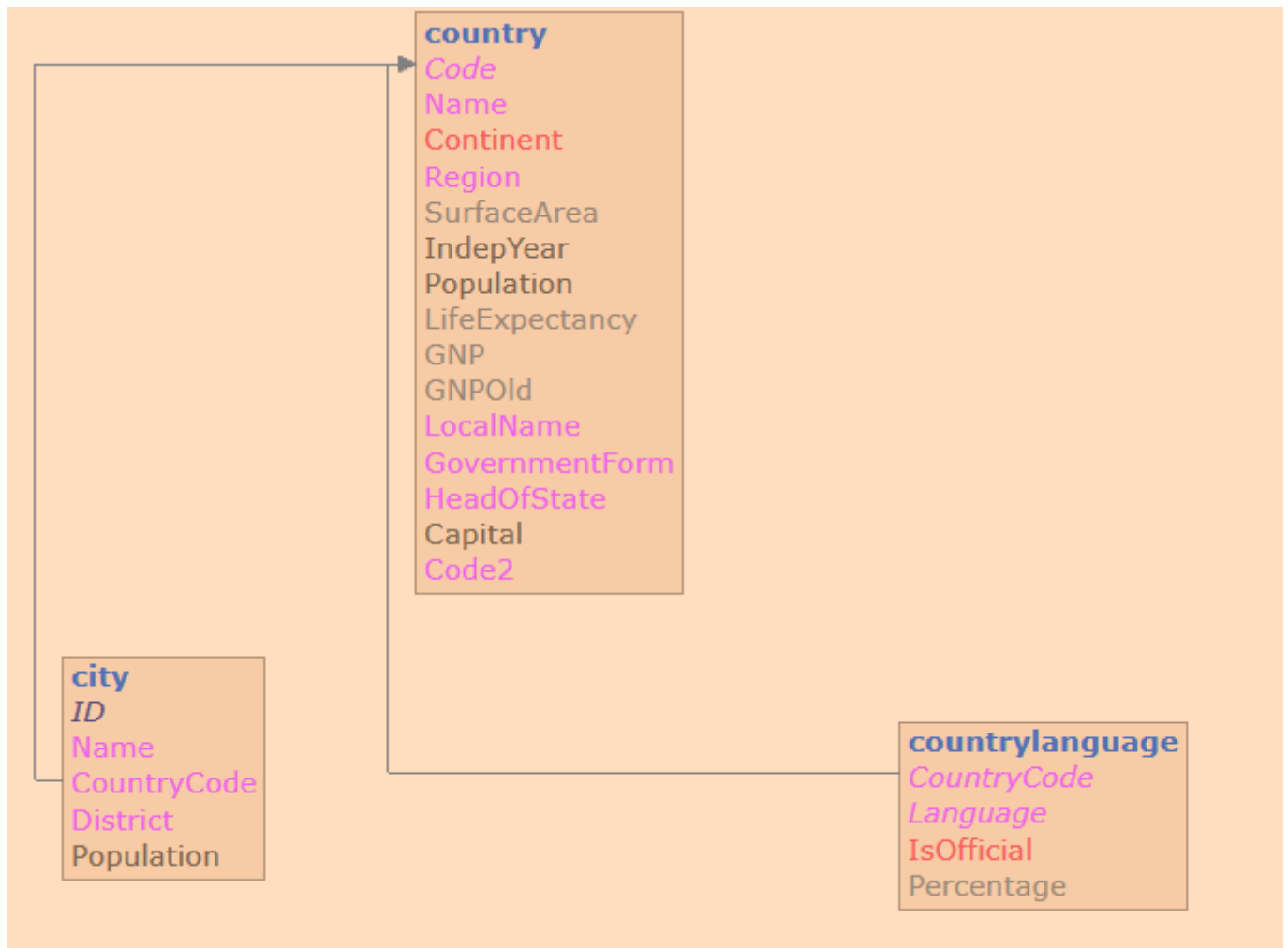


MySQL: Examples of queries on the World database



Database schema.

The world database is a sample database if you choose it will be installed together with the MySQL community.

You can execute queries and observe the results using the application:

https://wiki.ostrowski.net.pl/php_mysql/world.php

Display the top 10 countries by population

```
SELECT Name, Population
FROM Country
ORDER BY Population DESC
LIMIT 10;
```

Average population of cities in Germany

```
SELECT AVG(Population) AS AvgCityPopulation
FROM City
WHERE CountryCode = 'DEU';
```

List of official languages (IsOfficial = 'T') in Asian countries

```
SELECT cl.CountryCode, c.Name AS CountryName, cl.Language
FROM CountryLanguage cl
JOIN Country c ON cl.CountryCode = c.Code
WHERE cl.IsOfficial = 'T' AND c.Continent = 'Asia';
```

Sum of country populations by continent

```
SELECT Continent, SUM(Population) AS TotalPopulation
FROM Country
GROUP BY Continent
ORDER BY TotalPopulation DESC;
```

Cities with a population greater than 1 million in South America

```
SELECT ci.Name AS City, ci.Population, co.Name AS Country
FROM City ci
JOIN Country co ON ci.CountryCode = co.Code
WHERE ci.Population > 1000000 AND co.Continent = 'South America'
ORDER BY ci.Population DESC;
```

Country with the most cities

```
SELECT co.Name, COUNT(ci.ID) AS CityCount
FROM Country co
JOIN City ci ON co.Code = ci.CountryCode
GROUP BY co.Name
ORDER BY CityCount DESC
LIMIT 1;
```

Countries where Spanish is not an official language but is spoken

```
SELECT c.Name, cl.Language
FROM CountryLanguage cl
JOIN Country c ON cl.CountryCode = c.Code
WHERE cl.Language = 'Spanish' AND cl.IsOfficial = 'F';
```

Countries with a population larger than the average population of all countries

```
SELECT Name, Population
FROM Country
WHERE Population > (SELECT AVG(Population) FROM Country);
```

Using CASE: classifying countries by population size

```
SELECT Name,
       Population,
       CASE
         WHEN Population > 100000000 THEN 'Very Large'
         WHEN Population > 50000000 THEN 'Large'
         WHEN Population > 10000000 THEN 'Medium'
         ELSE 'Small'
       END AS PopulationCategory
FROM Country;
```

CTE (Common Table Expression) - countries with English language, sorted by population

```
WITH EnglishSpeakingCountries AS (
  SELECT CountryCode
  FROM CountryLanguage
  WHERE LANGUAGE = 'English' AND IsOfficial = 'T'
)
SELECT c.Name, c.Population
FROM Country c
JOIN EnglishSpeakingCountries esc ON c.Code = esc.CountryCode
ORDER BY c.Population DESC;
```

Country with the highest average urban population

(i.e. where the average number of inhabitants per city is the highest)

```
SELECT co.Name, AVG(ci.Population) AS AvgCityPopulation
FROM Country co
JOIN City ci ON co.Code = ci.CountryCode
GROUP BY co.Code
HAVING COUNT(ci.ID) > 1
ORDER BY AvgCityPopulation DESC
LIMIT 1;
```

Cities in countries with above average populations and where English is the official language

```
SELECT ci.Name AS City, co.Name AS Country, ci.Population
FROM City ci
JOIN Country co ON ci.CountryCode = co.Code
WHERE co.Population > (
    SELECT AVG(Population) FROM Country
)
AND co.Code IN (
    SELECT CountryCode FROM CountryLanguage
    WHERE LANGUAGE = 'English' AND IsOfficial = 'T'
);
```

List of countries that have fewer cities than the average number of cities per country, but above average population

```
SELECT co.Name, COUNT(ci.ID) AS CityCount, co.Population
FROM Country co
LEFT JOIN City ci ON co.Code = ci.CountryCode
GROUP BY co.Code
HAVING COUNT(ci.ID) < (
    SELECT AVG(CityCount)
    FROM (
        SELECT CountryCode, COUNT(*) AS CityCount
        FROM City
        GROUP BY CountryCode
    ) AS SubCityCounts
)
AND co.Population > (
    SELECT AVG(Population) FROM Country
);
```

All official languages of countries whose capital has a population of more than 1 million

```
SELECT DISTINCT cl.Language, co.Name AS Country
FROM Country co
JOIN CountryLanguage cl ON co.Code = cl.CountryCode
WHERE cl.IsOfficial = 'T'
AND co.Capital IN (
    SELECT ID FROM City WHERE Population > 1000000
);
```

Countries with the largest difference between the population of a country and its largest city

```
SELECT co.Name, co.Population - MAX(ci.Population) AS PopulationDiff
FROM Country co
JOIN City ci ON co.Code = ci.CountryCode
GROUP BY co.Code
ORDER BY PopulationDiff DESC
LIMIT 10;
```

For each continent: the country with the largest average urban population

```
SELECT Continent, Name, AvgCityPop
FROM (
    SELECT co.Continent, co.Name, AVG(ci.Population) AS AvgCityPop,
           RANK() OVER (PARTITION BY co.Continent ORDER BY
AVG(ci.Population) DESC) AS rnk
    FROM Country co
    JOIN City ci ON co.Code = ci.CountryCode
    GROUP BY co.Code
) AS ranked
WHERE rnk = 1;
```

Countries where more than one language is officially spoken

```
SELECT co.Name, COUNT(*) AS OfficialLanguages
FROM Country co
JOIN CountryLanguage cl ON co.Code = cl.CountryCode
WHERE cl.IsOfficial = 'T'
GROUP BY co.Code
```

```
HAVING COUNT(*) > 1;
```

Countries where a language is spoken that is not spoken by any of their neighbours on the same continent

This requires an analysis of languages in the context of continent and uniqueness - a bit 'artificial', but interesting:

```
SELECT DISTINCT c1.Name, c1.Language
FROM Country c1
JOIN CountryLanguage c1l ON c1.Code = c1l.CountryCode
WHERE c1l.Language NOT IN (
    SELECT c2.Language
    FROM Country c2
    JOIN CountryLanguage c2l ON c2.Code = c2l.CountryCode
    WHERE c2.Continent = c1.Continent
    AND c2.Code != c1.Code
)
AND c1l.IsOfficial = 'T';
```

Average population of cities for each official language in countries where that language is spoken

```
SELECT cl.Language, AVG(ci.Population) AS AvgCityPopulation
FROM CountryLanguage cl
JOIN Country co ON cl.CountryCode = co.Code
JOIN City ci ON co.Code = ci.CountryCode
WHERE cl.IsOfficial = 'T'
GROUP BY cl.Language
ORDER BY AvgCityPopulation DESC;
```

List of countries that do not have any cities in the database

```
SELECT co.Name
FROM Country co
LEFT JOIN City ci ON co.Code = ci.CountryCode
WHERE ci.ID IS NULL;
```