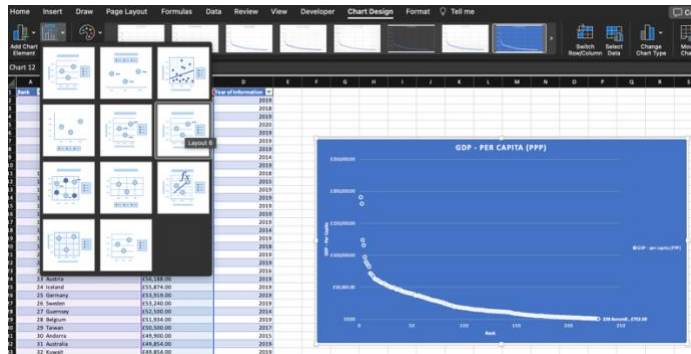


6. Using your creative skills edit the chart.
  - a) Add a title.
  - b) Add X and Y axis labels.
  - c) Make the chart visually pleasing.

Click on the graph and change the graph layout to 'layout 9' in the 'chart design' tab. It gives you a text box arranged in the title section of the graph for you to edit as you please; type 'GDP – Per capita' as the title of your scatter plot.

This layout gives you x and y axis titles where you can edit them by clicking into the text box to edit. Rename the y-axis as 'GDP per capita' and the x-axis as 'Rank'.

Lastly, in the 'Chart Design' tab, it gives you different chart themes to choose from; select one of the choices and it should apply automatically.



## 7. Move the chart to a new sheet tab and label with a suitable name.

Create a new sheet by clicking on the '+' located below the sheet. To rename the sheet, right-click and select 'Rename'. Rename the sheet to 'Country Rank by GDP per capita'.

## 8. Create a sort for the top 20 highest ranking countries.

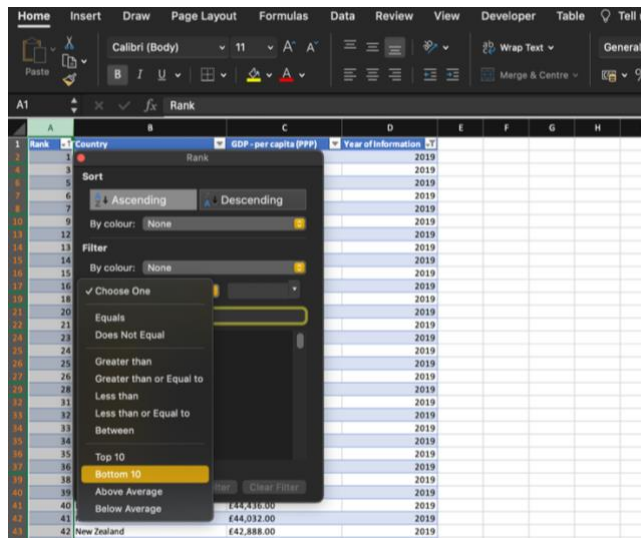
Click on the small faced-down arrow on the 'Rank' column. This is to set your filters. (Reminder: This data is filtered to '2019' Year of Information from pervious task)

The screenshot shows the Excel interface with the 'Rank' column filter menu open. The menu displays the 'Bottom 10' filter option, which is highlighted. The data table is visible in the background, showing the top 20 countries by GDP per capita for the year 2019.

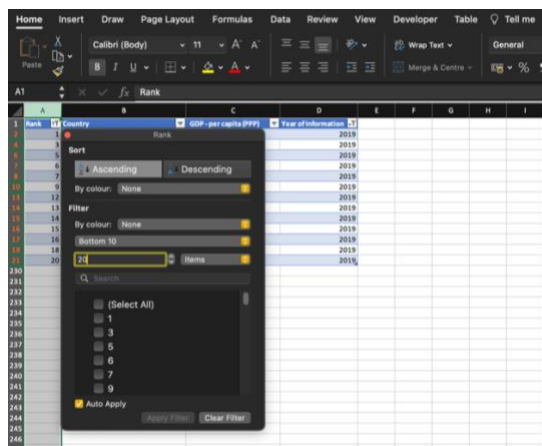
Rank	Country	GDP-per capita (PPP)	Year of Information
1	Monaco	£190,513.00	2019
2	Macau	£123,965.00	2019
3	Singapore	£97,341.00	2019
4	Qatar	£90,044.00	2019
5	Ireland	£86,781.00	2019
6	Bermuda	£81,798.00	2019
7	Switzerland	£68,628.00	2019
8	United Arab Emirates	£67,119.00	2019
9	Norway	£63,633.00	2019
10	United States	£62,530.00	2019
11	Brunel	£62,100.00	2019
12	Hong Kong	£59,848.00	2019
13	Denmark	£57,804.00	2019
14	Netherlands	£56,935.00	2019
15	Austria	£56,188.00	2019

Select the 'Bottom 10' filter in the small menu window as shown below.





We want the top 20, not top 10 so in order to show that, input the number 20 as shown in the image below.

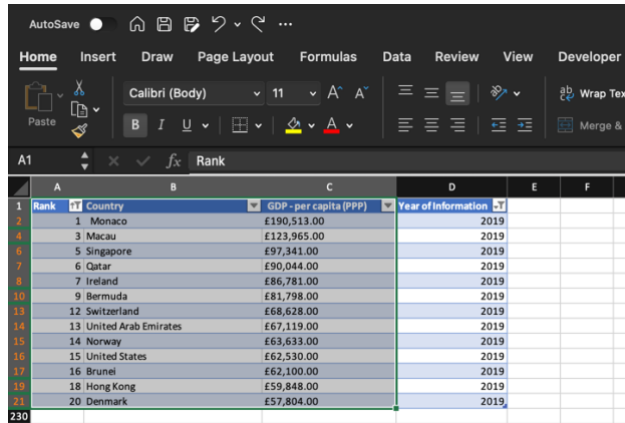


Now the table should be displaying the corresponding information shown here:

Rank	Country	GDP - per capita (PPP)	Year of Information
1	Monaco	£190,513.00	2019
2	Macau	£123,965.00	2019
3	Singapore	£97,341.00	2019
4	Qatar	£90,044.00	2019
5	Ireland	£86,781.00	2019
6	Bermuda	£81,798.00	2019
7	Switzerland	£68,628.00	2019
8	United Arab Emirates	£67,119.00	2019
9	Norway	£63,633.00	2019
10	United States	£62,530.00	2019
11	Brunei	£62,100.00	2019
12	Hong Kong	£59,848.00	2019
13	Denmark	£57,804.00	2019

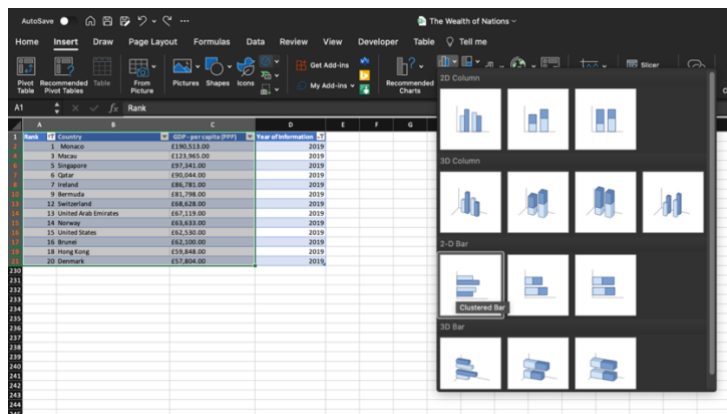
- Next create a new Bar chart to display the 20 highest ranking countries from your sort and then move the chart to be underneath the table, as shown below (In the original assignment pdf).

Highlight the three columns of data which we want included in the chart which is 'Rank', 'country' and 'GDP – per capita (PPP)'. Do this by highlighting the column letters A, B and C.

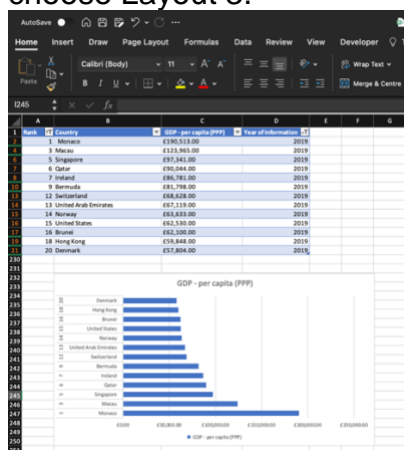


Rank	Country	GDP - per capita (PPP)	Year of Information
1	Monaco	£190,513.00	2019
3	Macau	£123,965.00	2019
5	Singapore	£97,341.00	2019
6	Qatar	£90,044.00	2019
7	Ireland	£86,781.00	2019
9	Bermuda	£81,798.00	2019
12	Switzerland	£68,628.00	2019
13	United Arab Emirates	£67,119.00	2019
14	Norway	£63,633.00	2019
15	United States	£62,530.00	2019
16	Brunei	£62,100.00	2019
18	Hong Kong	£59,848.00	2019
20	Denmark	£57,804.00	2019

Within the 'Insert' tab of the Excel ribbon, click on the 'column' chart icon; doing this will open a selection of different column charts to choose from. Select 'Clustered Bar' chart which is under the 2-D Bar options.

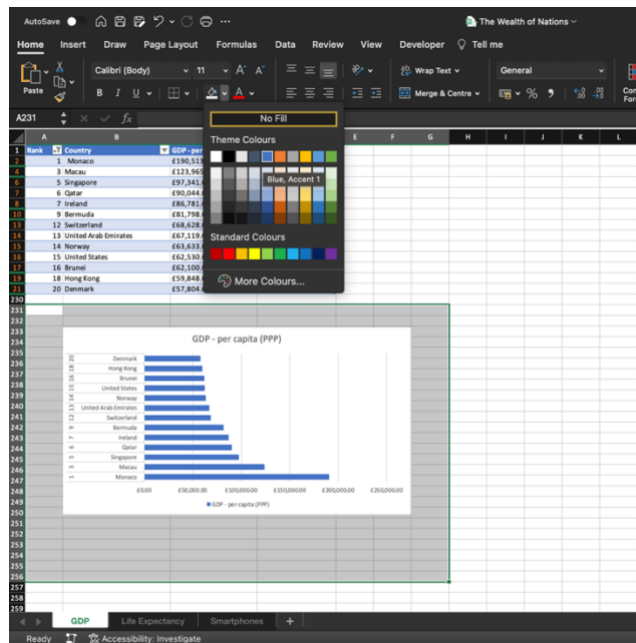


This will output an identical chart as requested in the objective. Drag the chart to below the table. If the chart legend such as '[boxed colour] GDP – per capita (PPP)' is not present, click on 'Quick Layouts' on the same 'Insert' tab and choose Layout 3.

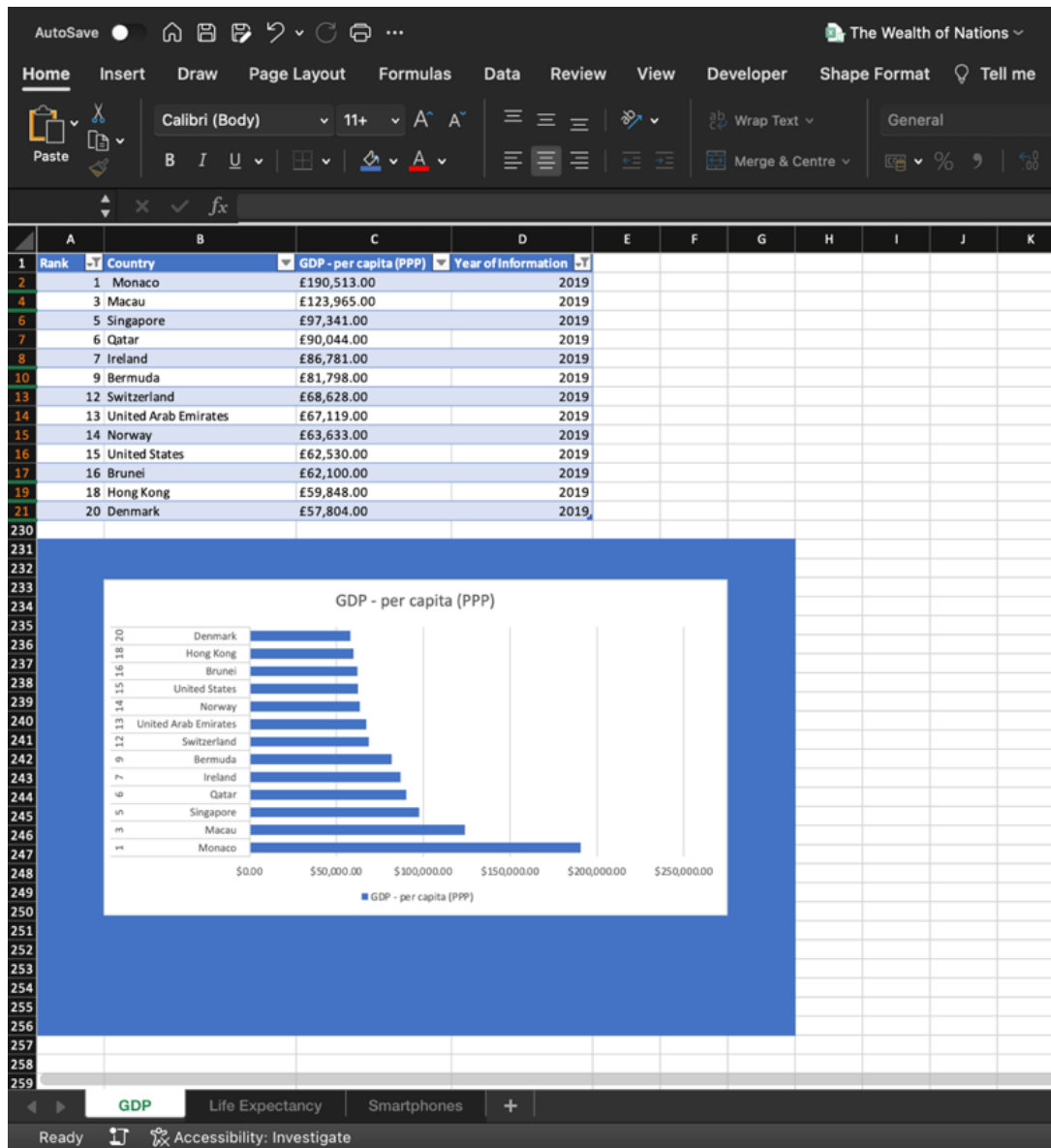


**10. Colour the background by highlighting the area underneath the table as shown below. Find the add a fill colour icon and select a colour.**

In order to colour the background, highlight the cells behind the chart which you want to be coloured. In the 'Home' tab, click on 'Fill Colour' and choose the colour you want.



This will colour the background cells of the chart to your selected colour as shown below:

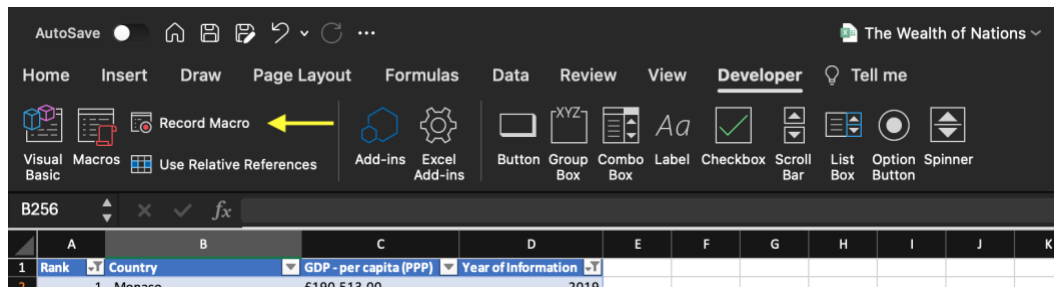


## THIRD TASK

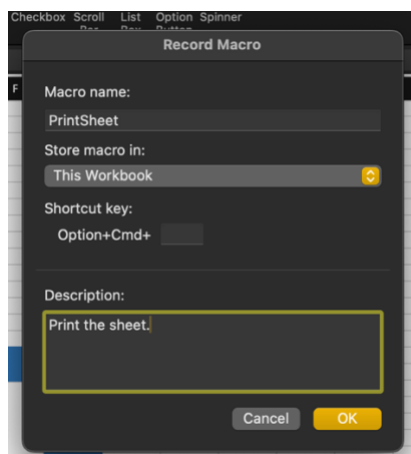
### Macro

1. The next task is to create 3 macro buttons, print the sheet, Save the file, and copy the sheet.

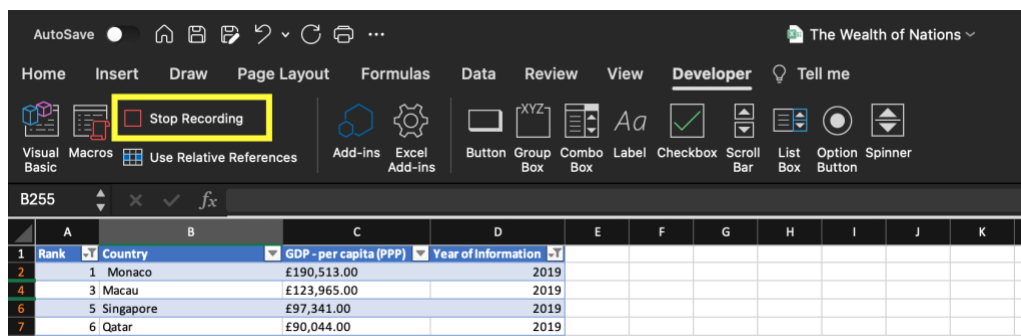
Make sure you are in the correct GDP sheet. In the 'Developer' tab of the ribbon, click on 'Record Macro'.



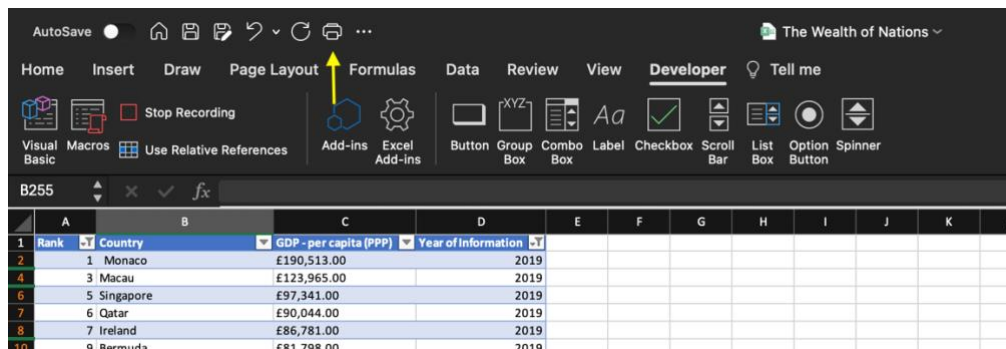
Name your macro alongside its description and shortcut key (optional). Click on OK.



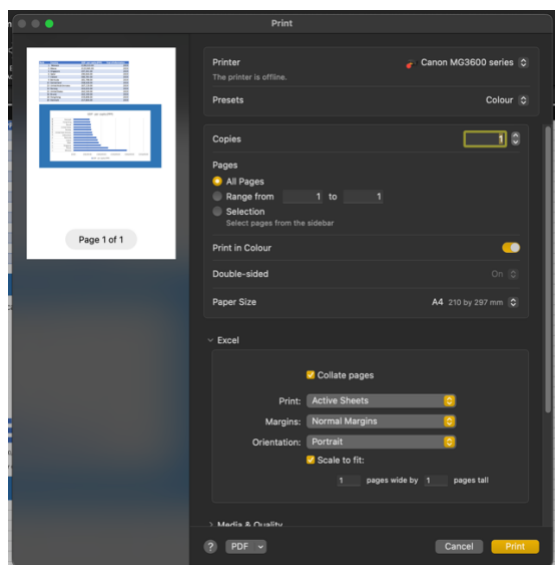
You will see that instead of 'Record Macro', it now says 'Stop Recording'. This means the recording has begun and you must be careful with what you click from now on as it will be included within the macro.



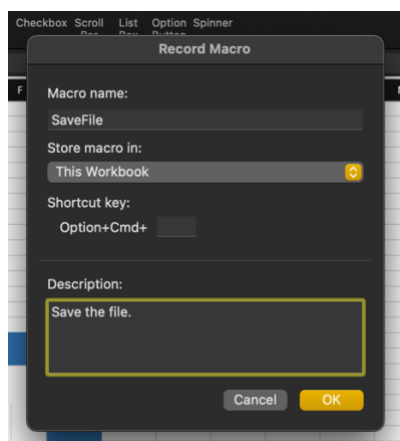
Click on the print icon located at the top of the excel window or navigate your way to the print button on your computer if different. You can also find it under the 'file' option.



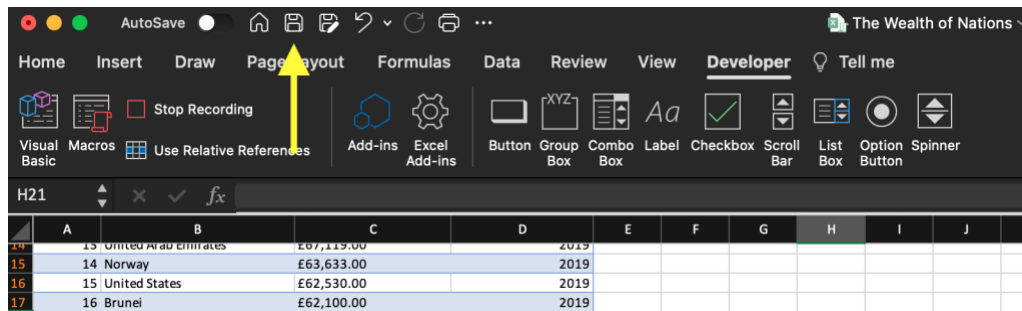
Correct the print options to the page layout you want and click 'Print'. Finally click on 'Stop Recording' to signal the end of the macro.



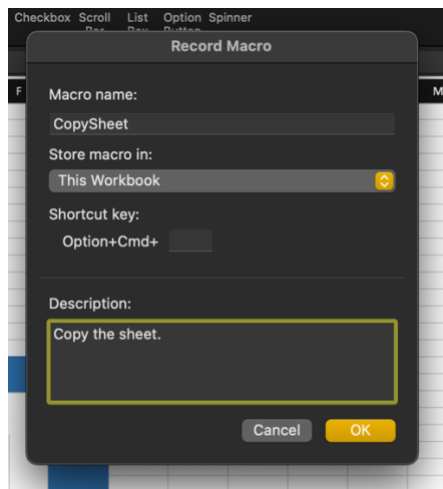
To create a macro which saves the file, click 'Record Macro' and name your macro 'SaveFile' alongside its shortcut command and description (optional).



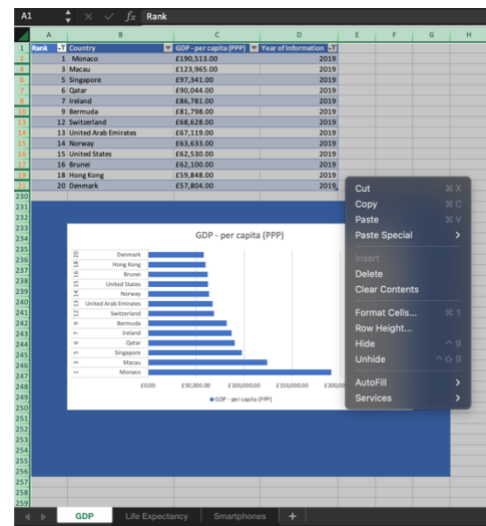
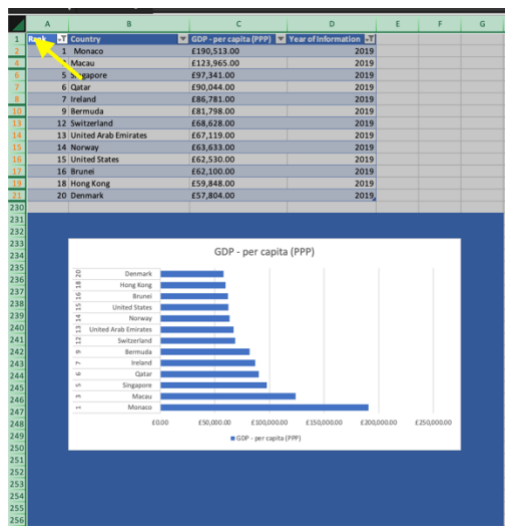
Click on the 'Save' icon either located at the top of the Excel window or under the 'File' option. Stop recording.



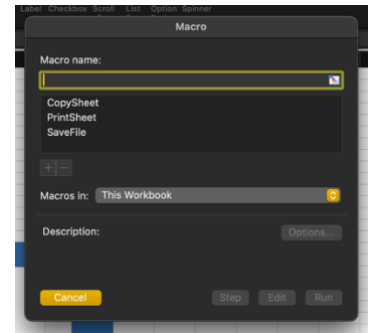
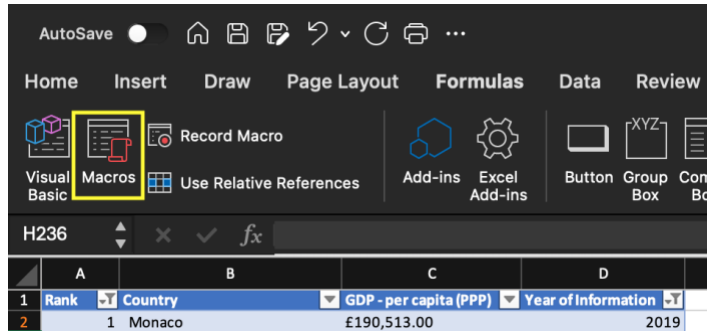
Record a new macro named 'CopySheet', this macro function to copy the sheet. Choose your shortcut key and description (optional) and click OK.



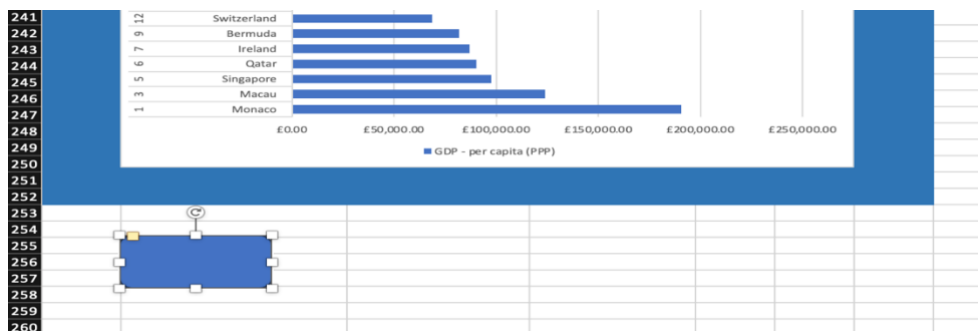
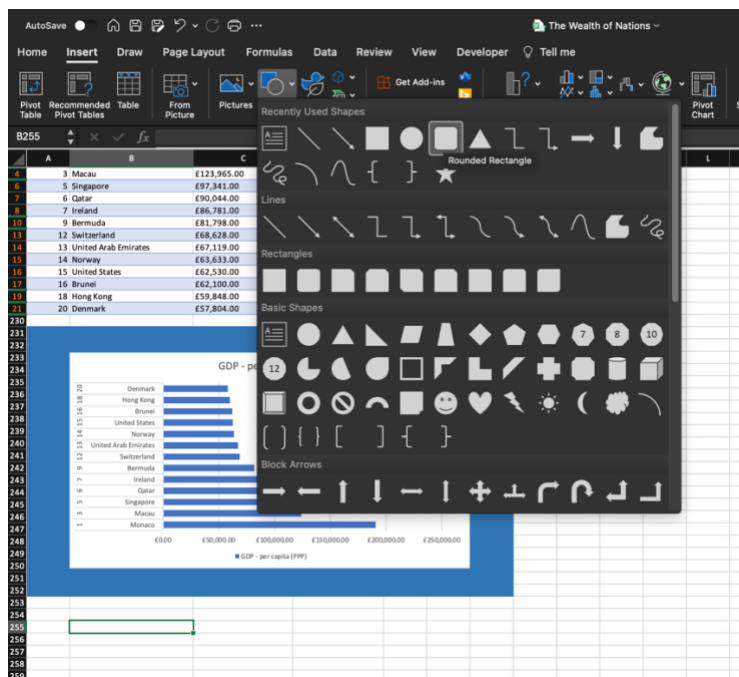
Click on the corner of the sheet as shown in the first image below to highlight the entire sheet. Right-click and select 'Copy' from the list of options and select 'Stop Recording'.



Once you've completed recording all three macros (print, save and copy), you can view, edit, and run them on the 'Macros' option in the Developer Tab.

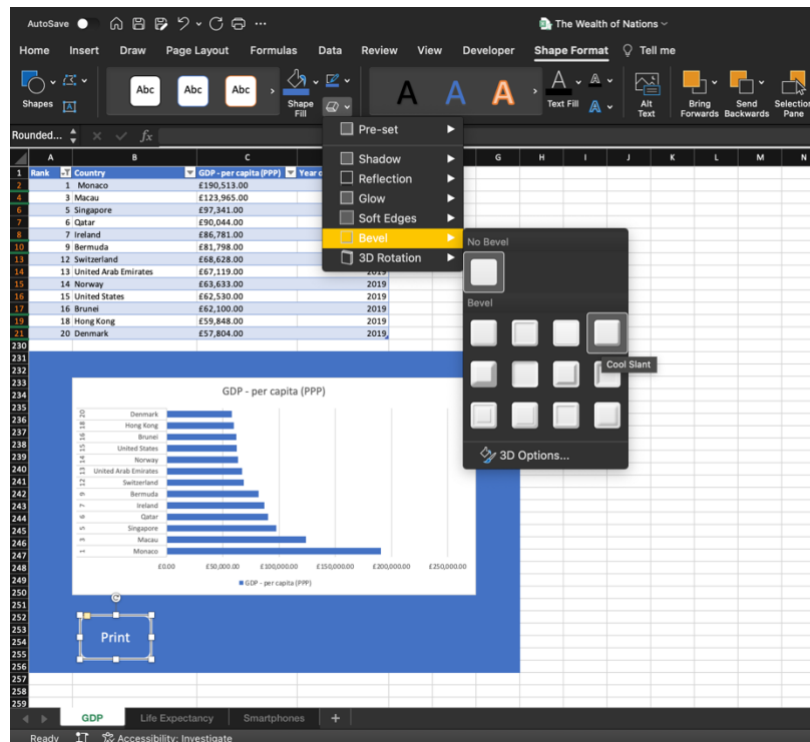
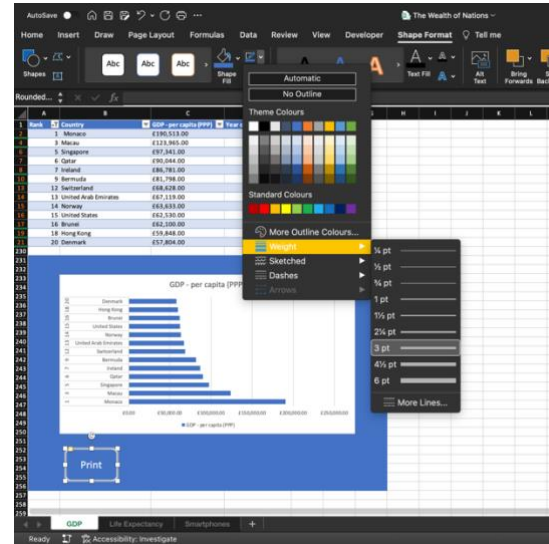
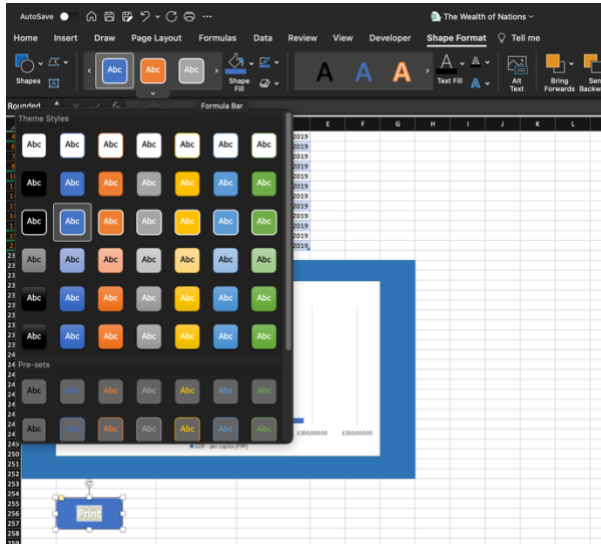


In order to create macro buttons, create a shape using the shape tool from the 'Insert' tab as shown below in the image. You are free to choose any shape but if you want the exact replica of the assignment task, choose rounded rectangle.

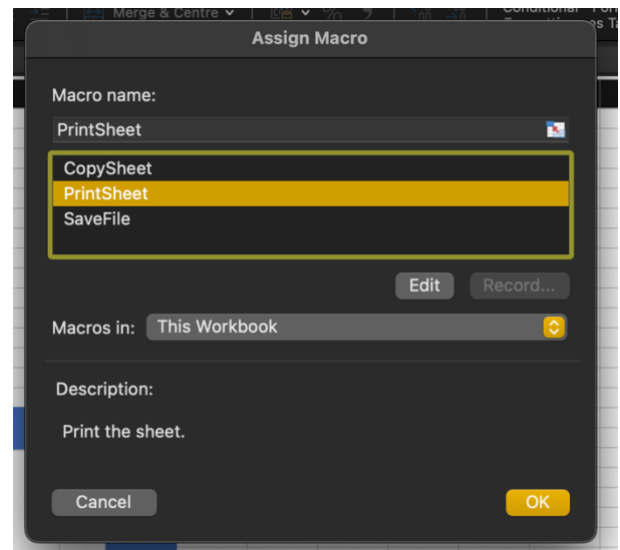
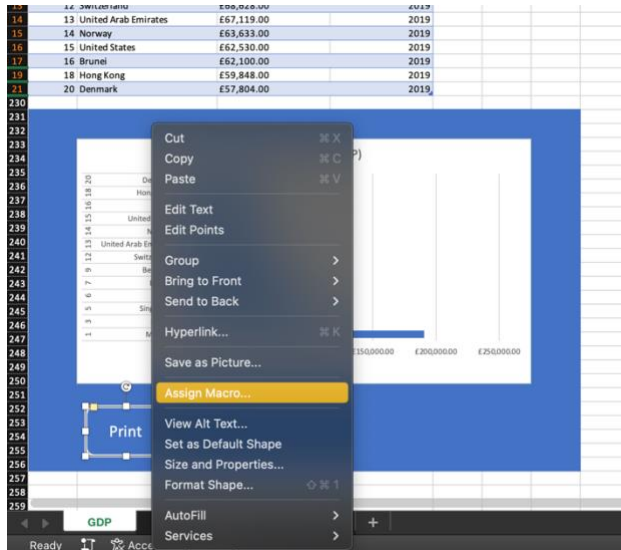




Next, type in 'Print' to the shape to label it for the macro which will be assigned later on. Navigate to the 'Shape format' tab in the Excel ribbon and customize your button to colouring the button border, selecting the weight of the border (border thickness), and finally the bevel that you can add to the button as shown by the three images below.



Now, to assign the macro for this button; as this is the 'print' button, right click on the shape and click on 'assign macro'. A list of macros which you created will be shown, select the corresponding macro that matches the button, in this case, 'PrintSheet'.



Finally, recreate similar buttons in different shapes but assigning the macros 'SaveFile' and 'SaveSheet' that you created earlier to their respective button. They should look like this:

