

DR. ALVIN'S PUBLICATIONS

# LEARNING POWER BI

## PART IV

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POPULATION OF COUNTRIES  
DR. ALVIN ANG



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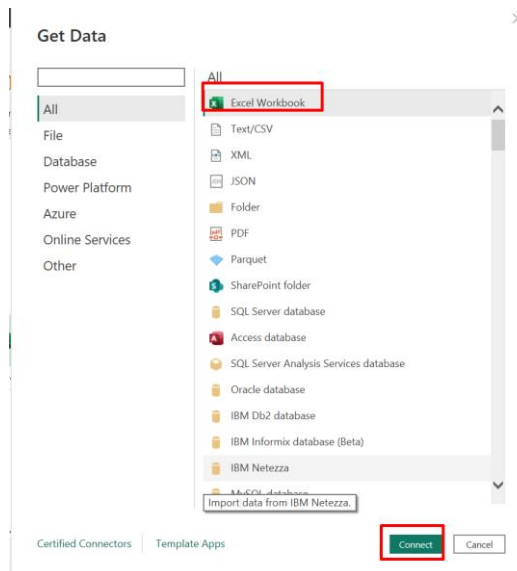
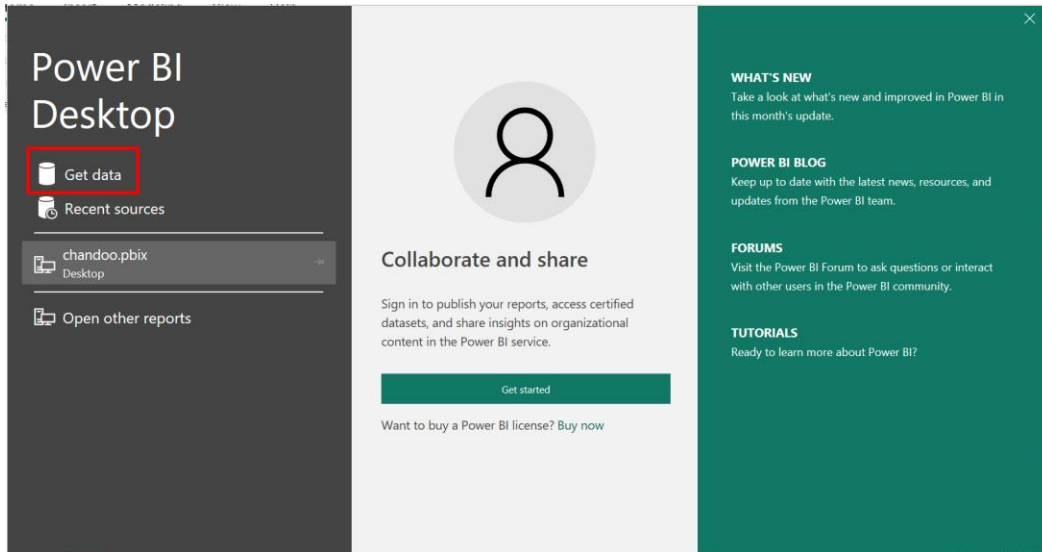
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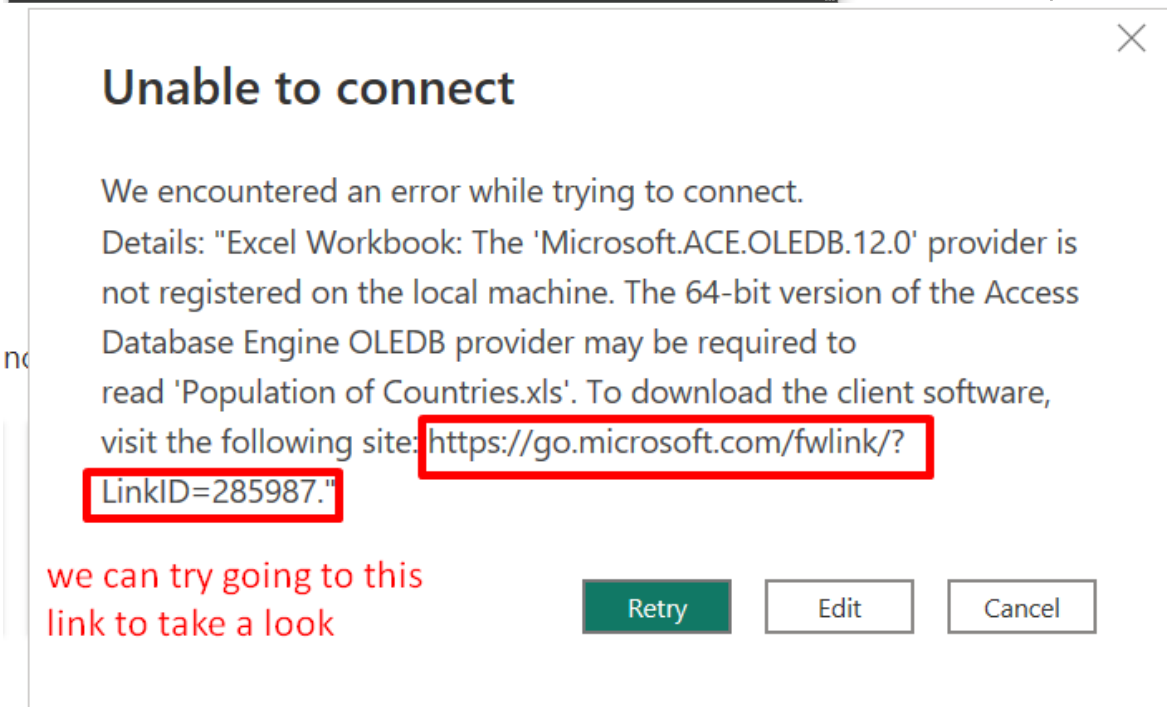
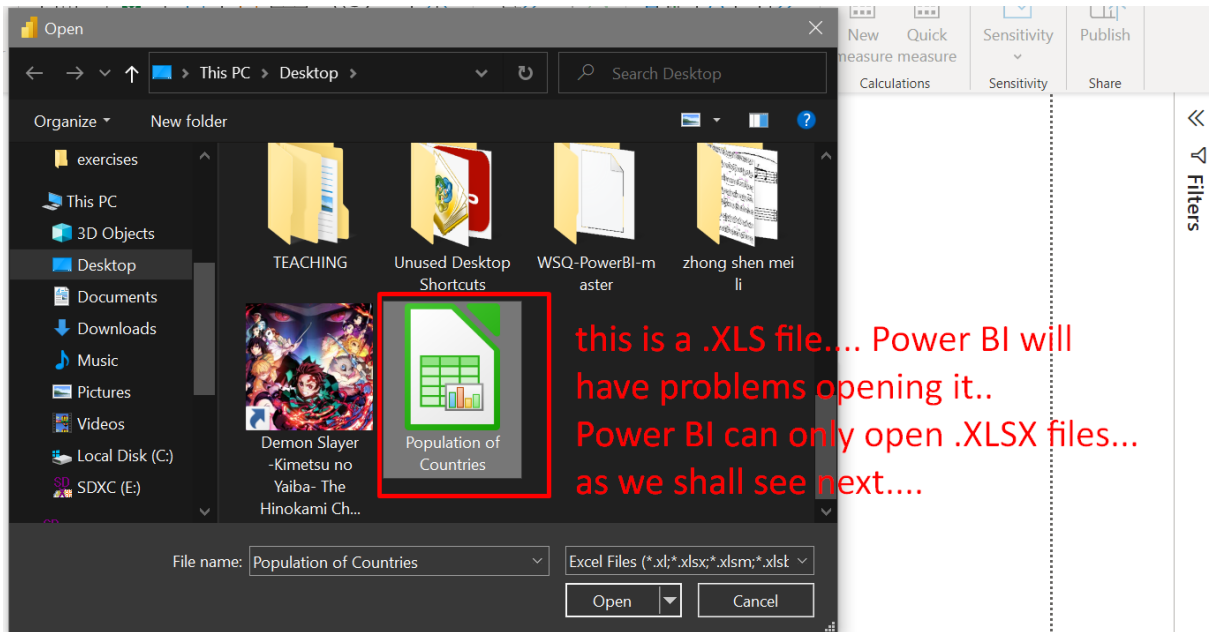
## I. GET DATA

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<https://www.alvinang.sg/s/Population-of-Countries.xls>

### A. GET DATA





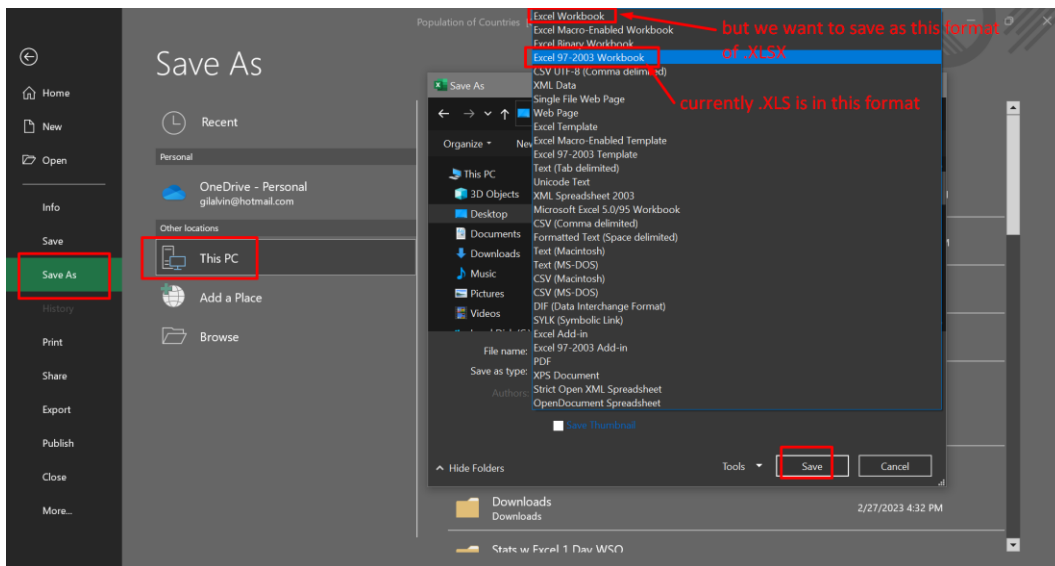
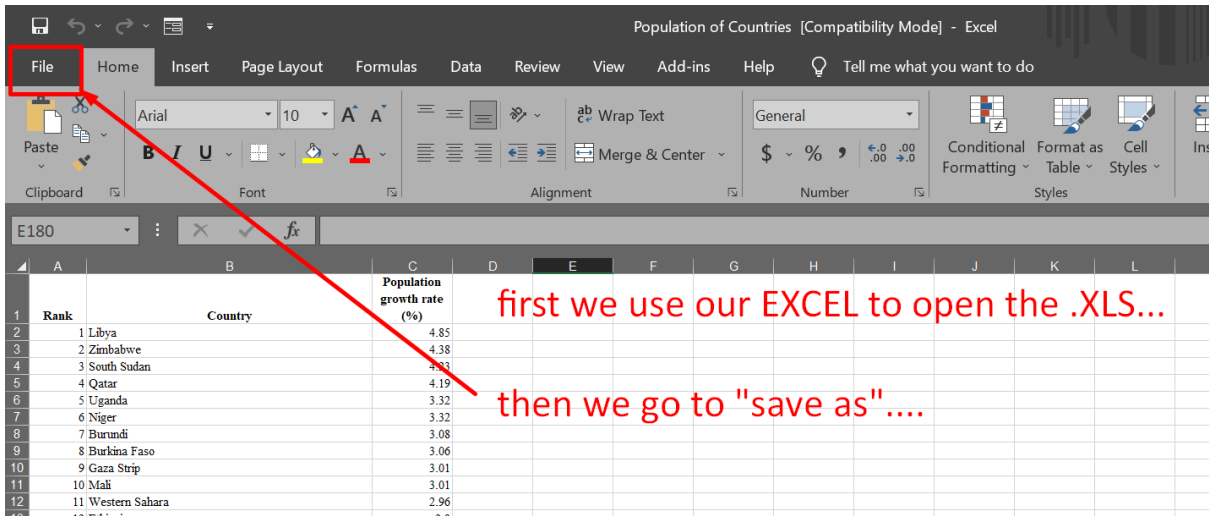
<https://learn.microsoft.com/en-us/power-bi/connect-data/desktop-access-database-errors>

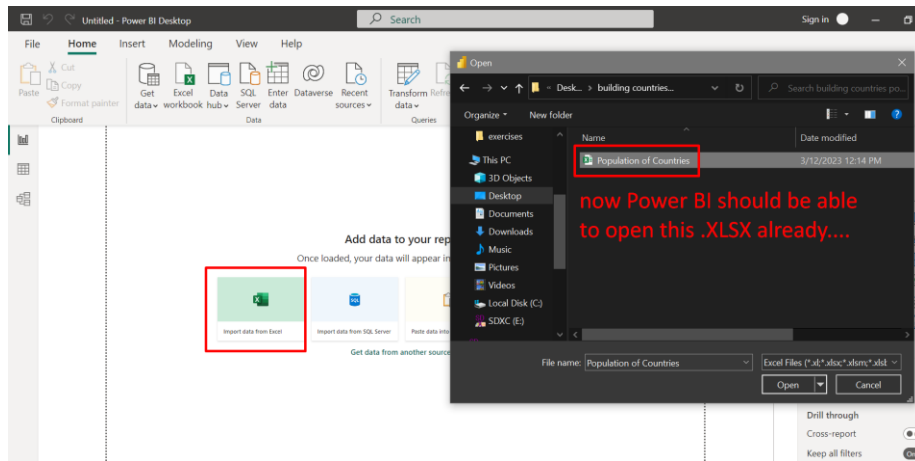
## B. CONVERT .XLS TO .XLSX

### Solution 3: Save the XLS file as XLSX

If the error occurs with an Excel 97-2003 XLS workbook, you can avoid using the Access Database Engine by opening the XLS file in Excel and saving it as an XLSX file.

**this is the solution, change .XLS to .XLSX**





### C. USE POWER QUERY TO CHANGE FIRST ROW AS HEADER

Navigator we notice that for the Continents sheet, the column header is wrong so we need to go Power Query to change....

Continents

Column1	Column2	Column3
Continent	Name	Capital
Africa	Algeria	Algiers
Africa	Angola	Luanda
Africa	Benin	Porto-Novo (official) Cotonou
Africa	Botswana	Gaborone
Africa	Burkina Faso	Ouagadougou
Africa	Burundi	Bujumbura
Africa	Cameroon	Yaoundé
Africa	Cape Verde	Praia
Africa	Central African Republic	Bangui
Africa	Chad	N'Djamena
Africa	Comoros	Moroni
Africa	Congo (Congo-Brazzaville)	Brazzaville
Africa	Côte d'Ivoire (Ivory Coast)	Yamoussoukro (official) Abidjan
Africa	Congo-Kinshasa	Kinshasa
Africa	Djibouti	Djibouti
Africa	Egypt	Cairo
Africa	Equatorial Guinea	Malabo
Africa	Eritrea	Asmara
Africa	Ethiopia	Addis Ababa
Africa	Gabon	Libreville
Africa	Gambia	Banjul

Load Transform Data Cancel

Use First Row as Headers

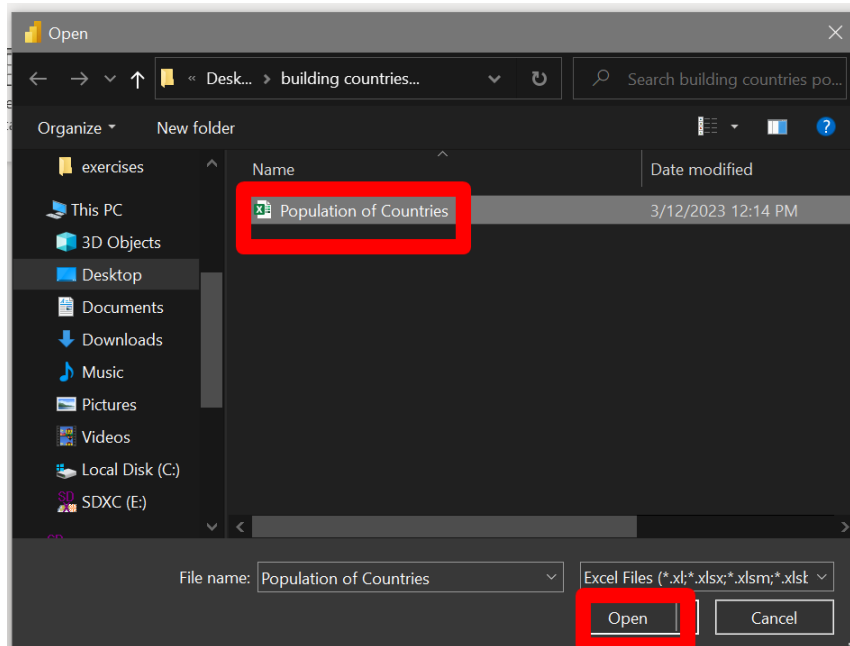
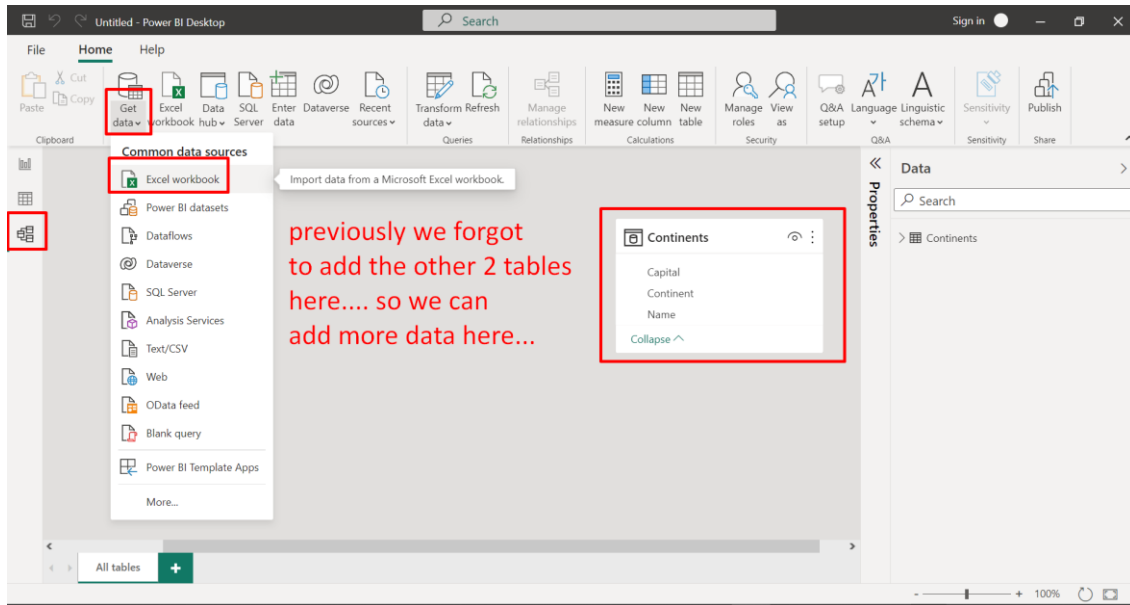
Applied Steps: Changed Type

the headers have now been promoted we can now close and apply....

Continent	Name	Capital
1	Africa	Algeria
2	Africa	Angola
3	Africa	Benin
4	Africa	Botswana
5	Africa	Burkina Faso
6	Africa	Burundi
7	Africa	Cameroon
8	Africa	Cape Verde
9	Africa	Central African Republic
10	Africa	Chad
11	Africa	Comoros
12	Africa	Congo (Congo-Brazzaville)
13	Africa	Côte d'Ivoire (Ivory Coast)



## D. ADD 2 MORE TABLES



## Navigator

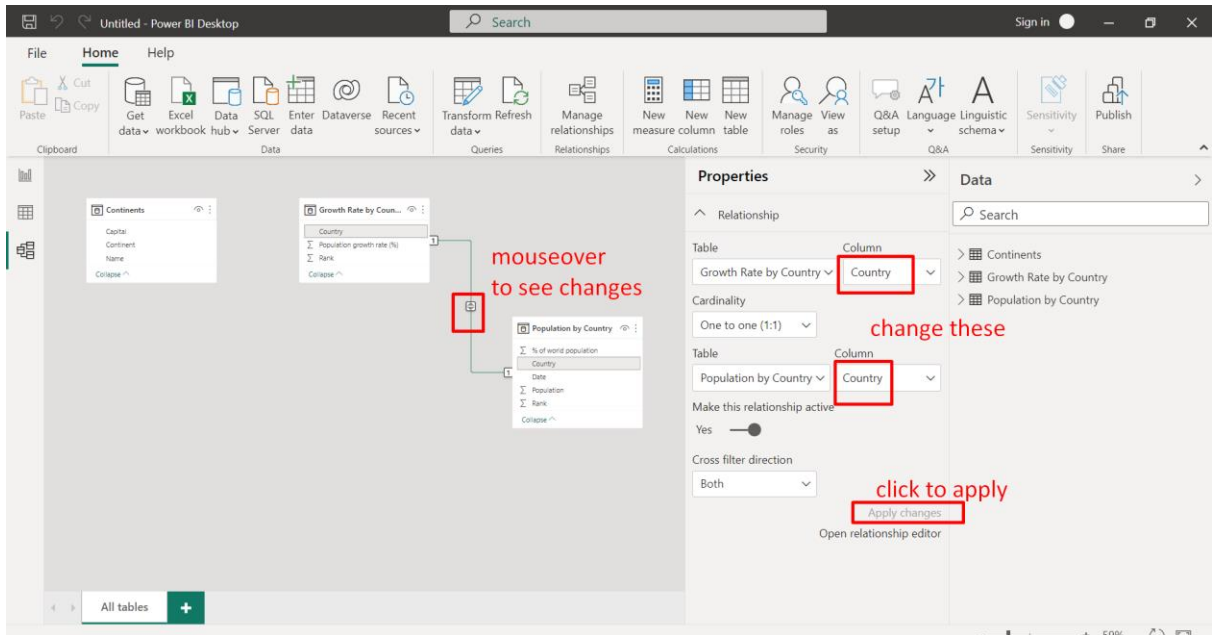
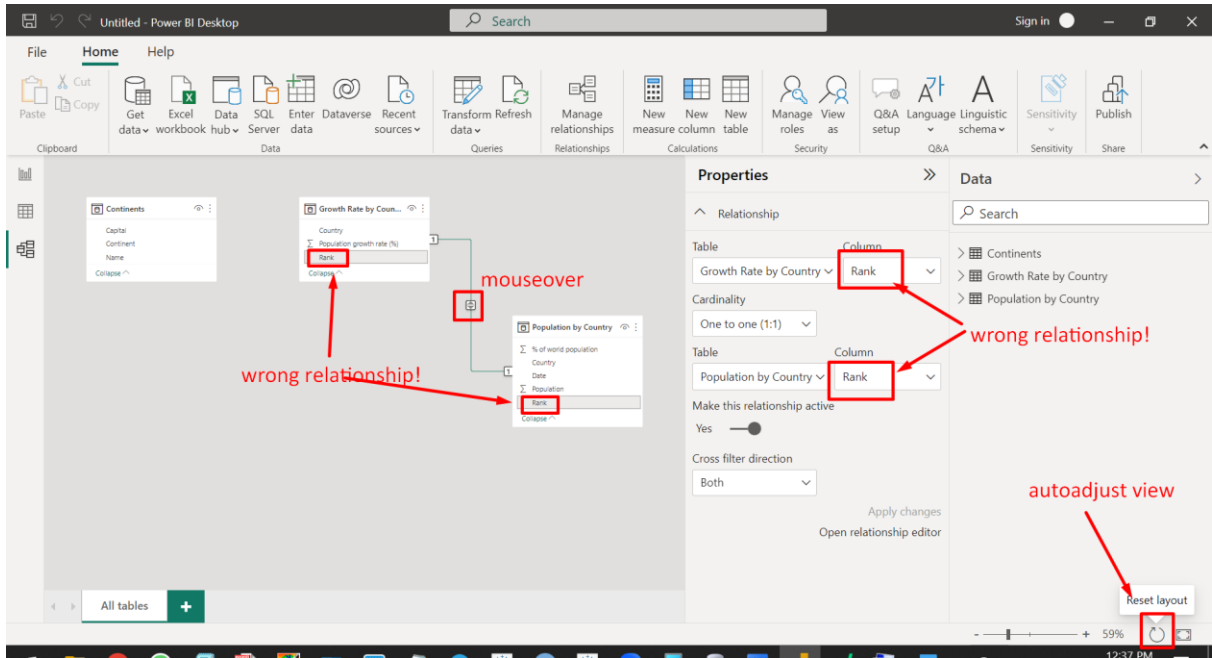
Display Options ▾

- Population of Countries.xlsx [3]
- Continents
- Growth Rate by Country
- Population by Country

## Population by Country

Rank	Country	Population	Date	% of world population
1	China	1362190000	1/14/2014	
2	India	1238990000	1/14/2014	
3	United States	317466000	1/14/2014	
4	Indonesia	249866000	7/1/2013	
5	Brazil	201032714	7/1/2013	
6	Pakistan	185347000	1/14/2014	
7	Nigeria	173615000	7/1/2013	
8	Bangladesh	152518015	7/16/2012	
9	Russia	143600000	11/1/2013	
10	Japan	127270000	12/1/2013	
11	Mexico	118395054	7/1/2013	
12	Philippines	98964000	1/14/2014	
13	Vietnam	90388000	11/1/2013	
14	Ethiopia	86613986	7/1/2013	
15	Egypt	83661000	1/1/2013	
16	Germany	80586000	6/30/2013	
17	Iran	77137000	1/14/2014	
18	Turkey	75627384	12/31/2012	
19	Congo-Kinshasa	67514000	7/1/2013	
20	Thailand	65926261	9/1/2010	
21	France	65860000	12/1/2013	
22	United Kingdom	63705000	7/1/2012	

## E. OBSERVE AUTODETECTED RELATIONSHIPS



Untitled - Power BI Desktop

we shall look at all the relationships here....

Manage relationships

mouseover to see changes

why is this 1 to 1?  
because there is only 1 country in each table  
meaning, 1 country in "Growth Rate" table  
hooked up to 1 country in "Population" table

change these

why both direction? because u cannot  
choose single [it will pop up error]....

click to apply

Apply changes

currently there's only 1 autodetected relationship

Active	From: Table (Column)	To: Table (Column)
<input checked="" type="checkbox"/>	Growth Rate by Country (Country)	Population by Country (Country)

we will edit to take a look...

Close



# Edit relationship

Select tables and columns that are related.

Growth Rate by Country

Rank	Country	Population growth rate (%)
1	Libya	4.85
2	Zimbabwe	4.38
3	South Sudan	4.23

Population by Country

Rank	Country	Population	Date	% of world population
178	Bahamas	351461	5/3/2010	0
179	Iceland	325010	10/1/2013	0
180	Maldives	317280	7/1/2010	0

Cardinality

Cross filter direction

One to one (1:1) Single

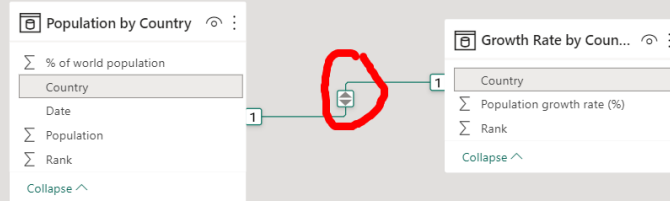
- Make this relationship active
- Assume referential integrity

u see? this happens....

The filter direction you selected isn't valid for this relationship.

OK Cancel

a 1 to 1 relationship will always be BOTH direction



it cannot be set to SINGLE direction  
because 1 table can always filter the other one

Kindly go here to learn more about relationships:

<https://www.alvinang.sg/s/Learning-Power-BI-Part-III-Relationships-by-Dr-Alvin-Ang.pdf>

## II. CREATE A NEW RELATIONSHIP

drag the name and pull it over the Country to create a 1 to 1 relationship

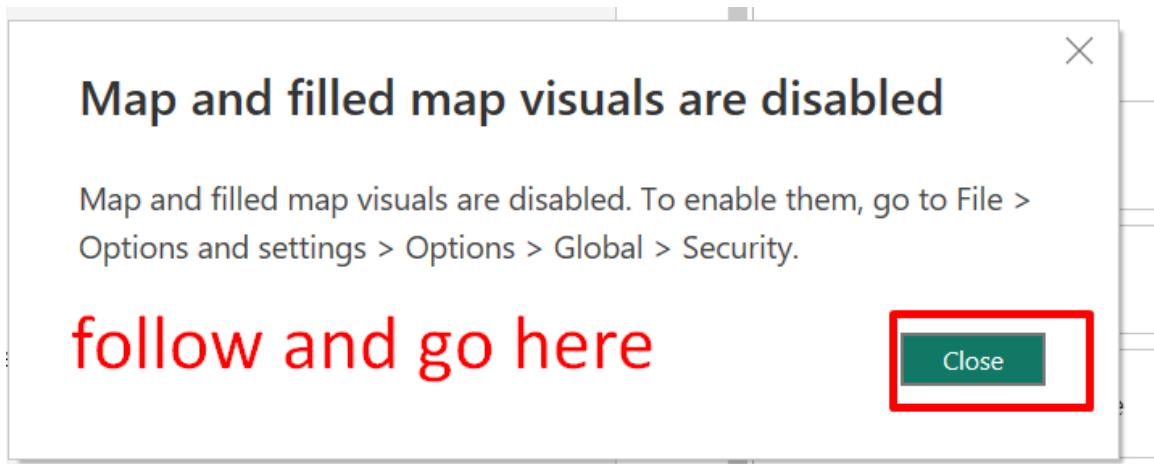
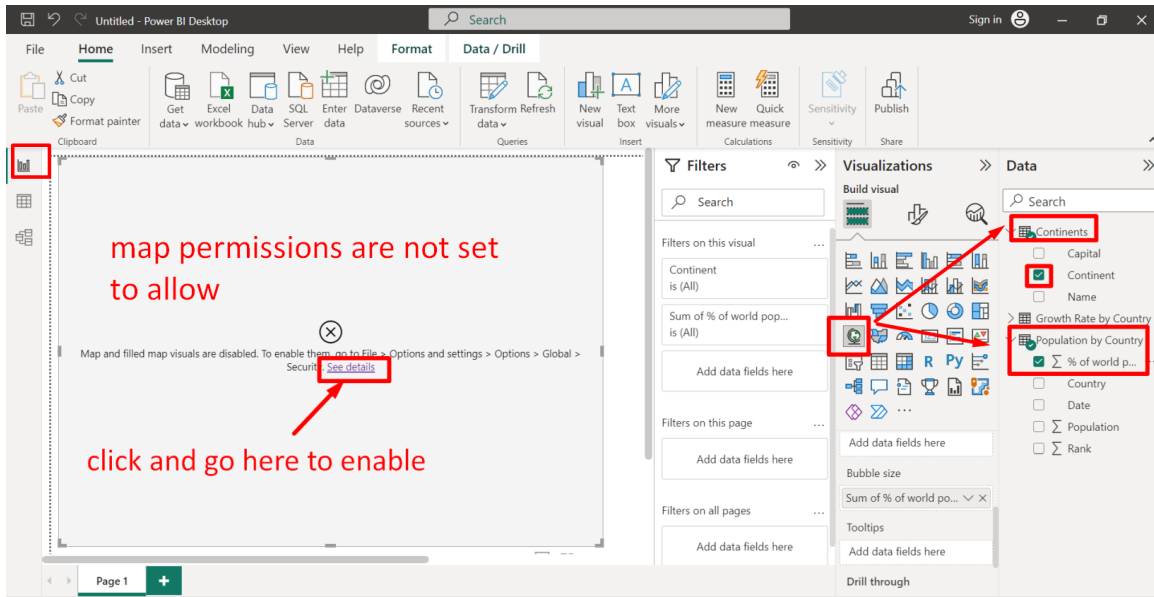
The screenshot shows the Power BI Desktop interface with the following components:

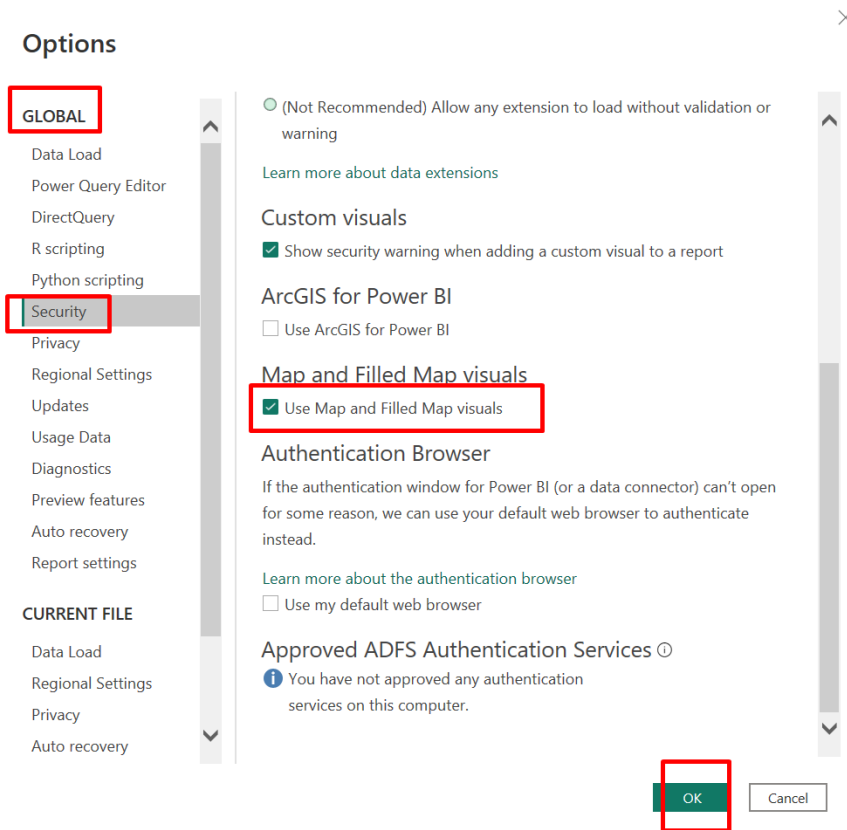
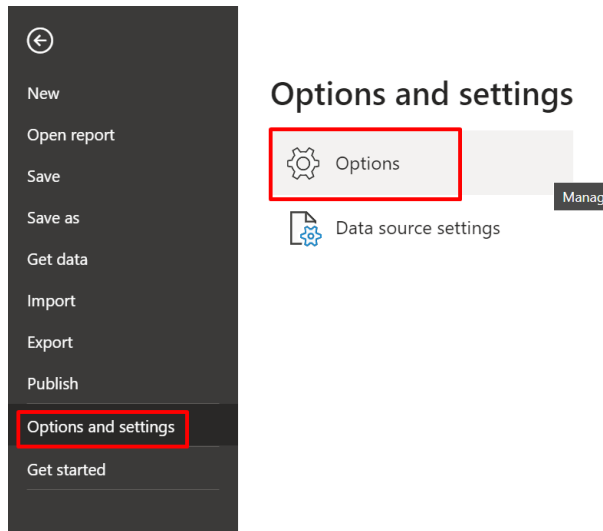
- Top Bar:** "Untitled - Power BI Desktop" and a search bar.
- Home Ribbon:** Includes sections for Clipboard (Paste, Copy), Data (Get data, Excel workbook, Data hub, SQL Server, Enter data, Dataverse, Recent sources), Queries (Transform data, Refresh data), Relationships (Manage relationships), Calculations (New measure, New column, New table), and Security (Manage roles, View as, Q&A, Layout setup).
- Left Pane:** Shows a list of tables: "Continents" and "Population by Country". The "Continents" table has fields "Capital", "Continent", and "Name". The "Population by Country" table has fields "% of world population", "Country", "Date", "Population", and "Rank".
- Relationship Diagram:** A 1-to-1 relationship is being established between the "Name" field in the "Continents" table and the "Country" field in the "Population by Country" table. A red arrow points from the "Name" field to the "Country" field.
- Bottom Bar:** Shows "All tables" and a plus sign to add more tables.



### III. DRAW A MAP: WORLD POPULATION BY CONTINENT

#### A. SETTING MAP PERMISSION





## B. DRAW MAP

The screenshot displays the Microsoft Power BI Desktop interface. The main canvas shows a world map titled "Sum of % of world population by Continent". The map is outlined in red. The right-hand pane is divided into several sections: "Filters", "Visualizations", and "Data". In the "Visualizations" pane, the "Map" icon is highlighted with a red box. In the "Data" pane, the "Continent" field is checked and highlighted with a red box. The "Population by Country" field is also checked and highlighted with a red box. A red arrow points from the "Continent" field in the "Data" pane to the "Map" icon in the "Visualizations" pane. The "Location" dropdown menu is set to "Continent" and is also highlighted with a red box. The "Visualizations" pane also shows the "Build visual" section with various visualization options. The "Filters" pane shows filters for the visual and the page. The "Data" pane shows a search bar and a list of fields including "Continent", "Capital", "Name", "Growth Rate by Country", "Population by Country", and "% of world popu...".

## IV. DO A FILTER FOR THE CONTINENT

The screenshot displays the Microsoft Power BI Desktop interface. The main visualization is a world map titled "Sum of % of world population by Continent". The map shows population percentages for various continents: Africa (59%), Antarctica (4%), Asia (59%), Europe (53%), and North America (45%).

The interface includes the following components:

- Field List (Left):** A list of fields including "Continent" (highlighted with a red box).
- Filters Pane (Center):** A pane titled "Filters" (highlighted with a red box) showing "Continent" (highlighted with a red box) with the filter type "Is not (Blank)". Below it, a list of continent options is shown with checkboxes: "Select all", "(Blank)", "Africa", "Antarctica", "Asia", "Europe", "North America", and "Require single selection".
- Data Pane (Right):** A pane titled "Data" (highlighted with a red box) showing a list of fields including "Continent" (highlighted with a red box).

The status bar at the bottom indicates "Page 1 of 1" and a zoom level of "60%".

## V. DO A NUMBER CARD OF ENTIRE WORLD POPULATION

The screenshot shows the Microsoft Power BI Desktop interface. The main view displays a number card for the 'Sum of Population' with a value of '7bn'. Below the number card is a world map titled 'Sum of Population by Continent'. The interface includes a ribbon with 'Data / Drill' selected, and taskbars for 'Filters', 'Visualizations', and 'Data'. A red box highlights the number card, and another red box highlights the 'Population by Country' field in the Data taskbar. A red arrow points from the 'Population by Country' field to the number card.

## VI. DO A POPULATION BY COUNTRY TABLE

click this to sort from high to low

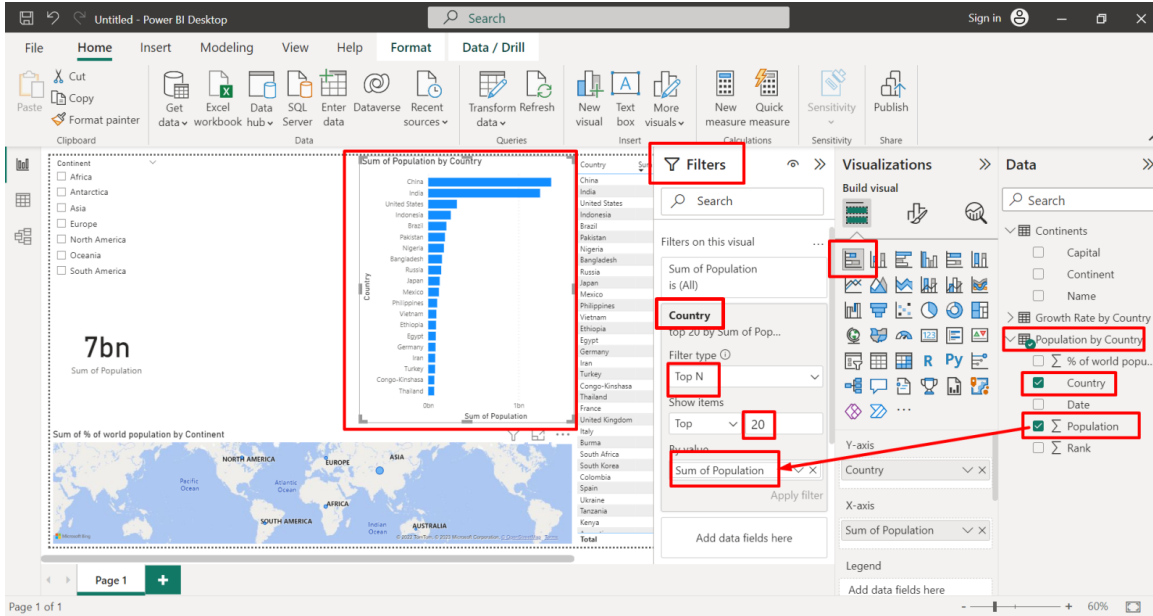
Country	Population
China	1362190000
India	1238990000
United States	317466000
Indonesia	249666000
Brazil	201032714
Pakistan	185347000
Nigeria	173415000
Bangladesh	152518815
Russia	143600000
Japan	122720000
Mexico	118395054
Philippines	98964000
Vietnam	92388000
Ethiopia	86613896
Egypt	82661000
Germany	80586000
Iran	77127000
Turkey	75627384
Congo-Kinshasa	67514000
Thailand	65026581
France	65060000
United Kingdom	63705000
Italy	59901141
Russia	53295000
South Africa	52981991
South Korea	50219669
Colombia	47416000
Total	7080798325

7bn  
Sum of Population

Sum of % of world population by Continent

Page 1 of 1

## VII. DO A TOP 20 POPULATION BY COUNTRY (HORIZONTAL BAR CHART)



## VIII. DO A VERTICAL BAR CHART OF WORLD POPULATION

The screenshot displays the Power BI Desktop interface with a vertical bar chart titled "Sum of % of world population by Continent". The chart shows the percentage of the world's population for each continent: Asia (approx. 0.55), Africa (approx. 0.15), Europe (approx. 0.12), North America (approx. 0.10), and South America (approx. 0.08). The y-axis is labeled "Sum of % of world population" and ranges from 0.0 to 0.6. The x-axis is labeled "Continent".

The "Filters" pane shows "Continent is not (Blank)" selected. The "Visualizations" pane shows "Continent" selected for the Y-axis and "Sum of % of world pop..." selected for the X-axis. The "Data" pane shows "Continent" and "Population by Country" selected.

Other visualizations on the page include a "7bn Sum of Population" card, a "Sum of Population by Country" horizontal bar chart, and a world map.



## IX. DO A TREEMAP OF CONTINENT'S POPULATIONS

The screenshot displays the Microsoft Power BI Desktop interface. The main workspace shows a treemap visualization titled "Sum of Population by Continent" with a total value of 7bn. The treemap is divided into four colored segments representing continents: Asia (orange), Europe (purple), North America (pink), and South America (yellow). To the right of the treemap is a bar chart titled "Sum of Population by Country" listing various countries and their populations. The "Filters" pane is open, showing a filter for "Continent is not (Blank)" with "Select all" applied. The "Data" pane on the right shows the "Continent" field selected in the "Build visual" section and the "Population" field selected in the "Values" section. The ribbon at the top includes "File", "Home", "Insert", "Modeling", "View", "Help", "Format", and "Data / Drill".

## X. PUBLISH

The screenshot shows the Power BI Desktop interface. The ribbon is set to 'Data / Drill', and the 'Publish' button is highlighted with a red box. A dialog box titled 'Enter your email address' is open, prompting the user to sign in. The email address 'pbi88135@gpka.cn' is entered in the field, and the 'Continue' button is also highlighted with a red box. The background shows a report with a bar chart of world population by continent, a map, and a table of population by country.

Country	Sum of Population
Burma	53259000
South Africa	52981991
South Korea	50219669
Colombia	47416000
Spain	46704314
Ukraine	45447010
Tanzania	44928923
Kenya	44354000
<b>Total</b>	<b>7080798325</b>

The screenshot shows the Microsoft account selection dialog box. The title is 'Sign in to your account'. The Microsoft logo is at the top. Below it, the text 'Pick an account' is displayed. A list of accounts is shown, with 'pbi88135@gpka.cn' selected and highlighted with a red box. Below the list, there is a '+ Use another account' option and a 'Back' button. At the bottom, there are links for 'Terms of use', 'Privacy & cookies', and a three-dot menu.

## Publish to Power BI

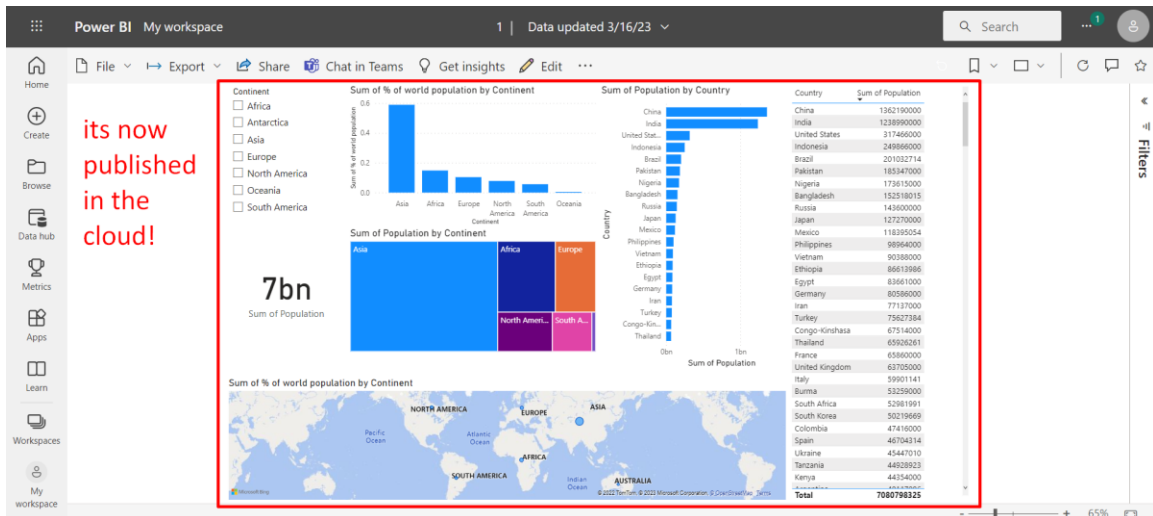
Select a destination

Search

My workspace

Select

Cancel



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## ABOUT DR. ALVIN ANG

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Dr. Alvin Ang earned his Ph.D., Masters and Bachelor degrees from NTU, Singapore. He is a scientist, entrepreneur, as well as a personal/business advisor. More about him at [www.AlvinAng.sg](http://www.AlvinAng.sg).