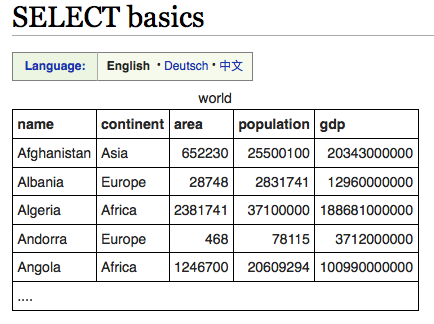
<https://sqlzoo.net/wiki/SELECT_from_WORLD_Tutorial>

[SELECT basics](https://sqlzoo.net/wiki/SELECT_basics)



1/ The example uses a WHERE clause to show the population of 'France'. Note that strings (pieces of text that are data) should be in 'single quotes';

Modify it to show the population of Germany

**Answer : select population from world where name = 'Germany'**

2/ Checking a list The word **IN** allows us to check if an item is in a list. The example shows the name and population for the countries 'Brazil', 'Russia', 'India' and 'China'.

Show the name and the population for 'Sweden', 'Norway' and 'Denmark'.

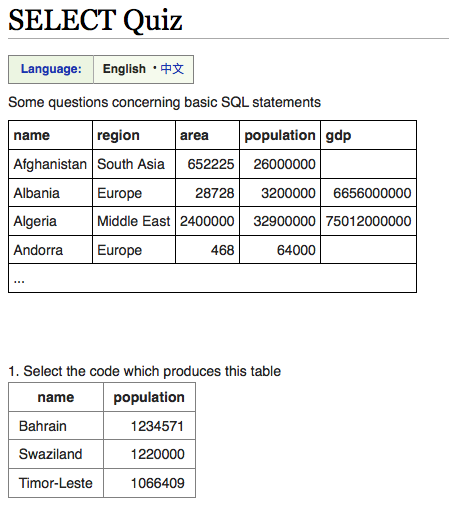
**Answer : SELECT name, population FROM world WHERE name in ('Sweden','Norway','Denmark')**

**3/**Which countries are not too small and not too big? BETWEEN allows range checking (range specified is inclusive of boundary values). The example below shows countries with an area of 250,000-300,000 sq. km. Modify it to show the country and the area for countries with an area between 200,000 and 250,000.

**Answer : SELECT name, area FROM world WHERE area BETWEEN 200000 AND 250000**

[Quiz](https://sqlzoo.net/wiki/SELECT_Quiz)

1/



**Answer : SELECT name, population  
 FROM world  
 WHERE population BETWEEN 1000000 AND 1250000**

2/ Pick the result you would obtain from this code:

**SELECT** name, population  
 **FROM** world  
 **WHERE** name **LIKE** "Al%"

**Answer :**

|  |  |
| --- | --- |
| **Albania** | **3200000** |
| **Algeria** | **32900000** |

3. Select the code which shows the countries that end in A or L

**Answer :SELECT name FROM world  
 WHERE name LIKE '%a' OR name LIKE '%l'**

4. Pick the result from the query

**SELECT** name,**length**(name)  
**FROM** world  
**WHERE** **length**(name)=5 **and** region='Europe'

**Answer :**

|  |  |
| --- | --- |
| **name** | **length(name)** |
| **Italy** | **5** |
| **Malta** | **5** |
| **Spain** | **5** |

5. Here are the first few rows of the world table:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **name** | **region** | **area** | **population** | **gdp** |
| Afghanistan | South Asia | 652225 | 26000000 |  |
| Albania | Europe | 28728 | 3200000 | 6656000000 |
| Algeria | Middle East | 2400000 | 32900000 | 75012000000 |
| Andorra | Europe | 468 | 64000 |  |
| ... | | | | |

Pick the result you would obtain from this code:

SELECT name, area\*2 FROM world WHERE population = 64000

**Answer :**

|  |  |
| --- | --- |
| **Andorra** | **936** |

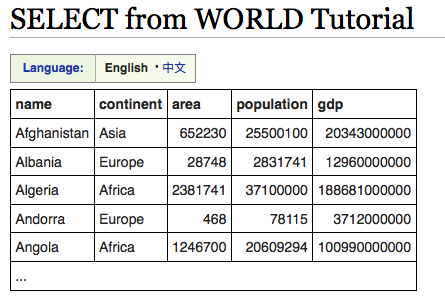
6. Select the code that would show the countries with an area larger than 50000 and a population smaller than 10000000

**Answer : SELECT name, area, population  
 FROM world  
 WHERE area > 50000 AND population < 10000000**

7. Select the code that shows the population density of China, Australia, Nigeria and France

**Answer : SELECT name, population/area  
 FROM world  
 WHERE name IN ('China', 'Nigeria', 'France', 'Australia')**

[SELECT from world](https://sqlzoo.net/wiki/SELECT_from_WORLD_Tutorial)



1/ [Read the notes about this table.](https://sqlzoo.net/wiki/Read_the_notes_about_this_table.) Observe the result of running this SQL command to show the name, continent and population of all countries.

**Answer : SELECT name, continent, population FROM world**

2/ [How to use WHERE to filter records.](https://sqlzoo.net/wiki/WHERE_filters) Show the name for the countries that have a population of at least 200 million. 200 million is 200000000, there are eight zeros.

**Answer : SELECT name FROM world**

**WHERE population >= 200000000**

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

*HELP:How to calculate per capita GDP*

**Answer : SELECT name, GDP/population FROM world WHERE population >= 200000000**

**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.

**Answer : SELECT name, population/1000000 FROM world WHERE continent ='South America'**

**5/** Show the name and population for France, Germany, Italy

**Answer : SELECT name, population FROM world WHERE name IN ('France','Germany','Italy')**

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

**Answer : SELECT name FROM world WHERE name like 'United%'**

**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.

**Answer : SELECT name, population, area FROM world WHERE area > 3000000 OR population > 250000000**

**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**.

**Answer : SELECT name, population,area FROM world WHERE area > 3000000 XOR population > 250000000**

9/ Show the name and population in millions and the GDP in billions for the countries of the continent 'South America'. Use the [ROUND](https://sqlzoo.net/wiki/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.

*Millions and billions*

**Answer : SELECT name, ROUND(population/1000000,2), ROUND(gdp/1000000000,2) FROM world WHERE continent like 'South America'**

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

Show per-capita GDP for the trillion dollar countries to the nearest $1000.

**Answer : SELECT name, ROUND(gdp/population,-3) FROM world WHERE gdp>1000000000000**

11/ Greece has capital Athens.

Each of the strings 'Greece', and 'Athens' has 6 characters.

Show the name and capital where the name and the capital have the same number of characters.

* You can use the [LENGTH](https://sqlzoo.net/wiki/LENGTH) function to find the number of characters in a string

**Answer : SELECT name, capital FROM world WHERE LENGTH(name)=LENGTH(capital)**

12/ The capital of Sweden is Stockholm. Both words start with the letter 'S'.

Show the name and the capital where the first letters of each match. Don't include countries where the name and the capital are the same word.

* You can use the function [LEFT](https://sqlzoo.net/wiki/LEFT) to isolate the first character.
* You can use <> as the **NOT EQUALS** operator.

Answer : SELECT name, capital

FROM world

WHERE LEFT(name,1) like LEFT(capital,1) AND name <> capital

13/Equatorial Guinea and Dominican Republic have all of the vowels (a e i o u) in the name. They don't count because they have more than one word in the name.

Find the country that has all the vowels and no spaces in its name.

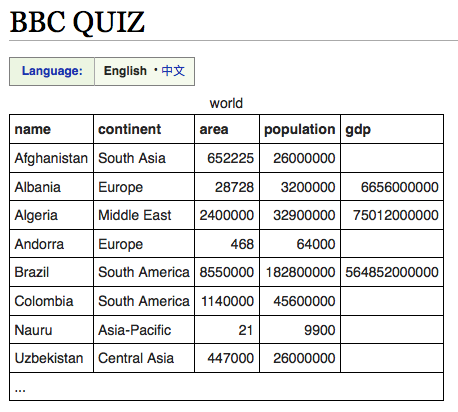
* You can use the phrase name NOT LIKE '%a%' to exclude characters from your results.
* The query shown misses countries like Bahamas and Belarus because they contain at least one 'a'

**Answer : SELECT name**

**FROM world**

**WHERE name LIKE ('\_o\_a%i%e')**

|  |
| --- |
| **name** |
| Mozambique |

****

1. Select the code which gives the name of countries beginning with U

**Answer : SELECT name  
 FROM world  
 WHERE name  
 BEGIN with U**

2. Select the code which shows just the population of United Kingdom?

**Answer : SELECT population  
 FROM world  
 WHERE name = 'United Kingdom'**

3. Select the answer which shows the problem with this SQL code - the intended result should be the continent of France:

**SELECT** continent   
 **FROM** world   
 **WHERE** 'name' = 'France'

**Answer : 'name' should be name**

4. Select the result that would be obtained from the following code:

**SELECT** name, population / 10   
 **FROM** world   
 **WHERE** population < 10000

**Answer :**

|  |  |
| --- | --- |
| **Nauru** | **990** |

5. Select the code which would reveal the name and population of countries in Europe and Asia

**Answer: SELECT name, population  
 FROM world  
 WHERE continent IN ('Europe', 'Asia')**

6. Select the code which would give two rows

**Answer : SELECT name FROM world  
 WHERE name IN ('Cuba', 'Togo**')

7. Select the result that would be obtained from this code:

**SELECT** name **FROM** world  
 **WHERE** continent = 'South America'  
 **AND** population > 40000000

**Answer :**

|  |
| --- |
| **Brazil** |
| **Colombia** |

# [SELECT from nobel](http://sqlzoo.net/wiki/SELECT_from_Nobel_Tutorial)

|  |  |
| --- | --- |
| [**Language:**](http://sqlzoo.net/wiki/SQLZOO:Language_policy) | **English** • [中文](http://sqlzoo.net/wiki/SELECT_from_Nobel_Tutorial/zh) |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **yr** | **subject** | **winner** |  |  |
| 1960 | Chemistry | Willard F. Libby |  |  |
| 1960 | Literature | Saint-John Perse |  |  |
| 1960 | Medicine | Sir Frank Macfarlane Burnet |  |  |
| 1960 | Medicine | Peter Madawar |  |  |
| ... | | | | |

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* [31962 Literature](http://sqlzoo.net/wiki/SELECT_from_Nobel_Tutorial#1962_Literature)
* [4Albert Einstein](http://sqlzoo.net/wiki/SELECT_from_Nobel_Tutorial#Albert_Einstein)
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* [6Literature in the 1980's](http://sqlzoo.net/wiki/SELECT_from_Nobel_Tutorial#Literature_in_the_1980.27s)
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* [8John](http://sqlzoo.net/wiki/SELECT_from_Nobel_Tutorial#John)
* [9Chemistry and Physics from different years](http://sqlzoo.net/wiki/SELECT_from_Nobel_Tutorial#Chemistry_and_Physics_from_different_years)
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* [16Chemistry and Physics last](http://sqlzoo.net/wiki/SELECT_from_Nobel_Tutorial#Chemistry_and_Physics_last)

## nobel Nobel Laureates

We continue practicing simple SQL queries on a single table.

This tutorial is concerned with a table of Nobel prize winners:

nobel(yr, subject, winner)

Using the SELECT statement.

1/ Change the query shown so that it displays Nobel prizes for 1950

**Answer : SELECT \***

**FROM nobel**

**WHERE yr=1950**

2/ Show who won the 1962 prize for Literature.

**Answer : SELECT winner**

**FROM nobel**

**WHERE yr=1962 AND subject ='Literature'**

3/ Show the year and subject that won 'Albert Einstein' his prize.

**Answer : SELECT yr, subject**

**FROM nobel**

**WHERE winner = 'Albert Einstein'**

**4/** Give the name of the 'Peace' winners since the year 2000, including 2000.

**Answer : SELECT winner**

**FROM nobel**

**WHERE yr >= 2000 AND subject = 'Peace'**

5/ Show all details (**yr**, **subject**, **winner**) of the Literature prize winners for 1980 to 1989 inclusive.

**Answer : SELECT \***

**FROM nobel**

**WHERE subject = 'Literature' AND yr BETWEEN 1980 AND 1989**

6/ Show all details of the presidential winners:

* Theodore Roosevelt
* Woodrow Wilson
* Jimmy Carter
* Barack Obama

**Answer : SELECT \***

**FROM nobel**

**WHERE winner IN ('Theodore Roosevelt','Woodrow Wilson','Jimmy Carter','Barack Obama')**

7/ Show the winners with first name John

**Answer : SELECT winner**

**FROM nobel**

**WHERE winner LIKE ('John%')**

8/ Show the year, subject, and name of Physics winners for 1980 together with the Chemistry winners for 1984.

**Answer : SELECT \***

**FROM nobel**

**WHERE (subject = 'Physics' AND yr=1980) OR (subject ='Chemistry' AND yr=1984)**

9/ Show the year, subject, and name of winners for 1980 excluding Chemistry and Medicine

**Answer : SELECT \***

**FROM nobel**

**WHERE yr=1980 AND subject NOT LIKE ('Chemistry') AND subject NOT LIKE ('Medicine')**

10/ Show year, subject, and name of people who won a 'Medicine' prize in an early year (before 1910, not including 1910) together with winners of a 'Literature' prize in a later year (after 2004, including 2004)

**Answer : SELECT \***

**FROM nobel**

**WHERE (subject = 'Medicine' AND yr < 1910) OR (subject = 'Literature' AND yr >= 2004)**

11/ Find all details of the prize won by PETER GRÜNBERG

*Non-ASCII characters*

**Answer : SELECT \***

**FROM nobel**

**WHERE winner = 'PETER GRÜNBERG'**

12/ Find all details of the prize won by EUGENE O'NEILL

*Escaping single quotes*

**Answer : SELECT \***

**FROM nobel**

**WHERE winner LIKE 'EUGENE%' AND winner LIKE '%NEILL'**

13/ Knights in order

List the winners, year and subject where the winner starts with Sir. Show the the most recent first, then by name order.

**Answer : SELECT winner, yr, subject**

**FROM nobel**

**WHERE winner LIKE ('Sir%')**

**ORDER BY yr DESC, winner ASC**

14/ The expression subject IN ('Chemistry','Physics') can be used as a value - it will be 0 or 1.

Show the 1984 winners and subject ordered by subject and winner name; but list Chemistry and Physics last.

**Answer :**

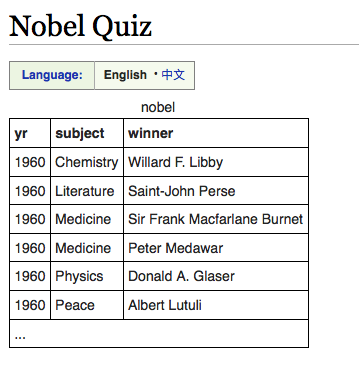
**SELECT winner, subject**

**FROM nobel**

**WHERE yr=1984**

**ORDER BY subject IN ('Chemistry','Physics'), subject, winner**

[Quiz](http://sqlzoo.net/wiki/Nobel_Quiz)



1. Pick the code which shows the name of winner's names beginning with C and ending in n

**Answer : SELECT winner FROM nobel  
 WHERE winner LIKE 'C%' AND winner LIKE '%n'**

2. Select the code that shows how many Chemistry awards were given between 1950 and 1960

**Answer : SELECT COUNT(subject) FROM nobel  
 WHERE subject = 'Chemistry'  
 AND yr BETWEEN 1950 and 1960**

3. Pick the code that shows the amount of years where no Medicine awards were given

**Answer : SELECT COUNT(DISTINCT yr) FROM nobel  
 WHERE yr NOT IN (SELECT DISTINCT yr FROM nobel WHERE subject = 'Medicine')**

4. Select the result that would be obtained from the following code:

**SELECT** subject, winner **FROM** nobel **WHERE** winner **LIKE** 'Sir%' **AND** yr **LIKE** '196%'

**Answer :**

|  |  |
| --- | --- |
| **Medicine** | **Sir John Eccles** |
| **Medicine** | **Sir Frank Macfarlane Burnet** |

5. Select the code which would show the year when neither a Physics or Chemistry award was given

**Answer : SELECT yr FROM nobel  
 WHERE yr NOT IN(SELECT yr   
 FROM nobel  
 WHERE subject IN ('Chemistry','Physics'))**

6. Select the code which shows the years when a Medicine award was given but no Peace or Literature award was

**Answer : SELECT DISTINCT yr  
 FROM nobel  
 WHERE subject='Medicine'   
 AND yr NOT IN(SELECT yr FROM nobel   
 WHERE subject='Literature')  
 AND yr NOT IN (SELECT yr FROM nobel  
 WHERE subject='Peace')**

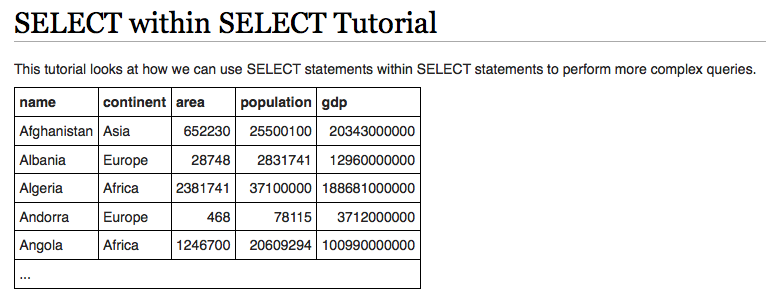
7. Pick the result that would be obtained from the following code:

**SELECT** subject, **COUNT**(subject)   
 **FROM** nobel   
 **WHERE** yr ='1960'   
 **GROUP** **BY** subject

Answer :

|  |  |
| --- | --- |
| Chemistry | 1 |
| Literature | 1 |
| Medicine | 2 |
| Peace | 1 |
| Physics | 1 |

[SELECT in SELECT](http://sqlzoo.net/wiki/SELECT_within_SELECT_Tutorial)



[Using nested SELECT](http://sqlzoo.net/wiki/Using_nested_SELECT)

Summary

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* [10Difficult Questions That Utilize Techniques Not Covered In Prior Sections](http://sqlzoo.net/wiki/SELECT_within_SELECT_Tutorial#Difficult_Questions_That_Utilize_Techniques_Not_Covered_In_Prior_Sections)

1. List each country name where the population is larger than that of 'Russia'.

world(name, continent, area, population, gdp)

**Answer : SELECT name**

**FROM world**

**WHERE population > ( SELECT population FROM world WHERE name LIKE 'Russia')**

2. Show the countries in Europe with a per capita GDP greater than 'United Kingdom'.*Per Capita GDP*

The per capita GDP is the gdp/population

**Answer : SELECT name**

**FROM world**

**WHERE gdp/population > (SELECT gdp/population FROM world WHERE name ='United Kingdom') AND continent = 'Europe'**

3. List the name and continent of countries in the continents containing either Argentina or Australia. Order by name of the country.

**Answer :**

**Step 1: Run this script to search continent of 2 countries (Argentina and Australia)**

**SELECT name, continent**

**FROM world**

**WHERE name IN ('Argentina’,’Australia’)**

**Step 2 : Get result which is helpful to get all countries of 2 continents**

**SELECT name, continent**

**FROM world**

**WHERE continent IN ('South America','Oceania')**

**ORDER BY name**

4. Which country has a population that is more than Canada but less than Poland? Show the name and the population.

**Answer : SELECT name, population**

**FROM world**

**WHERE population > (SELECT population FROM world WHERE name ='Canada')**

**AND population < (SELECT population FROM world WHERE name = 'Poland')**

5.Germany (population 80 million) has the largest population of the countries in Europe. Austria (population 8.5 million) has 11% of the population of Germany.

**Show the name and the population of each country in Europe. Show the population as a percentage of the population of Germany.**

*Decimal places*

You can use the function [ROUND](http://sqlzoo.net/wiki/ROUND) to remove the decimal places.

*Percent symbol %*

You can use the function [CONCAT](http://sqlzoo.net/wiki/CONCAT) to add the percentage symbol.

**Answer : We need to divide into 3 steps**

***First, get population of Germany to compare***

SELECT name,population

FROM world

WHERE name = ‘Germany'

***Second, try with ROUND to get percent of population/ population of germany***

SELECT name,ROUND(population/80716000\*100,0)

FROM world

WHERE continent = 'Europe'

***Third, try more with CONCAT***

SELECT name, CONCAT(ROUND(population/80716000\*100,0),'%')

FROM world

WHERE continent = 'Europe'

6. Which countries have a GDP greater than every country in Europe? [Give the nameonly.] (Some countries may have NULL gdp values)

We can refer to values in the outer SELECT within the inner SELECT. We can name the tables so that we can tell the difference between the inner and outer versions.

<https://www.essentialsql.com/what-is-the-difference-between-an-inner-and-outer-join/>

Answer :

Step 1: Find which maximum of gdp in Europe.

SELECT name, gdp

FROM world

WHERE comtinent = ‘Europe'

ORDER BY gdp

Get max[gdp] = 3425956000000

Step 2: Find countries has gdp, without NULL value for gdp

SELECT name

FROM world

WHERE gdp > 3425956000000 AND gdp NOT LIKE ‘NULL'

We can refer to values in the outer SELECT within the inner SELECT. We can name the tables so that we can tell the difference between the inner and outer versions.

7. Find the largest country (by area) in each continent, show the continent, the nameand the area:

**Answer :**

**SELECT x.continent, x.name, x.area**

**FROM world AS x**

**WHERE x.area = (**

**SELECT MAX(y.area)**

**FROM world AS y**

**WHERE x.continent = y.continent)**

8. List each continent and the name of the country that comes first alphabetically.

**Answer :**

**SELECT continent, name**

**FROM world x**

**WHERE name <= ALL(SELECT name FROM world y WHERE x.continent = y.continent);**

9. Difficult Questions That Utilize Techniques Not Covered In Prior Sections

Find the continents where all countries have a population <= 25000000. Then find the names of the countries associated with these continents. Show name, continentand population.

**Answer :**

**SELECT name, continent, population FROM world WHERE continent IN (SELECT continent FROM world x WHERE 25000000 >= (SELECT MAX(population) FROM world y WHERE x.continent = y.continent));**

10. Some countries have populations more than three times that of any of their neighbours (in the same continent). Give the countries and continents.

Answer :

[quiz](http://sqlzoo.net/wiki/Nested_SELECT_Quiz)

Nested SELECT quiz

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **name** | **region** | **area** | **population** | **gdp** |
| Afghanistan | South Asia | 652225 | 26000000 |  |
| Albania | Europe | 28728 | 3200000 | 6656000000 |
| Algeria | Middle East | 2400000 | 32900000 | 75012000000 |
| Andorra | Europe | 468 | 64000 |  |
| Bangladesh | South Asia | 143998 | 152600000 | 67144000000 |
| United Kingdom | Europe | 242514 | 59600000 | 2022824000000 |
| ... | | | | |

1. Select the code that shows the name, region and population of the smallest country in each region

**Answer : SELECT region, name, population FROM bbc x WHERE population <= ALL (SELECT population FROM bbc y WHERE y.region=x.region AND population>0)**

2. Select the code that shows the countries belonging to regions with all populations over 50000

**Answer : SELECT name,region,population FROM bbc x WHERE 50000 < ALL (SELECT population FROM bbc y WHERE x.region=y.region AND y.population>0)**

3. Select the code that shows the countries with a less than a third of the population of the countries around it

**Answer : SELECT name, region FROM bbc x  
 WHERE population < ALL (SELECT population/3 FROM bbc y WHERE y.region = x.region AND y.name != x.name)**

4. Select the result that would be obtained from the following code:

**SELECT** name **FROM** bbc  
 **WHERE** population >  
 (**SELECT** population  
 **FROM** bbc  
 **WHERE** name='United Kingdom')  
 **AND** region **IN**  
 (**SELECT** region  
 **FROM** bbc  
 **WHERE** name = 'United Kingdom')

**Answer :**

|  |
| --- |
| France |
| Germany |
| Russia |
| Turkey |

5. Select the code that would show the countries with a greater GDP than any country in Africa (some countries may have NULL gdp values)

**Answer : SELECT name FROM bbc  
 WHERE gdp > (SELECT MAX(gdp) FROM bbc WHERE region = 'Africa')**

6. Select the code that shows the countries with population smaller than Russia but bigger than Denmark

**Answer : SELECT name FROM bbc  
 WHERE population < (SELECT population FROM bbc WHERE name='Russia')  
 AND population > (SELECT population FROM bbc WHERE name='Denmark')**

7. >Select the result that would be obtained from the following code:

**SELECT** name **FROM** bbc  
 **WHERE** population > **ALL**  
 (**SELECT** **MAX**(population)  
 **FROM** bbc  
 **WHERE** region = 'Europe')  
 **AND** region = 'South Asia'

**Answer :**

|  |
| --- |
| **Bangladesh** |
| **India** |
| **Pakistan** |

[SUM and COUNT](http://sqlzoo.net/wiki/SUM_and_COUNT)

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* [7Baltic states population](http://sqlzoo.net/wiki/SUM_and_COUNT#Baltic_states_population)
* [8Using GROUP BY and HAVING](http://sqlzoo.net/wiki/SUM_and_COUNT#Using_GROUP_BY_and_HAVING)
* [9Counting the countries of each continent](http://sqlzoo.net/wiki/SUM_and_COUNT#Counting_the_countries_of_each_continent)
* [10Counting big countries in each continent](http://sqlzoo.net/wiki/SUM_and_COUNT#Counting_big_countries_in_each_continent)
* [11Counting big continents](http://sqlzoo.net/wiki/SUM_and_COUNT#Counting_big_continents)

### **World Country Profile: Aggregate functions**

This tutorial is about aggregate functions such as COUNT, SUM and AVG. An aggregate function takes many values and delivers just one value. For example the function SUM would aggregate the values 2, 4 and 5 to deliver the single value 11.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **name** | **continent** | **area** | **population** | **gdp** |
| Afghanistan | Asia | 652230 | 25500100 | 20343000000 |
| Albania | Europe | 28748 | 2831741 | 12960000000 |
| Algeria | Africa | 2381741 | 37100000 | 188681000000 |
| Andorra | Europe | 468 | 78115 | 3712000000 |
| Angola | Africa | 1246700 | 20609294 | 100990000000 |
| ... | | | | |

## You might want to look at these examples first

[Using SUM, Count, MAX, DISTINCT and ORDER BY](http://sqlzoo.net/wiki/Using_SUM,_Count,_MAX,_DISTINCT_and_ORDER_BY).

## Total world population

1.Show the total **population** of the world.

world(**name**, **continent**, **area**, **population**, **gdp**)

**Answer :**

**SELECT SUM(population)**

**FROM world**

2. List all the continents - just once each.

**Answer :**

**SELECT DISTINCT continent**

**FROM world**

3.Give the total GDP of Africa

**Answer : SELECT SUM(gdp)**

**FROM world**

**WHERE continent LIKE 'Africa'**

**4.** How many countries have an **area** of at least 1000000

**Answer : SELECT COUNT(name)**

**FROM world**

**WHERE area >= 1000000**

**5.** What is the total **population** of ('Estonia', 'Latvia', 'Lithuania')

**Answer : SELECT SUM(population)**

**FROM world**

**WHERE name IN ('Estonia', 'Latvia', 'Lithuania')**

**6.** Using GROUP BY and HAVING

You may want to look at these examples: [Using GROUP BY and HAVING.](http://sqlzoo.net/wiki/Using_GROUP_BY_and_HAVING.)

## Counting the countries of each continent

**Answer : SELECT continent, COUNT(name)**

**FROM world**

**GROUP BY continent**

7. For each **continent** show the **continent** and number of countries with populations of at least 10 million.

**Answer : SELECT continent, COUNT(name)**

**FROM world**

**WHERE population >=10000000**

**GROUP BY continent**

**8.** List the continents that **have** a total population of at least 100 million.

**Answer : SELECT continent**

**FROM world**

**GROUP BY continent**

**HAVING SUM(population) >= 100000000;**

[SUM and COUNT Quiz](http://sqlzoo.net/wiki/SUM_and_COUNT_Quiz)

[The nobel table can be used to practice more SUM and COUNT functions.](http://sqlzoo.net/wiki/The_nobel_table_can_be_used_to_practice_more_SUM_and_COUNT_functions.)

[The next tutorial looks at the Table Tennis database. It shows how queries may use records from two related tables.](http://sqlzoo.net/wiki/The_JOIN_operation)

[Quiz](http://sqlzoo.net/wiki/SUM_and_COUNT_Quiz)

SUM and COUNT QUIZ

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **name** | **region** | **area** | **population** | **gdp** |
| Afghanistan | South Asia | 652225 | 26000000 |  |
| Albania | Europe | 28728 | 3200000 | 6656000000 |
| Algeria | Middle East | 2400000 | 32900000 | 75012000000 |
| Andorra | Europe | 468 | 64000 |  |

1. Select the statement that shows the sum of population of all countries in 'Europe'

**Answer : SELECT SUM(population) FROM bbc WHERE region = 'Europe'**

2. Select the statement that shows the number of countries with population smaller than 150000

**Answer :SELECT COUNT(name) FROM bbc WHERE population < 150000**

3. Select the list of core SQL aggregate functions

**Answer : AVG(), COUNT(), MAX(), MIN(), SUM()**

4. Select the result that would be obtained from the following code:

**SELECT** region, **SUM**(area)  
 **FROM** bbc   
 **WHERE** **SUM**(area) > 15000000   
 **GROUP** **BY** region

**Answer : No result due to invalid use of the WHERE function**

5. Select the statement that shows the average population of 'Poland', 'Germany' and 'Denmark'

**Answer : SELECT AVG(population) FROM bbc WHERE name IN ('Poland', 'Germany', 'Denmark')**

6. Select the statement that shows the medium population density of each region

**Answer : SELECT region, SUM(population)/SUM(area) AS density FROM bbc GROUP BY region**

7. Select the statement that shows the name and population density of the country with the largest population

**Answer : SELECT name, population/area AS density FROM bbc WHERE population = (SELECT MAX(population) FROM bbc)**

8. Pick the result that would be obtained from the following code:

**SELECT** region, **SUM**(area)   
 **FROM** bbc   
 **GROUP** **BY** region   
 **HAVING** **SUM**(area)<= 20000000

**Answer :**

|  |  |
| --- | --- |
| **Americas** | **732240** |
| **Middle East** | **13403102** |
| **South America** | **17740392** |
| **South Asia** | **9437710** |

[JOIN](http://sqlzoo.net/wiki/The_JOIN_operation)

# **The JOIN operation**

FootballERD.png

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **id** | **mdate** | **stadium** | **team1** | **team2** |
| 1001 | 8 June 2012 | National Stadium, Warsaw | POL | GRE |
| 1002 | 8 June 2012 | Stadion Miejski (Wroclaw) | RUS | CZE |
| 1003 | 12 June 2012 | Stadion Miejski (Wroclaw) | GRE | CZE |
| 1004 | 12 June 2012 | National Stadium, Warsaw | POL | RUS |
| ... | | | | |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **matchid** | **teamid** | **player** | **gtime** |  |
| 1001 | POL | Robert Lewandowski | 17 |  |
| 1001 | GRE | Dimitris Salpingidis | 51 |  |
| 1002 | RUS | Alan Dzagoev | 15 |  |
| 1002 | RUS | Roman Pavlyuchenko | 82 |  |
| ... | | | | |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **id** | **teamname** | **coach** |  |  |
| POL | Poland | Franciszek Smuda |  |  |
| RUS | Russia | Dick Advocaat |  |  |
| CZE | Czech Republic | Michal Bilek |  |  |
| GRE | Greece | Fernando Santos |  |  |
| ... | | | | |

## JOIN and UEFA EURO 2012

This tutorial introduces JOIN which allows you to use data from two or more tables. The tables contain all matches and goals from UEFA EURO 2012 Football Championship in Poland and Ukraine.

The data is available (mysql format) at <http://sqlzoo.net/euro2012.sql>

Summary

1 . The first example shows the goal scored by a player with the last name 'Bender'. The \*says to list all the columns in the table - a shorter way of saying matchid, teamid, player, gtime

**Modify it to show the *matchid* and *player* name for all goals scored by Germany. To identify German players, check for: teamid = 'GER'**

**Answer : SELECT matchid, player FROM goal**

**WHERE teamid='GER'**

2. From the previous query you can see that Lars Bender's scored a goal in game 1012. Now we want to know what teams were playing in that match.

Notice in the that the column matchid in the goal table corresponds to the idcolumn in the game table. We can look up information about game 1012 by finding that row in the **game** table.

**Show id, stadium, team1, team2 for just game 1012**

**Answer : SELECT id,stadium,team1,team2**

**FROM game**

**WHERE id=1012**

3. You can combine the two steps into a single query with a JOIN.

SELECT \*  
 FROM game JOIN goal ON (id=matchid)

The **FROM** clause says to merge data from the goal table with that from the game table. The **ON** says how to figure out which rows in **game** go with which rows in **goal** - the **id**from **goal** must match **matchid** from **game**. (If we wanted to be more clear/specific we could say

ON (game.id=goal.matchid)

The code below shows the player (from the goal) and stadium name (from the game table) for every goal scored.

**Modify it to show the player, teamid, stadium and mdate for every German goal.**

**Answer :SELECT player, teamid, stadium, mdate**

**FROM game JOIN goal ON (game.id=goal.matchid)**

**WHERE teamid='GER'**

4. Use the same JOIN as in the previous question.

**Show the team1, team2 and player for every goal scored by a player called Mario player LIKE 'Mario%'**

**Answer : SELECT team1, team2, player**

**FROM game JOIN goal ON (game.id=goal.matchid)**

**WHERE player LIKE 'Mario%'**

5. The table eteam gives details of every national team including the coach. You can JOIN goal to eteam using the phrase goal JOIN eteam on teamid=id

**Show player, teamid, coach, gtime for all goals scored in the first 10 minutes gtime<=10**

**Answer : SELECT player, teamid,coach,gtime**

**FROM goal JOIN eteam ON teamid=id**

**WHERE gtime <=10**

6. To JOIN game with eteam you could use either

game JOIN eteam ON (team1=eteam.id) or game JOIN eteam ON (team2=eteam.id)

Notice that because id is a column name in both game and eteam you must specify eteam.id instead of just id

**List the the dates of the matches and the name of the team in which 'Fernando Santos' was the team1 coach.**

**Answer: SELECT mdate, teamname**

**FROM game JOIN eteam ON (team1=eteam.id)**

**WHERE coach LIKE 'Fernando Santos'**

7. **List the player for every goal scored in a game where the stadium was 'National Stadium, Warsaw'**

**Answer : SELECT player**

**FROM game JOIN goal ON (game.id=goal.matchid)**

**WHERE stadium = 'National Stadium, Warsaw'**

8. The example query shows all goals scored in the Germany-Greece quarterfinal.

**Instead show the name of all players who scored a goal against Germany.**

*HINT*

Select goals scored only by non-German players in matches where GER was the id of either **team1** or **team2**.

You can use teamid!='GER' to prevent listing German players.

You can use DISTINCT to stop players being listed twice.

**Answer : SELECT DISTINCT player** # Get player name isn't duplicate

**FROM game**

**JOIN goal ON goal.matchid = game.id** # Get information from both 2 tables game and goal (usd keys matchid in goal and id in game to murge)

**WHERE (team1 = 'GER' OR team2 = 'GER')** #

**AND teamid <> 'GER'**

*Explain more for this question. Who scored a goal for GER team in Team1 & Team2 but who isn't German*

9. **Show teamname and the total number of goals scored.**

*COUNT and GROUP BY*

You should COUNT(\*) in the SELECT line and GROUP BY teamname

**Answer : SELECT teamname, COUNT(teamid)**

**FROM eteam JOIN goal ON id=teamid**

**GROUP BY teamname**

10. **Show the stadium and the number of goals scored in each stadium.**

**Answer : SELECT stadium, COUNT(player)**

**FROM game JOIN goal ON matchid=id**

**GROUP BY stadium**

*# Count player who scored a goal each stadium to define amount of goal for each stadium*

11. **For every match involving 'POL', show the matchid, date and the number of goals scored.**

**Answer :** SELECT matchid, COUNT(player)

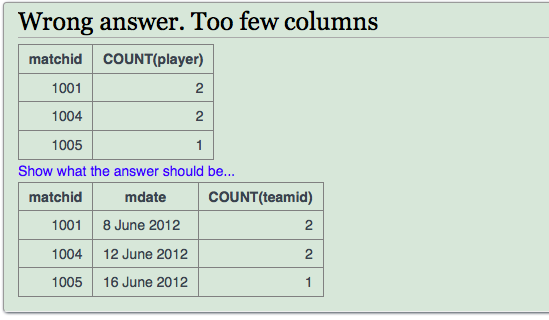
FROM game

JOIN goal ON goal.matchid = game.id

WHERE (team1 = 'POL' OR team2 = 'POL')

GROUP BY matchid

**⇒**

****

**IF**

SELECT matchid, COUNT(player), mdate

FROM game

JOIN goal ON goal.matchid = game.id

WHERE (team1 = 'POL' OR team2 = 'POL')

GROUP BY matchid

**⇒ ERROR answer**

'gisq.game.mdate' isn't in GROUP BY

**IF**

SELECT matchid,mdate, team1, team2,teamid

FROM game JOIN goal ON matchid = id

WHERE (team1 = 'POL' OR team2 = 'POL')

⇒



**SELECT matchid,mdate, COUNT(player)**

**FROM game JOIN goal ON matchid = id**

**WHERE (team1 = 'POL' OR team2 = 'POL')**

**GROUP BY matchid, mdate**

12. For every match where 'GER' scored, show matchid, match date and the number of goals scored by 'GER'

**Answer :**

**IF**

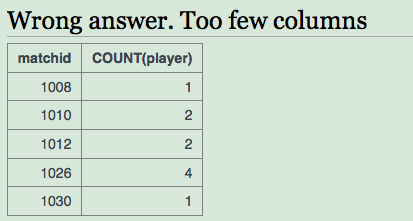
SELECT matchid, COUNT(player)

FROM game

JOIN goal ON game.id = goal.matchid

WHERE teamid = 'GER'

GROUP BY matchid

**⇒** 

Answer should be :



**SELECT matchid, mdate, COUNT(player)**

**FROM game**

**JOIN goal ON game.id = goal.matchid**

**WHERE teamid = 'GER'**

**GROUP BY matchid, mdate**

**#***How to resolve error variable in SELECT isn’t in GROUP BY*

*We can GROUP BY more one group, this problem is same as ORDER by with more variable*

SELECT var1, var2, …

FROM table1 JOIN table 2 ON table1.key = table2.key

WHERE condition to filter

GROUP BY var1, var2,...

13. **List every match with the goals scored by each team as shown. This will use "**[**CASE WHEN**](http://sqlzoo.net/wiki/CASE)**" which has not been explained in any previous exercises.**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **mdate** | **team1** | **score1** | **team2** | **score2** |
| 1 July 2012 | ESP | 4 | ITA | 0 |
| 10 June 2012 | ESP | 1 | ITA | 1 |
| 10 June 2012 | IRL | 1 | CRO | 3 |
| ... | | | | |

Notice in the query given every goal is listed. If it was a team1 goal then a 1 appears in score1, otherwise there is a 0. You could SUM this column to get a count of the goals scored by team1. **Sort your result by mdate, matchid, team1 and team2.**

Example : CASE

|  |  |  |
| --- | --- | --- |
| **CASE WHEN b1 THEN v1 END** | | |
| **Engine** | **OK** | **Alternative** |
| ingres | Yes |  |
| mysql | Yes |  |
| oracle | Yes |  |
| postgres | Yes |  |
| sqlserver | Yes |  |

CASE allows you to return different values under different conditions.

If there no conditions match (and there is not ELSE) then NULL is returned.

CASE WHEN condition1 THEN value1   
 WHEN condition2 THEN value2   
 ELSE def\_value   
 END

**Answer : SELECT mdate,**

**team1,**

**SUM(CASE WHEN teamid=team1 THEN 1 ELSE 0 END) score1,**

**team2,**

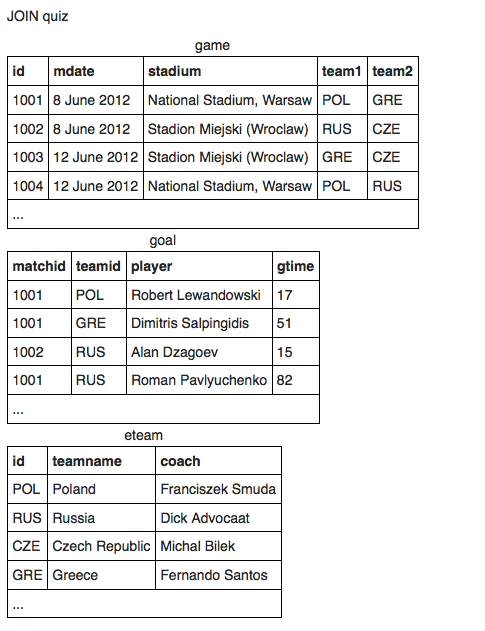
**SUM(CASE WHEN teamid=team2 THEN 1 ELSE 0 END) score2**

**FROM game JOIN goal ON goal.matchid = game.id**

**GROUP BY game.id, mdate, team1, team2**

**ORDER BY mdate, matchid, team1, team2**

[Quiz](http://sqlzoo.net/wiki/JOIN_Quiz)

****

1. You want to find the stadium where player 'Dimitris Salpingidis' scored. Select the JOIN condition to use:

**Answer : game JOIN goal ON (id=matchid)**

2. You JOIN the tables **goal** and **eteam** in an SQL statement. Indicate the list of column names that may be used in the SELECT line:

**Answer : matchid, teamid, player, gtime, id, teamname, coach**

3. Select the code which shows players, their team and the amount of goals they scored against Greece(GRE).

**Answer : SELECT player, teamid, COUNT(\*)  
 FROM game JOIN goal ON matchid = id  
 WHERE (team1 = "GRE" OR team2 = "GRE")  
 AND teamid != 'GRE'  
 GROUP BY player, teamid**

4. Select the result that would be obtained from this code:

**SELECT** **DISTINCT** teamid, mdate  
 **FROM** goal **JOIN** game **on** (matchid=id)  
 **WHERE** mdate = '9 June 2012'

**Answer :**

|  |  |
| --- | --- |
| **DEN** | **9 June 2012** |
| **GER** | **9 June 2012** |

5. Select the code which would show the player and their team for those who have scored against Poland(POL) in National Stadium, Warsaw.

**Answer : SELECT DISTINCT player, teamid   
 FROM game JOIN goal ON matchid = id   
 WHERE stadium = 'National Stadium, Warsaw'   
 AND (team1 = 'POL' OR team2 = 'POL')  
 AND teamid != 'POL'**

6. Select the code which shows the player, their team and the time they scored, for players who have played in Stadion Miejski (Wroclaw) but not against Italy(ITA).

**Answer : SELECT DISTINCT player, teamid, gtime  
 FROM game JOIN goal ON matchid = id  
 WHERE stadium = 'Stadion Miejski (Wroclaw)'  
 AND (( teamid = team2 AND team1 != 'ITA') OR ( teamid = team1 AND team2 != 'ITA'))**

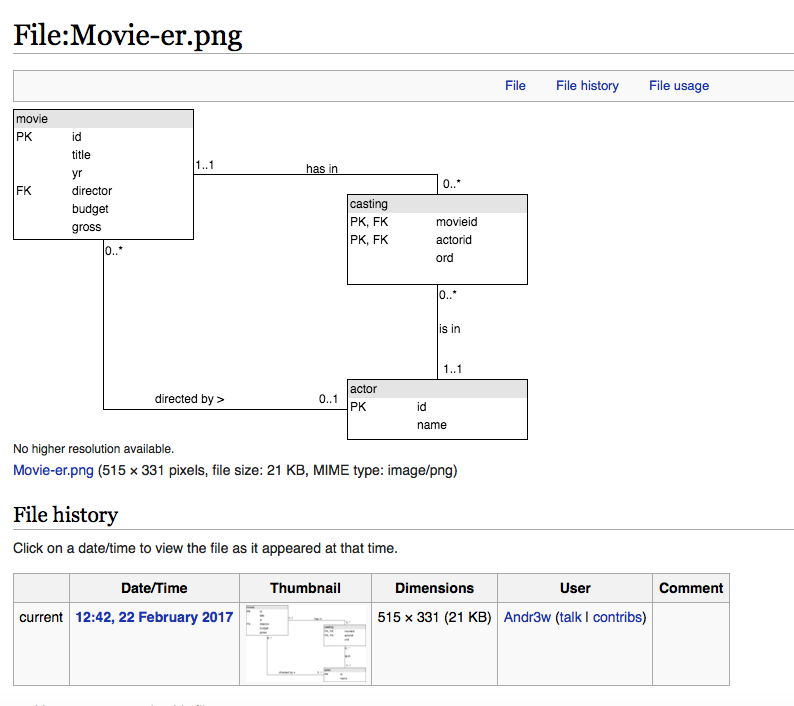
7. Select the result that would be obtained from this code:

**SELECT** teamname, **COUNT**(\*)  
 **FROM** eteam **JOIN** goal **ON** teamid = id  
 **GROUP** **BY** teamname  
**HAVING** **COUNT**(\*) < 3

**Answer :**

|  |  |
| --- | --- |
| **Netherlands** | **2** |
| **Poland** | **2** |
| **Republic of Ireland** | **1** |
| **Ukraine** | **2** |

[More JOIN](http://sqlzoo.net/wiki/More_JOIN_operations)



<http://sqlzoo.net/wiki/More_details_about_the_database>.

Summary

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* [2When was Citizen Kane released?](http://sqlzoo.net/wiki/More_JOIN_operations#When_was_Citizen_Kane_released.3F)
* [3Star Trek movies](http://sqlzoo.net/wiki/More_JOIN_operations#Star_Trek_movies)
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1.List the films where the **yr** is 1962 [Show **id**, **title**]

**Answer : SELECT id, title**

**FROM movie**

**WHERE yr=1962**

2. Give year of 'Citizen Kane'.

**Answer : SELECT yr**

**FROM movie**

**WHERE title = 'Citizen Kane'**

3. List all of the Star Trek movies, include the **id**, **title** and **yr** (all of these movies include the words Star Trek in the title). Order results by year.

**Answer : SELECT id, title, yr**

**FROM movie**

**WHERE title LIKE 'Star Trek%'**

**ORDER BY yr**

4.What **id** number does the actor 'Glenn Close' have?

**Answer : SELECT id**

**FROM actor**

**WHERE name LIKE 'Glenn Close'**

5.What is the **id** of the film 'Casablanca'

**Answer : SELECT id**

**FROM movie**

**WHERE title LIKE 'Casablanca'**

[Get to the point](http://sqlzoo.net/wiki/Get_to_the_point)

6.Obtain the cast list for 'Casablanca'.

*what is a cast list?*

The cast list is the names of the actors who were in the movie.

Use **movieid=11768**, (or whatever value you got from the previous question)

**Answer : SELECT name**

**FROM casting JOIN movie ON casting.movieid = movie.id**

**JOIN actor ON actor.id=casting.actorid**

**WHERE movieid=11768 OR title='Casablanca'**

7.Obtain the cast list for the film 'Alien'

**Answer : SELECT name**

**FROM casting JOIN movie ON casting.movieid = movie.id**

**JOIN actor ON actor.id=casting.actorid**

**WHERE title='Alien'**

8. List the films in which 'Harrison Ford' has appeared

**Answer :**

**SELECT title**

**FROM casting JOIN movie ON casting.movieid = movie.id**

**JOIN actor ON actor.id=casting.actorid**

**WHERE name='Harrison Ford'**

9.List the films where 'Harrison Ford' has appeared - but not in the starring role. [Note: the **ord** field of casting gives the position of the actor. If ord=1 then this actor is in the starring role]

**Answer : SELECT title**

**FROM casting JOIN movie ON casting.movieid = movie.id**

**JOIN actor ON actor.id=casting.actorid**

**WHERE name='Harrison Ford' AND ord NOT LIKE 1**

10. List the films together with the leading star for all 1962 films.

**Answer : Spread this issue into more steps**

*Step 1: Get movieid which are released in 1962 ( use DISTINCT statement to remove duplication movieid in result)*

SELECT DISTINCT movieid

FROM casting JOIN movie ON casting.movieid = movie.id

WHERE yr=1962

→ Result

|  |
| --- |
| **movieid** |
| 10212 |
| 10329 |
| 10347 |
| 10648 |
| 10868 |
| 11006 |
| 11053 |
| 11199 |
| 11230 |
| 11234 |
| 11242 |
| 11373 |
| 11391 |
| 11439 |
| 11692 |
| 11735 |
| 11753 |
| 12368 |
| 12384 |
| 12710 |
| 12817 |
| 12967 |
| 12992 |
| 13010 |
| 13484 |
| 13534 |
| 13641 |
| 13727 |
| 13741 |
| 13798 |
| 14317 |
| 14454 |
| 14550 |
| 14718 |
| 14860 |
| 14873 |
| 14972 |
| 15088 |
| 15173 |
| 15182 |
| 15247 |
| 15297 |
| 15397 |
| 15564 |
| 15752 |
| 15779 |
| 15840 |
| 16203 |
| 16295 |
| 16367 |
| Results truncated. Only the first 50 rows have been shown |

*Step 2: Get movie title for each movieid and name of actors list ( JOIN to actor table) and ord = 1 to filter leading actor of them.*

SELECT DISTINCT movieid, title, name

FROM casting JOIN movie ON casting.movieid = movie.id

JOIN actor ON actorid=actor.id

WHERE yr=1962 AND ord =1

→ Result :

|  |  |  |
| --- | --- | --- |
| **movieid** | **title** | **name** |
| 10212 | A Kind of Loving | Alan Bates |
| 10329 | A Symposium on Popular Songs | Paul Frees |
| 10347 | A Very Private Affair (Vie PrivÃ©e) | Brigitte Bardot |
| 10648 | An Autumn Afternoon | Chishu Ryu |
| 10868 | Atraco a las tres | JosÃ© Luis LÃ³pez VÃ¡zquez |
| 11006 | Barabbas | Anthony Quinn |
| 11053 | Battle Beyond the Sun (ÐÐµÐ±Ð¾ Ð·Ð¾Ð²ÐµÑ‚) | Aleksandr Shvorin |
| 11199 | Big and Little Wong Tin Bar | Jackie Chan |
| 11230 | Billy Budd | Terence Stamp |
| 11234 | Billy Rose's Jumbo | Doris Day |
| 11242 | Birdman of Alcatraz | Burt Lancaster |
| 11373 | Boccaccio '70 | Anita Ekberg |
| 11391 | Bon Voyage! | Fred MacMurray |
| 11439 | Boys' Night Out | Kim Novak |
| 11692 | Cape Fear | Gregory Peck |
| 11735 | Carnival of Souls | Candace Hilligoss |
| 11753 | Carry On Cruising | Sid James |
| 12368 | David and Lisa | Keir Dullea |
| 12384 | Days of Wine and Roses | Jack Lemmon |
| 12710 | Dr. No | Sean Connery |
| 12817 | L'Eclisse | Alain Delon |
| 12967 | Tutti a casa | Alberto Sordi |
| 12992 | Experiment in Terror | Glenn Ford |
| 13010 | Eyes Without a Face | Pierre Brasseur |
| 13484 | Gay Purr-ee | Judy Garland |
| 13534 | Gigot | Jackie Gleason |
| 13641 | Gorath | Ryo Ikebe |
| 13727 | Gypsy | Rosalind Russell |
| 13741 | Half Ticket | Kishore Kumar |
| 13798 | Harakiri | Tatsuya Nakadai |
| 14317 | In Search of the Castaways | Hayley Mills |
| 14454 | It's Only Money | Jerry Lewis |
| 14550 | Jigsaw | Jack Warner |
| 14718 | Kid Galahad | Elvis Presley |
| 14860 | La commare secca | Marisa Solinas |
| 14873 | La notte | Marcello Mastroianni |
| 15088 | Life for Ruth | Michael Craig |
| 15173 | Lolita | James Mason |
| 15182 | Long Day's Journey into Night | Katharine Hepburn |
| 15247 | Love at Twenty | Jean-Pierre LÃ©aud |
| 15297 | Lycanthropus | Barbara Lass |
| 15397 | Mamma Roma | Anna Magnani |
| 15564 | Merrill's Marauders | Jeff Chandler |
| 15752 | Mother Joan of the Angels | Lucyna Winnicka |
| 15779 | Mr. Hobbs Takes a Vacation | James Stewart |
| 15840 | Mutiny on the Bounty | Marlon Brando |
| 16203 | On the Beat | Norman Wisdom |
| 16295 | Os Cafajestes | Daniel Filho |
| 16367 | Panic in Year Zero! | Ray Milland |
| 16462 | Period of Adjustment | Anthony Franciosa |
| Results truncated. Only the first 50 rows have been shown. | | |

*Step 3: Remove movieid from SELECT syntax to get correct answer*

**SELECT title, name**

**FROM casting JOIN movie ON casting.movieid = movie.id**

**JOIN actor ON actorid=actor.id**

**WHERE yr=1962 AND ord =1**

11.Which were the busiest years for 'John Travolta', show the year and the number of movies he made each year for any year in which he made more than 2 movies.

**Answer : SELECT yr,COUNT(title) FROM**

**movie JOIN casting ON movie.id=movieid**

**JOIN actor ON actorid=actor.id**

**where name='John Travolta'**

**GROUP BY yr**

**HAVING COUNT(title)=(SELECT MAX(c) FROM**

**(SELECT yr,COUNT(title) AS c FROM**

**movie JOIN casting ON movie.id=movieid**

**JOIN actor ON actorid=actor.id**

**where name='John Travolta'**

**GROUP BY yr) AS t**

**)**

12. List the film title and the leading actor for all of the films 'Julie Andrews' played in.

*Did you get "Little Miss Marker twice"?*

Julie Andrews starred in the 1980 remake of Little Miss Marker and not the original(1934).

Title is not a unique field, create a table of IDs in your subquery

**Answer : Spread this issue into more steps**

*Step 1: Filter movieid film list which 'Julie Andrews' joined*

SELECT movieid

FROM casting JOIN actor ON actor.id=actorid

WHERE name = 'Julie Andrews'

→ Submit

|  |
| --- |
| **movieid** |
| 10016 |
| 12354 |
| 12497 |
| 12766 |
| 13846 |
| 15145 |
| 15476 |
| 16870 |
| 17117 |
| 17445 |
| 17765 |
| 18270 |
| 20136 |
| 20136 |
| 20180 |
| 20181 |
| 20509 |
| 20627 |
| 21023 |
| 21154 |
| 21171 |
| 21483 |

Click answer should be to get correct answer

|  |  |
| --- | --- |
| **title** | **name** |
| 10 | Dudley Moore |
| Darling Lili | Julie Andrews |
| Despicable Me | Steve Carell |
| Duet for One | Julie Andrews |
| Hawaii | Julie Andrews |
| Little Miss Marker | Walter Matthau |
| Mary Poppins | Julie Andrews |
| Relative Values | Julie Andrews |
| S.O.B. | Julie Andrews |
| Shrek the Third | Mike Myers |
| Star! | Julie Andrews |
| The Americanization of Emily | James Garner |
| The Pink Panther Strikes Again | Peter Sellers |
| The Princess Diaries | Anne Hathaway |
| The Princess Diaries 2: Royal Engagement | Anne Hathaway |
| The Sound of Music | Julie Andrews |
| The Tamarind Seed | Julie Andrews |
| Thoroughly Modern Millie | Julie Andrews |
| Tooth Fairy | Dwayne Johnson |
| Torn Curtain | Paul Newman |
| Victor Victoria | Julie Andrews |

*Step 2 : Change format for movieid list from*

Movieid\_number1 → enter

Movieid\_number2 → enter

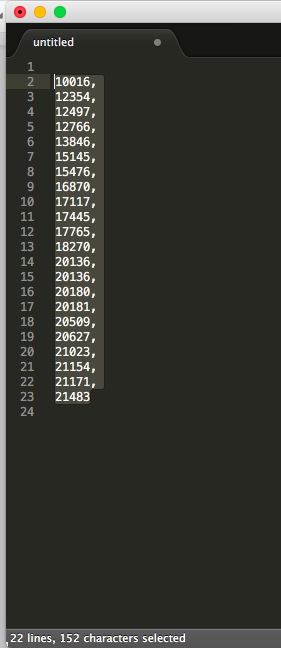
….

Into

Movieid\_number1, Movieid\_number2, …

To input for IN (Movieid\_number1, Movieid\_number2, …) to get film title for movie list (get first column for correct answer)

Method : copy list in code editor such **textwrangler** or **sublime text**, add (,) after movieid\_number



*Step 3 : run script to get title list*

SELECT title

FROM movie JOIN casting ON movieid=movie.id

WHERE id IN (10016,

12354,

12497,

12766,

13846,

15145,

15476,

16870,

17117,

17445,

17765,

18270,

20136,

20136,

20180,

20181,

20509,

20627,

21023,

21154,

21171,

21483)

→ Get result this :

|  |
| --- |
| **title** |
| 10 |
| 10 |
| 10 |
| 10 |
| 10 |
| 10 |
| 10 |
| Darling Lili |
| Darling Lili |
| Darling Lili |
| Darling Lili |
| Darling Lili |
| Darling Lili |
| Despicable Me |
| Despicable Me |
| Despicable Me |
| Despicable Me |
| Despicable Me |
| Despicable Me |
| Despicable Me |
| Despicable Me |
| Despicable Me |
| Despicable Me |
| Despicable Me |
| Despicable Me |
| Despicable Me |
| Despicable Me |
| Despicable Me |
| Despicable Me |
| Despicable Me |
| Duet for One |
| Duet for One |
| Duet for One |
| Hawaii |
| Hawaii |
| Hawaii |
| Hawaii |
| Hawaii |
| Hawaii |
| Hawaii |
| Hawaii |
| Hawaii |
| Hawaii |
| Hawaii |
| Hawaii |
| Little Miss Marker |
| Little Miss Marker |
| Little Miss Marker |
| Little Miss Marker |
| Little Miss Marker |
| Results truncated. Only the first 50 rows have been shown. |

*Step 4: Show ord, actorid column for each movieid and actorid*

SELECT title, actorid, ord

FROM movie JOIN casting ON movieid=movie.id

JOIN actor ON actorid=actor.id #use JOIN statement to get ord value for each actor/ movie title

WHERE movie.id IN (10016,

12354,

12497,

12766,

13846,

15145,

15476,

16870,

17117,

17445,

17765,

18270,

20136,

20136,

20180,

20181,

20509,

20627,

21023,

21154,

21171,

21483)

*Step 5 : Filter ord = 1*

SELECT title, actorid, ord

FROM movie JOIN casting ON movieid=movie.id

JOIN actor ON actorid=actor.id

WHERE movie.id IN (10016,

12354,

12497,

12766,

13846,

15145,

15476,

16870,

17117,

17445,

17765,

18270,

20136,

20136,

20180,

20181,

20509,

20627,

21023,

21154,

21171,

21483)

AND ord = 1

→ Result

|  |  |  |
| --- | --- | --- |
| **title** | **actorid** | **ord** |
| 10 | 178 | 1 |
| Darling Lili | 179 | 1 |
| Despicable Me | 6512 | 1 |
| Duet for One | 179 | 1 |
| Hawaii | 179 | 1 |
| Little Miss Marker | 1928 | 1 |
| Mary Poppins | 179 | 1 |
| Relative Values | 179 | 1 |
| S.O.B. | 179 | 1 |
| Shrek the Third | 1089 | 1 |
| Star! | 179 | 1 |
| The Americanization of Emily | 7895 | 1 |
| The Pink Panther Strikes Again | 3116 | 1 |
| The Princess Diaries | 5254 | 1 |
| The Princess Diaries 2: Royal Engagement | 5254 | 1 |
| The Sound of Music | 179 | 1 |
| The Tamarind Seed | 179 | 1 |
| Thoroughly Modern Millie | 179 | 1 |
| Tooth Fairy | 9291 | 1 |
| Torn Curtain | 2697 | 1 |
| Victor Victoria | 179 | 1 |

*Step 6 : Use actorid to get name of leading actor for each movie title*

SELECT title, actorid, ord, name

FROM movie JOIN casting ON movieid=movie.id

JOIN actor ON actorid=actor.id

WHERE movie.id IN (10016,

12354,

12497,

12766,

13846,

15145,

15476,

16870,

17117,

17445,

17765,

18270,

20136,

20136,

20180,

20181,

20509,

20627,

21023,

21154,

21171,

21483)

AND ord = 1

→ Result

|  |  |  |  |
| --- | --- | --- | --- |
| **title** | **actorid** | **ord** | **name** |
| 10 | 178 | 1 | Dudley Moore |
| Darling Lili | 179 | 1 | Julie Andrews |
| Despicable Me | 6512 | 1 | Steve Carell |
| Duet for One | 179 | 1 | Julie Andrews |
| Hawaii | 179 | 1 | Julie Andrews |
| Little Miss Marker | 1928 | 1 | Walter Matthau |
| Mary Poppins | 179 | 1 | Julie Andrews |
| Relative Values | 179 | 1 | Julie Andrews |
| S.O.B. | 179 | 1 | Julie Andrews |
| Shrek the Third | 1089 | 1 | Mike Myers |
| Star! | 179 | 1 | Julie Andrews |
| The Americanization of Emily | 7895 | 1 | James Garner |
| The Pink Panther Strikes Again | 3116 | 1 | Peter Sellers |
| The Princess Diaries | 5254 | 1 | Anne Hathaway |
| The Princess Diaries 2: Royal Engagement | 5254 | 1 | Anne Hathaway |
| The Sound of Music | 179 | 1 | Julie Andrews |
| The Tamarind Seed | 179 | 1 | Julie Andrews |
| Thoroughly Modern Millie | 179 | 1 | Julie Andrews |
| Tooth Fairy | 9291 | 1 | Dwayne Johnson |
| Torn Curtain | 2697 | 1 | Paul Newman |
| Victor Victoria | 179 | 1 | Julie Andrews |

Step 7 : Removed column which isn’t include in correct answer by remove (actorid and ord feilds on SELECT syntax)

SELECT title, name

FROM movie JOIN casting ON movieid=movie.id

JOIN actor ON actorid=actor.id

WHERE movie.id IN (10016,

12354,

12497,

12766,

13846,

15145,

15476,

16870,

17117,

17445,

17765,

18270,

20136,

20136,

20180,

20181,

20509,

20627,

21023,

21154,

21171,

21483)

AND ord = 1

13. Obtain a list, in alphabetical order, of actors who've had at least 30 starring roles.

**Answer : SELECT name**

**FROM actor**

**JOIN casting ON (id = actorid AND (SELECT COUNT(ord) FROM casting WHERE actorid = actor.id AND ord=1)>=30)**

**GROUP BY name**

14. List the films released in the year 1978 ordered by the number of actors in the cast, then by title.

**Answer : SELECT title, COUNT(actorid)**

**FROM casting JOIN movie ON movie.id=casting.movieid**

**JOIN actor ON actor.id=casting.actorid**

**WHERE yr = 1978**

**GROUP BY title**

**ORDER BY COUNT(actorid) DESC , title**

15.List all the people who have worked with 'Art Garfunkel'.

**Answer : Spread big question into 2 Steps**

*15.1 Which film did Art Garfunkel joined ?*

**SELECT film**

**FROM casting JOIN movie ON casting.movieid = movie.id**

**JOIN actor ON actor.id=casting.actorid**

**WHERE name LIKE 'Art Garfunkel'**

*15.2 Find actor list who joined the films (Got from 15.1) without ‘Art Garfunkel’*

**SELECT DISTINCT name**

**FROM casting JOIN movie ON casting.movieid = movie.id**

**JOIN actor ON actor.id=casting.actorid**

**WHERE title IN ('54','Boxing Helena','Good to Go') AND name NOT LIKE 'Art Garfunkel'**

Clear your results

[JOIN Quiz 2](http://sqlzoo.net/wiki/JOIN_Quiz_2)

[That is definitely enough. Students should, under no circumstances look at the next tutorial, concerning outer joins.](http://sqlzoo.net/w/index.php/Using_Null)

[Quiz](http://sqlzoo.net/wiki/JOIN_Quiz_2)

1. Select the statement which lists the unfortunate directors of the movies which have caused financial loses (gross < budget)

**Answer : SELECT name  
 FROM actor INNER JOIN movie ON actor.id = director  
 WHERE gross < budget**

2. Select the correct example of JOINing three tables

**Answer : SELECT \*  
 FROM actor JOIN casting ON actor.id = actorid  
 JOIN movie ON movie.id = movieid**

3. Select the statement that shows the list of actors called 'John' by order of number of movies in which they acted

**Answer : SELECT name, COUNT(movieid)  
 FROM casting JOIN actor ON actorid=actor.id  
 WHERE name LIKE 'John %'  
 GROUP BY name ORDER BY 2 DESC**

4. Select the result that would be obtained from the following code:

**Answer :**

|  |
| --- |
| **"Crocodile" Dundee** |
| **Crocodile Dundee in Los Angeles** |
| **Flipper** |
| **Lightning Jack** |

5. Select the statement that lists all the actors that starred in movies directed by Ridley Scott who has id 351

**Answer : SELECT name  
 FROM movie JOIN casting ON movie.id = movieid  
 JOIN actor ON actor.id = actorid  
WHERE ord = 1 AND director = 351**

6. There are two sensible ways to connect movie and actor. They are:

**Answer : link the director column in movies with the primary key in actor**

* **connect the primary keys of movie and actor via the casting table**

7. Select the result that would be obtained from the following code:

**SELECT** title, yr   
 **FROM** movie, casting, actor   
 **WHERE** name='Robert De Niro' **AND** movieid=movie.id **AND** actorid=actor.id **AND** ord = 3

**Answer :**

|  |  |
| --- | --- |
| **A Bronx Tale** | **1993** |
| **Bang the Drum Slowly** | **1973** |
| **Limitless** | **2011** |

[Using NULL](http://sqlzoo.net/wiki/Using_Null)

# Using Null

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **id** | **dept** | **name** | **phone** | **mobile** |
| 101 | 1 | Shrivell | 2753 | 07986 555 1234 |
| 102 | 1 | Throd | 2754 | 07122 555 1920 |
| 103 | 1 | Splint | 2293 |  |
| 104 |  | Spiregrain | 3287 |  |
| 105 | 2 | Cutflower | 3212 | 07996 555 6574 |
| 106 |  | Deadyawn | 3345 |  |
| ... | | | | |

|  |  |
| --- | --- |
| **id** | **name** |
| 1 | Computing |
| 2 | Design |
| 3 | Engineering |
| ... | |

## Teachers and Departments

The school includes many departments. Most teachers work exclusively for a single department. Some teachers have no department.

[Selecting NULL values.](http://sqlzoo.net/wiki/Selecting_NULL_values.)

Summary

## NULL, INNER JOIN, LEFT JOIN, RIGHT JOIN

1.List the teachers who have NULL for their department.

*Why we cannot use =*

You might think that the phrase dept=NULL would work here but it doesn't - you can use the phrase dept IS NULL

*That's not a proper explanation.*

No it's not, but you can read a better explanation at Wikipedia:[NULL.](http://en.wikipedia.org/wiki/Null_%28SQL%29)

**Answer : SELECT name**

**FROM teacher**

**WHERE dept IS NULL**

2.Note the INNER JOIN misses the teachers with no department and the departments with no teacher.

**Answer : SELECT teacher.name, dept.name**

**FROM teacher INNER JOIN dept**

**ON (teacher.dept=dept.id)**

***# INNER JOIN to get values which aren't different NULL***

3. Use a different JOIN so that all teachers are listed.

**Answer : SELECT teacher.name, dept.name**

**FROM teacher LEFT JOIN dept ON dept.id=teacher.dept**

***# LEFT JOIN to get values which includes NULL value***

4. Use a different JOIN so that all departments are listed.

**Answer : SELECT teacher.name, dept.name**

**FROM dept LEFT JOIN teacher ON dept.id=teacher.dept**

5. Using the [COALESCE](http://sqlzoo.net/wiki/COALESCE) function

Use COALESCE to print the mobile number. Use the number '07986 444 2266' if there is no number given.**Show teacher name and mobile number or '07986 444 2266'**

**Answer : SELECT teacher.name, COALESCE(mobile,'07986 444 2266')**

**FROM teacher**

6. Use the COALESCE function and a LEFT JOIN to print the teacher **name** and department name. Use the string 'None' where there is no department.

**Answer : SELECT teacher.name, COALESCE(dept.name,'None')**

**FROM dept RIGHT JOIN teacher ON dept.id=teacher.dept**

OR use LEFT JOIN

**SELECT teacher.name, COALESCE(dept.name,'None')**

**FROM teacher LEFT JOIN dept ON dept.id=teacher.dept**

7. Use COUNT to show the number of teachers and the number of mobile phones.

**Answer : SELECT COUNT(name), COUNT(mobile)**

**FROM teacher**

8. Use COUNT and GROUP BY **dept.name** to show each department and the number of staff. Use a RIGHT JOIN to ensure that the Engineering department is listed.

**Answer : SELECT dept.name, COUNT(teacher.name)**

**FROM teacher RIGHT JOIN dept ON dept.id=teacher.dept**

**GROUP BY dept.name**

**#How to use INNER JOIN/ LEFT JOIN/ RIGHT JOIN**

[**https://123doc.org/document/406373-su-khac-biet-giua-left-join-right-join-innerjoin.htm**](https://123doc.org/document/406373-su-khac-biet-giua-left-join-right-join-innerjoin.htm)

Using [CASE](http://sqlzoo.net/wiki/CASE)

9. Use CASE to show the **name** of each teacher followed by 'Sci' if the teacher is in **dept** 1 or 2 and 'Art' otherwise.

**Answer : SELECT name**

**,CASE WHEN dept =1**

**THEN 'Sci'**

**WHEN dept =2**

**THEN 'Sci'**

**ELSE 'Art'**

**END**

**FROM teacher**

10. Use CASE to show the name of each teacher followed by 'Sci' if the teacher is in dept 1 or 2, show 'Art' if the teacher's dept is 3 and 'None' otherwise.

**Answer :**

**SELECT name,**

**CASE WHEN dept =1**

**THEN 'Sci'**

**WHEN dept =2**

**THEN 'Sci'**

**WHEN dept = 3**

**THEN 'Art'**

**ELSE 'None'**

**END**

**FROM teacher**

Clear your results

[Using Null Quiz](http://sqlzoo.net/wiki/Using_Null_Quiz)

[Quiz](http://sqlzoo.net/wiki/Using_Null_Quiz)

Test your understanding of the NULL value

|  |  |  |  |
| --- | --- | --- | --- |
| **id** | **dept** | **name** | **phone** |
| 101 | 1 | Shrivell | 2753 |
| 102 | 1 | Throd | 2754 |
| 103 | 1 | Splint |  |
| 104 |  | Spiregrain |  |
| 105 | 2 | Cutflower | 3212 |
| 106 |  | Deadyawn |  |
|  | | | |

|  |  |
| --- | --- |
| **id** | **name** |
| 1 | Computing |
| 2 | Design |
| 3 | Engineering |
|  | |

1. Select the code which uses a JOIN correctly.

**Answer :SELECT teacher.name, dept.name FROM teacher LEFT OUTER JOIN dept ON (teacher.dept > dept.id)**

2. Select the correct statement that shows the name of department which employs Cutflower -

**Answer : SELECT dept.name FROM teacher JOIN dept ON (dept.id = teacher.dept) WHERE teacher.name = 'Cutflower'**

3. Select out of following the code which uses a JOIN to show a list of all the departments and number of employed teachers

**Answer : SELECT dept.name, COUNT(teacher.name) FROM teacher RIGHT JOIN dept ON dept.id = teacher.dept GROUP BY dept.name**

4. Using SELECT name, dept, COALESCE(dept, 0) AS result FROM teacher on teacher table will:

**Answer : display 0 in result column for all teachers without department**

5. Query:

**SELECT** name,  
 **CASE** **WHEN** phone = 2752 **THEN** 'two'  
 **WHEN** phone = 2753 **THEN** 'three'  
 **WHEN** phone = 2754 **THEN** 'four'  
 **END** **AS** digit  
 **FROM** teacher

shows following 'digit':

**Answer : 'four' for Throd**

6. Select the result that would be obtained from the following code:

**SELECT** name,   
 **CASE**   
 **WHEN** dept   
 **IN** (1)   
 **THEN** 'Computing'   
 **ELSE** 'Other'   
 **END**   
 **FROM** teacher

**Answer :**

|  |  |
| --- | --- |
| **Shrivell** | **Computing** |
| **Throd** | **Computing** |
| **Splint** | **Computing** |
| **Spiregrain** | **Other** |
| **Cutflower** | **Other** |
| **Deadyawn** | **Other** |

[Self JOIN](http://sqlzoo.net/wiki/Self_join)

# Self join

# Edinburgh Buses

[Details of the database](http://sqlzoo.net/wiki/Edinburgh_Buses.) Looking at the data

stops(**id**, name)  
route(**num**,**company**,**pos**, *stop*)

|  |  |
| --- | --- |
| **stops** | **route** |
| id | num |
| name | company |
|  | pos |
|  | stop |
|  |  |

1.How many **stops** are in the database.

**Answer : SELECT COUNT(name)**

**FROM stops**

**2.**Find the **id** value for the stop 'Craiglockhart'

**Answer : SELECT id**

**FROM stops**

**WHERE name LIKE 'Craiglockhart'**

3. Give the **id** and the **name** for the **stops** on the '4' 'LRT' service.

**Answer : SELECT stops.id, stops.name**

**FROM stops JOIN route ON id=stop**

**WHERE num=4 AND company LIKE 'LRT'**

**4.**The query shown gives the number of routes that visit either London Road (149) or Craiglockhart (53). Run the query and notice the two services that link these **stops** have a count of 2. Add a HAVING clause to restrict the output to these two routes.

**Answer : SELECT company, num, COUNT(\*)**

**FROM route**

**WHERE stop = 149 OR stop = 53**

**GROUP BY num, company**

**HAVING COUNT(\*) = 2**

5.Execute the self join shown and observe that b.stop gives all the places you can get to from Craiglockhart, without changing routes. Change the query so that it shows the services from Craiglockhart to London Road.

**Answer : SELECT a.company, a.num, a.stop, b.stop**

**FROM route a JOIN route b ON**

**(a.company=b.company AND a.num=b.num)**

**WHERE a.stop=53 AND b.stop=149**

*#Explain more for this issue*

Think *a table* as *route* and b table as stops. Use JOIN from a table to b table belong to company & num which are same on both a table and b table, but from a.stop=id(Start stop) to b.stop=id (finish stop)

6. The query shown is similar to the previous one, however by joining two copies of the **stops** table we can refer to **stops** by **name** rather than by number. Change the query so that the services between 'Craiglockhart' and 'London Road' are shown. If you are tired of these places try 'Fairmilehead' against 'Tollcross'

**Answer : SELECT a.company, a.num, stopa.name, stopb.name**

**FROM route a JOIN route b ON**

**(a.company=b.company AND a.num=b.num)**

**JOIN stops stopa ON (a.stop=stopa.id)**

**JOIN stops stopb ON (b.stop=stopb.id)**

**WHERE stopa.name='Craiglockhart' AND stopb.name='London Road'**

## [Using a self join](http://sqlzoo.net/wiki/Using_a_self_join)

7. Give a list of all the services which connect stops 115 and 137 ('Haymarket' and 'Leith')

**Answer : SELECT DISTINCT a.company, a.num**

**FROM route a**

**JOIN route b ON a.num = b.num**

**WHERE a.stop = 115**

**AND b.stop = 137**

8. Give a list of the services which connect the **stops** 'Craiglockhart' and 'Tollcross'

**Answer : SELECT a.company, a.num**

**FROM route a JOIN route b ON (a.num = b.num)**

**JOIN stops stopa ON (a.stop = stopa.id)**

**JOIN stops stopb ON (b.stop = stopb.id)**

**WHERE stopa.name = 'Craiglockhart'**

**AND stopb.name = 'Tollcross'**

9. Give a distinct list of the **stops** which may be reached from 'Craiglockhart' by taking one bus, including 'Craiglockhart' itself, offered by the LRT company. Include the company and bus no. of the relevant services

**Answer : SELECT a.company, stopb.name,a.num**

**FROM route a JOIN route b ON (a.num=b.num AND a.company=b.company)**

**JOIN stops stopa ON (a.stop = stopa.id)**

**JOIN stops stopb ON (b.stop = stopb.id)**

**WHERE stopa.name ='Craiglockhart' AND a.company='LRT'**

10.Find the routes involving two buses that can go from Craiglockhart to Sighthill.

Show the bus no. and company for the first bus, the name of the stop for the transfer,

and the bus no. and company for the second bus.

**Answer :**

**SELECT DISTINCT an, ac, stops.name, dn, dc**

**FROM**

**-- all lines going from Craiglockahart to somewhere**

**(SELECT a.num as an, a.company as ac, b.stop as bstop**

**FROM**

**route a JOIN route b JOIN stops s**

**ON a.num=b.num AND s.id=a.stop**

**WHERE s.name='Craiglockhart') T1**

**JOIN**

**-- all lines going from somewhere to Sighthill**

**(SELECT d.num as dn, d.company as dc, c.stop as cstop**

**FROM**

**route c JOIN route d JOIN stops s**

**ON c.num=d.num AND c.company=d.company AND s.id=d.stop**

**WHERE s.name='Sighthill') T2**

**JOIN stops**

**ON bstop=cstop AND bstop=stops.id**

[Quiz](http://sqlzoo.net/wiki/Self_join_Quiz)

SELF JOIN quiz

|  |  |
| --- | --- |
| **stops** | **route** |
| id | num |
| name | company |
|  | pos |
|  | stop |
|  |  |

1. Select the code that would show it is possible to get from Craiglockhart to Haymarket

**Answer : SELECT DISTINCT a.name, b.name  
 FROM stops a JOIN route z ON a.id=z.stop  
 JOIN route y ON y.num = z.num  
 JOIN stops b ON y.stop=b.id  
 WHERE a.name='Craiglockhart' AND b.name ='Haymarket'**

2. Select the code that shows the stops that are on route.num '2A' which can be reached with one bus from Haymarket?

**Answer : SELECT S2.id, S2.name, R2.company, R2.num  
 FROM stops S1, stops S2, route R1, route R2  
 WHERE S1.name='Haymarket' AND S1.id=R1.stop  
 AND R1.company=R2.company AND R1.num=R2.num  
 AND R2.stop=S2.id AND R2.num='2A'**

3. Select the code that shows the services available from Tollcross?

**Answer : SELECT a.company, a.num, stopa.name, stopb.name  
 FROM route a JOIN route b ON (a.company=b.company AND a.num=b.num)  
 JOIN stops stopa ON (a.stop=stopa.id)  
 JOIN stops stopb ON (b.stop=stopb.id)  
 WHERE stopa.name='Tollcross'**