

SQL_from_world_Tutorial

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This document uses the data set **world** from the sqlzoo.net, to practice various **SQL** basic queries

[SELECT Basics](#)

In this tutorial you will use the SELECT command on the table world.

Let's first have a glimpse of the dataset world

```
##           name continent      area population      gdp      capital
## 1 Afghanistan      Asia  652230   25500100  20364000000      Kabul
## 2      Albania     Europe   28748    2821977  12044000000      Tirana
## 3      Algeria     Africa 2381741   38700000  207021000000      Algiers
## 4      Andorra     Europe    468        76098   3222000000 Andorra la Vella
## 5      Angola      Africa 1246700   19183590 116308000000      Luanda
##      tld
## 1 .af
## 2 .al
## 3 .dz
## 4 .ad
## 5 .ao
```

The dataset have below variables/columns

```
## [1] "name"      "continent" "area"      "population" "gdp"
## [6] "capital"   "tld"
```

1. Observe the result of running a simple SQL command.

```
SELECT name, continent, population FROM world
```

##	name	continent	population
## 1	Afghanistan	Asia	25500100
## 2	Albania	Europe	2821977
## 3	Algeria	Africa	38700000
## 4	Andorra	Europe	76098
## 5	Angola	Africa	19183590
## 6	Antigua and Barbuda	Caribbean	86295
## 7	Argentina	South America	42669500
## 8	Armenia	Eurasia	3017400
## 9	Australia	Oceania	23545500
## 10	Austria	Europe	8504850

2. How to use WHERE to filter records. Show the name for the countries that have a population of at least 200 million. 200 million is 200000000, there are eight zeros.

```
SELECT name FROM world WHERE population>200000000
```

##	name
## 1	Afghanistan
## 2	Albania
## 3	Algeria
## 4	Andorra
## 5	Antigua and Barbuda
## 6	Argentina
## 7	Armenia
## 8	Australia
## 9	Austria
## 10	Azerbaijan

3. Give the name and the per capita GDP for those countries with a population of at least 200 million.

```
SELECT name, gdp/population as 'per capita GDP' FROM world WHERE population >= 200000000
```

##	name	per capita GDP
## 1	Afghanistan	798
## 2	Albania	4267
## 3	Algeria	5349
## 4	Andorra	42340
## 5	Antigua and Barbuda	13627
## 6	Argentina	11179
## 7	Armenia	3297
## 8	Australia	66442
## 9	Austria	46380
## 10	Azerbaijan	7251

4. Show the name and population in millions for the countries of the continent 'South America'. Divide the population by 1000000 to get population in millions.

```
SELECT name, (population/1000000) as 'Population (mns)' FROM world WHERE continent = 'South America'
```

##	name	Population (mns)
## 1	Argentina	42
## 2	Bolivia	10
## 3	Brazil	202
## 4	Chile	17
## 5	Colombia	47
## 6	Ecuador	15
## 7	Guyana	0
## 8	Paraguay	6
## 9	Peru	30
## 10	Saint Vincent and the Grenadines	0
## 11	Suriname	0
## 12	Uruguay	3
## 13	Venezuela	28

5. Show the name and population for France, Germany, Italy

```
SELECT name, population FROM world WHERE name IN ('France', 'Germany', 'Italy')
```

##	name	population
## 1	France	65906000
## 2	Germany	80716000
## 3	Italy	60782668

6. Show the countries which have a name that includes the word 'United'

```
SELECT name FROM world WHERE name LIKE "United%"
```

##	name
## 1	United Arab Emirates
## 2	United Kingdom
## 3	United States

7. Two ways to be big: A country is big if it has an area of more than 3 million sq km or it has a population of more than 250 million. Show the countries that are big by area or big by population. Show name, population and area.

```
SELECT name, population, area FROM world WHERE (area > 3000000 OR population > 250000000)
```

##	name	population	area
## 1	Afghanistan	25500100	652230
## 2	Albania	2821977	28748
## 3	Algeria	38700000	2381741
## 4	Andorra	76098	468
## 5	Antigua and Barbuda	86295	442
## 6	Argentina	42669500	2780400
## 7	Armenia	3017400	29743
## 8	Australia	23545500	7692024
## 9	Austria	8504850	83871
## 10	Azerbaijan	9477100	86600
## 11	Bahamas	351461	null
## 12	Bahrain	1234571	765
## 13	Barbados	285000	430
## 14	Belarus	9467000	207600
## 15	Belgium	11198638	30528

8. Exclusive OR (XOR). Show the countries that are big by area or big by population but not both. Show name, population and area.

- Australia has a big area but a small population, it should be included.
- Indonesia has a big population but a small area, it should be included.
- China has a big population and big area, it should be excluded.
- United Kingdom has a small population and a small area, it should be excluded.

```
SELECT name, population, area FROM world WHERE (area > 3000000 XOR population > 250000000)
```

##	name	population	area
## 1	Albania	2821977	28748
## 2	Algeria	38700000	2381741
## 3	Argentina	42669500	2780400
## 4	Armenia	3017400	29743
## 5	Australia	23545500	7692024
## 6	Bahrain	1234571	765
## 7	Belarus	9467000	207600
## 8	Belgium	11198638	30528
## 9	Belize	349728	22966
## 10	Benin	9988068	112622
## 11	Botswana	2024904	582000
## 12	Brazil	202794000	8515767
## 13	Bulgaria	7245677	110879
## 14	Burundi	9420248	27834
## 15	Cameroon	20386799	475442

The same output without using XOR

```
SELECT name, population, area FROM world WHERE ((area > 3000000 AND population < 250000000) OR (area < 3000000 AND population > 250000000))
```

##	name	population	area
## 1	Albania	2821977	28748
## 2	Algeria	38700000	2381741
## 3	Argentina	42669500	2780400
## 4	Armenia	3017400	29743
## 5	Australia	23545500	7692024
## 6	Bahrain	1234571	765
## 7	Belarus	9467000	207600
## 8	Belgium	11198638	30528
## 9	Belize	349728	22966
## 10	Benin	9988068	112622
## 11	Botswana	2024904	582000
## 12	Brazil	202794000	8515767
## 13	Bulgaria	7245677	110879
## 14	Burundi	9420248	27834
## 15	Cameroon	20386799	475442

9. Show the name and population in millions and the GDP in billions for the countries of the continent 'South America'.

- Use the ROUND function to show the values to two decimal places.
- For South America show population in millions and GDP in billions both to 2 decimal places.
- Divide by 1000000 (6 zeros) for millions. Divide by 1000000000 (9 zeros) for billions.

```
SELECT name, ROUND(population/1000000,2), ROUND(gdp/1000000000,2)  
FROM world WHERE continent = 'South America'
```

##	name	Population (mns)	gdp (bns)
## 1	Argentina	42	477
## 2	Bolivia	10	27
## 3	Brazil	202	2254
## 4	Chile	17	268
## 5	Colombia	47	369
## 6	Ecuador	15	87
## 7	Guyana	0	2
## 8	Paraguay	6	25
## 9	Peru	30	204
## 10	Saint Vincent and the Grenadines	0	0
## 11	Suriname	0	5
## 12	Uruguay	3	49
## 13	Venezuela	28	382

10. Show the name and percapita GDP for those countries with a GDP of at least one trillion (1000000000000; that is 12 zeros). Round this value to the nearest 1000.

```
SELECT name, ROUND(gdp/population,-3) FROM world WHERE gdp >= 1000000000000;
```

##	name	percapita GDP
## 1	Afghanistan	798
## 2	Albania	4267
## 3	Algeria	5349
## 4	Andorra	42340
## 5	Angola	6062
## 6	Antigua and Barbuda	13627
## 7	Argentina	11179
## 8	Armenia	3297
## 9	Australia	66442
## 10	Austria	46380
## 11	Azerbaijan	7251
## 12	Bahamas	22884
## 13	Bahrain	24593
## 14	Bangladesh	812
## 15	Barbados	15905

11. The CASE statement shown is used to substitute North America for Caribbean in the third column. Show the name but substitute Australasia for Oceania for countries beginning with N.

```
SELECT name,
CASE WHEN continent='Oceania' THEN 'Australasia'
ELSE continent END
FROM world
WHERE name LIKE 'N%'
```

##	name	continent	Continent (CASE-WHEN)
## 1	Namibia	Africa	Africa
## 2	Nauru	Oceania	Australasia
## 3	Nepal	Asia	Asia
## 4	Netherlands	Europe	Europe
## 5	New Zealand	Oceania	Australasia
## 6	Nicaragua	North America	North America
## 7	Niger	Africa	Africa
## 8	Nigeria	Africa	Africa
## 9	North Korea	Asia	Asia
## 10	Norway	Europe	Europe

12. Show the name and the continent but substitute Eurasia for Europe and Asia; substitute America for each country in North America or South America or Caribbean. Show countries beginning with A or B

```
SELECT name, CASE
WHEN continent IN ("Europe", "Asia") THEN 'Eurasia'
WHEN continent IN ("North America", "South America", "Caribbean") THEN 'America'
ELSE continent END
FROM world
WHERE name LIKE "A%" or name LIKE "B%"
```

##	name	continent	Continent (updated)
## 1	Afghanistan	Asia	Eurasia
## 2	Albania	Europe	Eurasia
## 3	Algeria	Africa	Africa
## 4	Andorra	Europe	Eurasia
## 5	Angola	Africa	Africa
## 6	Antigua and Barbuda	Caribbean	America
## 7	Argentina	South America	America
## 8	Armenia	Eurasia	Eurasia
## 9	Australia	Oceania	Oceania
## 10	Austria	Europe	Eurasia
## 11	Azerbaijan	Asia	Eurasia
## 12	Bahamas	Caribbean	America
## 13	Bahrain	Asia	Eurasia
## 14	Bangladesh	Asia	Eurasia
## 15	Barbados	Caribbean	America
## 16	Belarus	Europe	Eurasia
## 17	Belgium	Europe	Eurasia
## 18	Belize	North America	America
## 19	Benin	Africa	Africa
## 20	Bhutan	Asia	Eurasia
## 21	Bolivia	South America	America
## 22	Bosnia and Herzegovina	Europe	Eurasia
## 23	Botswana	Africa	Africa
## 24	Brazil	South America	America
## 25	Brunei	Asia	Eurasia
## 26	Bulgaria	Europe	Eurasia
## 27	Burkina Faso	Africa	Africa
## 28	Burundi	Africa	Africa

13. Put the continents right...

- Oceania becomes Australasia
- Countries in Eurasia and Turkey go to Europe/Asia
- Caribbean islands starting with 'B' go to North America, other Caribbean islands go to South America
- Order by country name in ascending order
- Show the name, the original continent and the new continent of all countries.

```
SELECT name, continent,
CASE WHEN continent='Oceania' THEN 'Australasia'
WHEN continent = 'Eurasia' OR name = 'Turkey' THEN 'Europe/Asia'
WHEN name LIKE "B%" and continent ='Caribbean' THEN 'North America'
WHEN NOT (name LIKE "B%") and continent = 'Caribbean' THEN 'South America'
ELSE continent END 'Continent (updated)'
FROM world ORDER BY name ASC
```

##	name	continent	Continent (updated)
## 1	Afghanistan	Asia	Asia
## 2	Albania	Europe	Europe
## 3	Algeria	Africa	Africa
## 4	Andorra	Europe	Europe
## 5	Angola	Africa	Africa
## 6	Antigua and Barbuda	Caribbean	South America
## 7	Argentina	South America	South America
## 8	Armenia	Eurasia	Europe/Asia
## 9	Australia	Oceania	Australasia
## 10	Austria	Europe	Europe
## 11	Azerbaijan	Asia	Asia
## 12	Bahamas	Caribbean	North America
## 13	Bahrain	Asia	Asia
## 14	Bangladesh	Asia	Asia
## 15	Barbados	Caribbean	North America
## 16	Belarus	Europe	Europe
## 17	Belgium	Europe	Europe
## 18	Belize	North America	North America
## 19	Benin	Africa	Africa
## 20	Bhutan	Asia	Asia