

## Database

You will work on with “world” database from mysql website resources.  
Please refer to the link to learn more about this database.

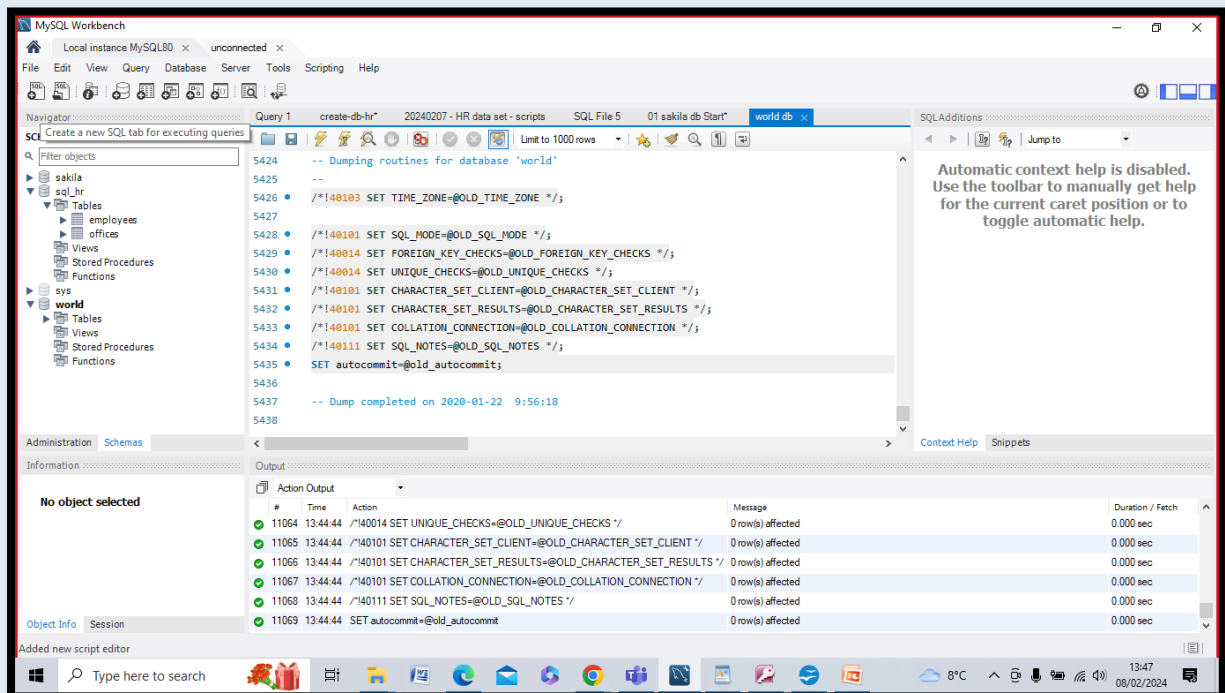
Link: <https://dev.mysql.com/doc/world-setup/en/>

Please read [Preface and Legal Notices](#).

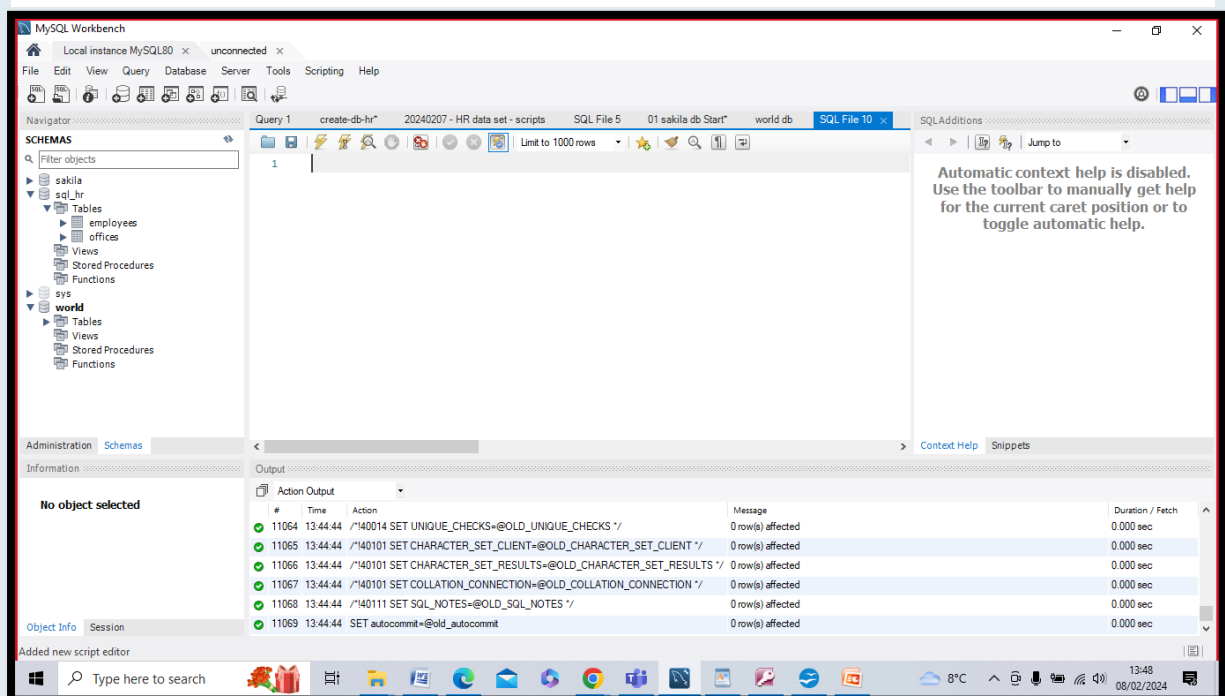
Overall, the Preface provides legal and usage guidelines for users of the “world db” sample database, including copyright information, licensing restrictions, warrantee disclaimers, and guidelines for using the database.

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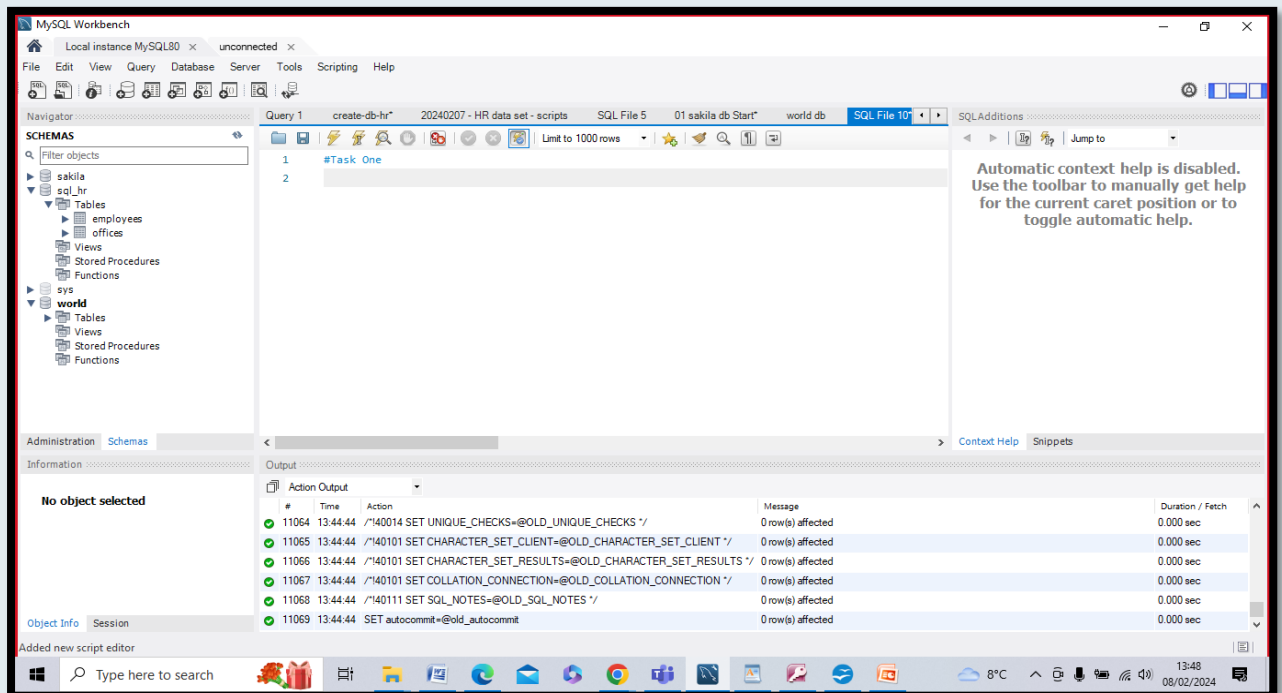
- Import SQL Script “world db” and then execute the script. Refresh schemas and check if db “world” exists.



- On your keyboard hold down Ctrl and T keys to open new query tab.
- Or you can do it from task bar
- Create word file to include at least 3 of your works screenshots.



- Use # key to comment your tasks. You will need to save this query tab for trainers review later. Please use same query tab for all your tasks.



**This project concerns a new Schema called 'World db'.**

**World db contains the following tables:**

- 'city',
- 'country',
- 'countrylanguage'

**'City' table contains the following Columns:**

- 'ID',
- 'Name',
- 'CountryCode',
- 'District',
- 'Population'

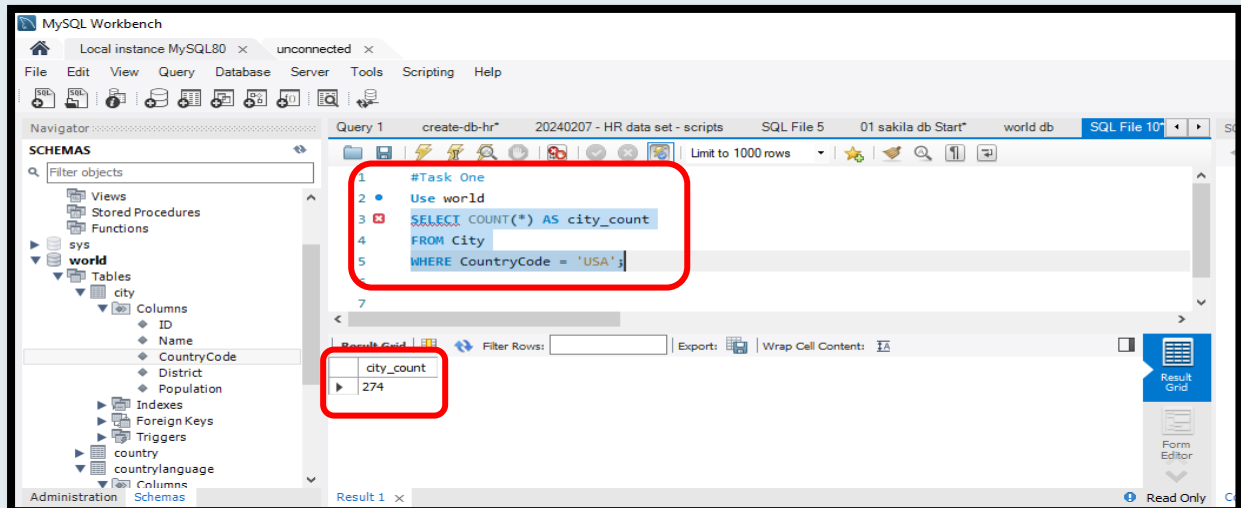
**'Country' table contains the following Columns:**

- 'Code',
- 'Name',
- 'Continent',
- 'Region',
- 'SurfaceArea',

• 'IndepYear',	
• 'Population',	
• 'LifeExpectancy',	
• 'GNP',	
• 'GNPOld',	
• 'LocalName',	
• 'GovernmentForm',	
• 'HeadOfState',	
• 'Capital',	
• 'Code2'	
<b>'CountryLanguage' table contains the following Columns:</b>	
• 'CountryCode',	
• 'Language',	
• 'IsOfficial',	
• 'Percentage'	

## Task 1

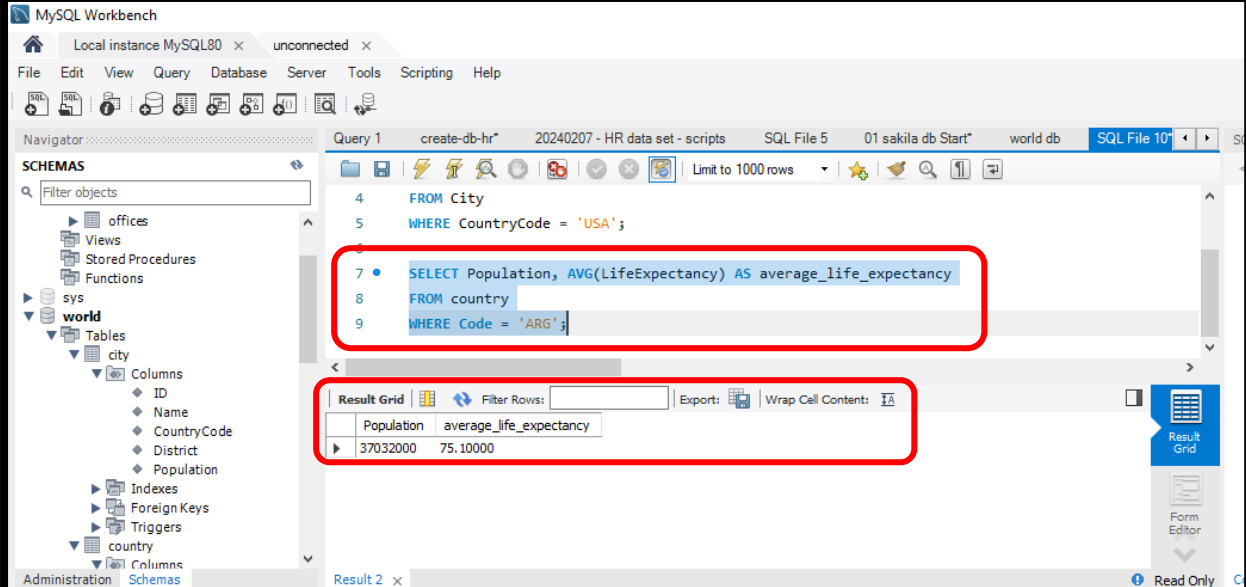
Using `count`, get the number of cities in the USA



The Query selects the count of rows (in cities) from the 'city' table selecting the 'CountryCode' column where this is 'USA', indicating that the cities are in the United States. This results in a figure for the number of cities in the USA, which is '274'.

## Task 2

Find out what the population and average life expectancy for people in Argentina (ARG) is.



The screenshot shows the MySQL Workbench interface. The 'Query 1' editor contains the following SQL code:

```
4 FROM City
5 WHERE CountryCode = 'USA';
7 SELECT Population, AVG(LifeExpectancy) AS average_life_expectancy
8 FROM country
9 WHERE Code = 'ARG';
```

The SQL code is highlighted with a red box. Below the editor, the 'Result Grid' is displayed, showing the results of the query. The result grid is also highlighted with a red box and contains the following data:

Population	average_life_expectancy
37032000	75.10000

'Population' is selected and used to calculate the average of 'LifeExpectancy' for Argentina from the 'country' table where the 'Code' column is 'ARG'. The result gives total population and average life expectancy for people in Argentina under two created headings:

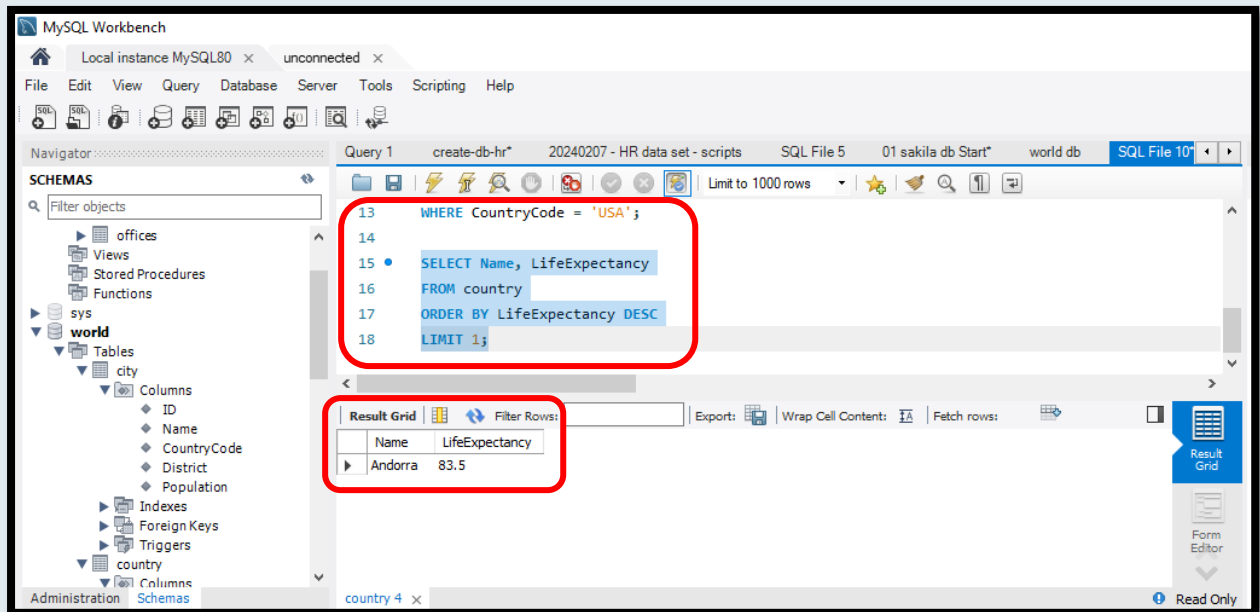
ARG

Population: 37,032,000

Average\_Life\_Expectancy: 75.1 years

### Task 3

Using `ORDER BY`, `LIMIT`, what country has the highest life expectancy?



The Query selects 'Name' (country name) and 'LifeExpectancy' columns from the 'country' table and orders the results by 'LifeExpectancy' in descending order using the `ORDER BY` clause. The `LIMIT 1` clause ensures that only the first row (country with the highest life expectancy) is returned.

Andorra – 83.5 years average life expectancy

## Task 4

Select 25 cities around the world that start with the letter 'F' in a single SQL query.

The screenshot shows the MySQL Workbench interface. The left sidebar displays the 'SCHEMAS' tree with the 'world' database selected. The 'city' table is highlighted under 'Tables'. The main editor window shows a SQL query:

```
13 WHERE CountryCode = 'USA';
14
15 • SELECT Name, LifeExpectancy
16 FROM country
17 ORDER BY LifeExpectancy DESC
18 LIMIT 1;
19
20 • SELECT Name
21 FROM city
22 WHERE Name LIKE 'F%'
23 LIMIT 25;
```

The 'Result Grid' at the bottom displays the results of the query, showing a list of city names starting with 'F':

Name
Fagatogo
Florencio Varela
Formosa
Francistown
Fortaleza
Feira de Santana
Franca
Florianópolis
Foz do Iguaçu
Ferraz de Vasconcelos
Francisco Morato
Franco de Paula

The names of cities from the 'city' table are selected where the 'Name' column starts with the letter 'F'. This is done using the LIKE operator with the wildcard pattern 'F%', which matches any string that starts with 'F'. The LIMIT 25 clause ensures that only 25 rows are returned.



## Task 5

Create a SQL statement to display columns `Id`, `Name`, `Population` from the `city` table and limit results to first 10 rows only.

The screenshot shows the MySQL Workbench interface. The left sidebar displays the 'SCHEMAS' tree with 'world' selected, showing the 'city' table. The main editor window shows a SQL query in 'Query 1':

```
17 ORDER BY LifeExpectancy DESC
18 LIMIT 1;
19
20 • SELECT Name
21 FROM city
22 WHERE Name LIKE 'FX%'
23 LIMIT 25;
24
25 • SELECT ID, Name, Population
26 FROM city
27 LIMIT 10;
```

The 'Result Grid' at the bottom displays the first 10 rows of the query results:

ID	Name	Population
1	Kabul	1780000
2	Qandahar	237500
3	Herat	186800
4	Mazar-e-Sharif	127800
5	Amsterdam	731200
6	Rotterdam	593321
7	Haag	440900
8	Utrecht	234323
9	Eindhoven	201843
10	Tilburg	193238

The 'Information' panel on the left shows details for the 'Name' column: Collation: utf8mb4\_0900\_ai\_ci, Definition: Name char(52).

The specified columns from the 'city' table are selected; the LIMIT clause limits results to the first 10 rows.

## Task 6

- Create a SQL statement to find only those cities from `city` table whose population is larger than 2000000.

The screenshot shows the MySQL Workbench interface. The left sidebar displays the 'SCHEMAS' tree with the 'world' database selected, showing the 'city' table. The main editor window contains the following SQL query:

```
26 FROM city
27 LIMIT 10;
28
29 • SELECT *
30 FROM city
31 WHERE Population > 2000000;
32
33 • SELECT *
34 FROM city
35 WHERE Population > 2000000
36 ORDER BY Population DESC;
```

The 'Result Grid' at the bottom displays the results of the query, showing 10 rows of cities with populations greater than 2,000,000, ordered by population in descending order.

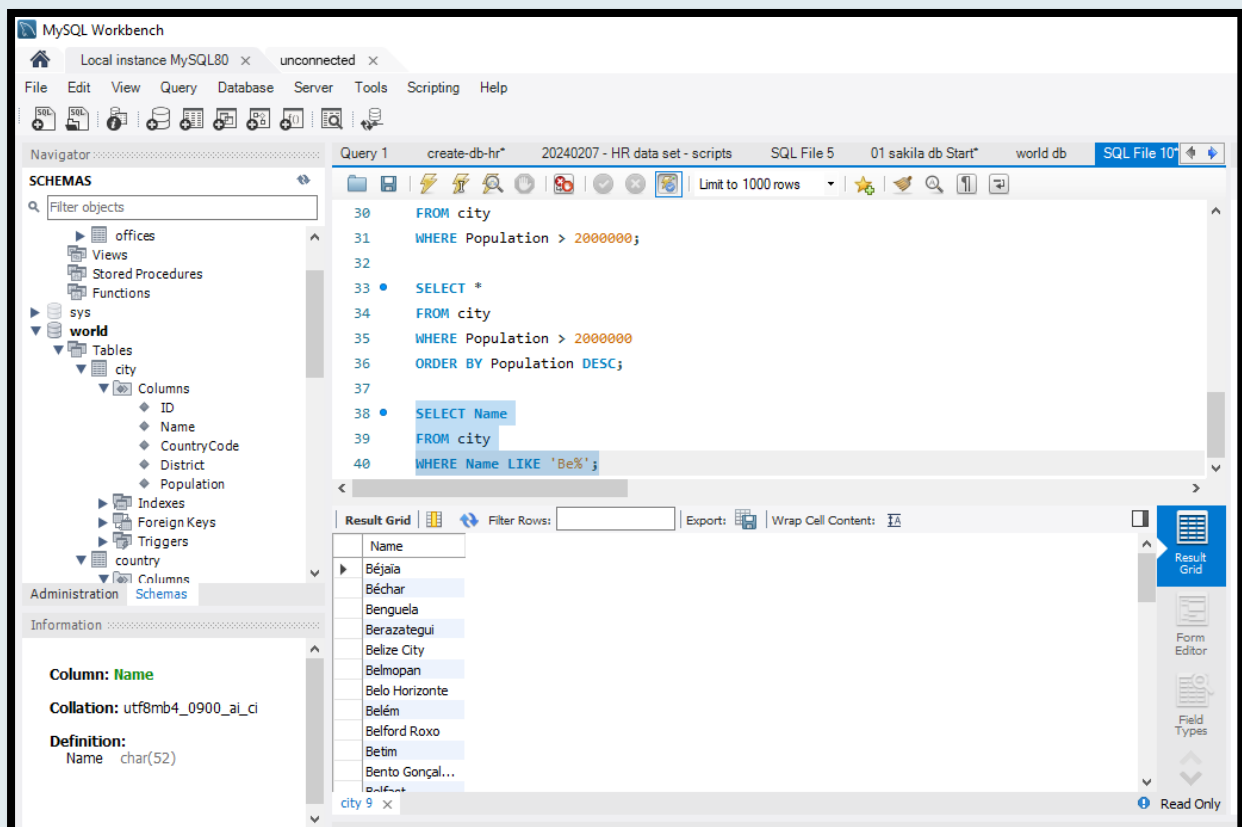
ID	Name	CountryCode	District	Population
1024	Mumbai (Bombay)	IND	Maharashtra	10500000
2331	Seoul	KOR	Seoul	9981619
206	São Paulo	BRA	São Paulo	9968485
1890	Shanghai	CHN	Shanghai	9696300
939	Jakarta	IDN	Jakarta Raya	9604900
2822	Karachi	PAK	Sindh	9269265
3357	Istanbul	TUR	Istanbul	8787958
2515	Ciudad de México	MEX	Distrito Federal	8591309
3580	Moscow	RUS	Moscow (City)	8389200
3793	New York	USA	New York	8008278

The 'Object Info' panel on the left shows details for the 'Name' column: Collation: utf8mb4\_0900\_ai\_ci, Definition: Name char(52).

This query selects all columns from the 'city' table where the 'Population' column is larger than 2,000,000. It only returned the rows (cities) that met the condition.

## Task 7

- Create a SQL statement to find all city names from city table whose name begins with "Be" prefix.



The 'Name' column is selected from the 'city' table, but only where the 'Name' column starts with the prefix "Be". This is done using the LIKE operator with the pattern 'Be%' (wildcard). It returns all city names that match this pattern.

## Task 8

- Create a SQL statement to find only those cities from city table whose population is between 500000-1000000.

The screenshot shows the MySQL Workbench interface. The left sidebar displays the 'SCHEMAS' tree with the 'world' database selected, showing the 'city' table. The main editor window contains the following SQL query:

```
35 WHERE Population > 2000000
36 ORDER BY Population DESC;
37
38 • SELECT Name
39 FROM city
40 WHERE Name LIKE 'Be%';
41
42 • SELECT *
43 FROM city
44 WHERE Population BETWEEN 500000 AND 1000000
45 ORDER BY Population DESC;
```

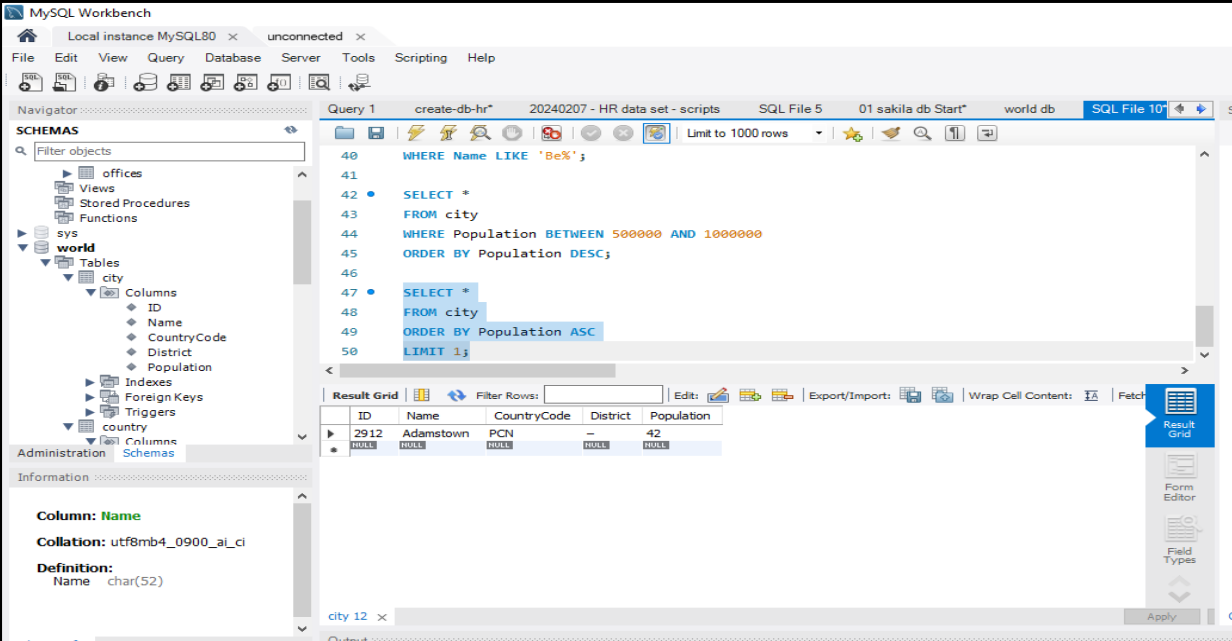
The 'Result Grid' at the bottom displays the results of the query, showing a list of cities with their IDs, names, country codes, districts, and populations. The results are ordered by population in descending order.

ID	Name	CountryCode	District	Population
1786	Amman	JOR	Amman	1000000
3214	Mogadishu	SOM	Banaadir	997000
3592	Volgograd	RUS	Volgograd	993400
1543	Sendai	JPN	Miyagi	989975
2829	Peshawar	PAK	Northwest Border Prov	988005
1925	Baotou	CHN	Inner Mongolia	980000
134	Adelaide	AUS	South Australia	978100
1042	Madurai	IND	Tamil Nadu	977856
3175	Mekka	SAU	Mekka	965700
3071	Köln	DEU	Nordrhein-Westfalen	962507
2734	Managua	NIC	Managua	959000
3007	Detroit	USA	Michigan	951700

This query selects all columns from the 'city' table where the 'Population' column is between 500,000 and 1,000,000 inclusive. This is done using the BETWEEN operator. It returns only the rows (cities) that meet the criteria.

## Task 9

- Create a SQL statement to find a city with the lowest population in the city table.



The screenshot shows the MySQL Workbench interface. The left sidebar displays the 'SCHEMAS' tree with 'world' selected, showing the 'city' table. The main editor shows a SQL query in 'Query 1':

```
40 WHERE Name LIKE 'Be%';  
41  
42 • SELECT *  
43 FROM city  
44 WHERE Population BETWEEN 500000 AND 1000000  
45 ORDER BY Population DESC;  
46  
47 • SELECT *  
48 FROM city  
49 ORDER BY Population ASC  
50 LIMIT 1;
```

The 'Result Grid' at the bottom shows the results of the query:

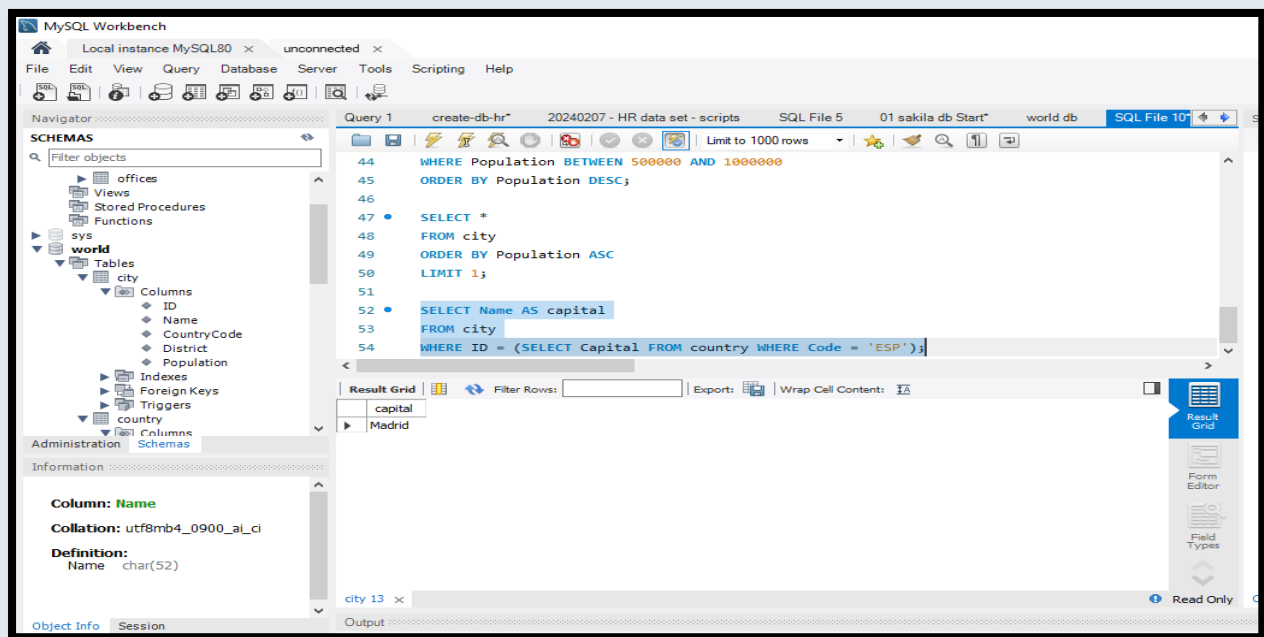
ID	Name	CountryCode	District	Population
2912	Adamstown	PCN	-	42

The 'Information' pane on the left shows details for the 'Name' column: Column: Name, Collation: utf8mb4\_0900\_ai\_ci, Definition: Name char(52).

This selects all columns from the 'city' table and orders the result by population, but in ascending order (from lowest to highest). The LIMIT 1 clause then ensures that only the first row (city with the lowest population) is returned.

## Task 10

- Create a SQL statement to find the capital of Spain (ESP).



The 'Name' column from the 'city' table is selected and is used to retrieve the capital city's name by matching the 'Capital' column value (which represents the city ID of the capital) from the 'country' table, but only where the country code is 'ESP' (Spain).

## Task 11

- Create a SQL statement to list all the languages spoken in the Caribbean region.

The screenshot shows the MySQL Workbench interface. The left sidebar displays the 'SCHEMAS' tree with the 'world' database selected. The 'country' table is expanded, showing columns: ID, Name, CountryCode, District, and Population. The main editor displays a SQL query:

```
49 ORDER BY Population ASC
50 LIMIT 1;
51
52 • SELECT Name AS capital
53 FROM city
54 WHERE ID = (SELECT Capital FROM country WHERE Code = 'ESP');
55
56 • SELECT DISTINCT cl.Language
57 FROM countrylanguage cl
58 JOIN country c ON cl.CountryCode = c.Code
59 WHERE c.Region = 'Caribbean';
```

The 'Result Grid' at the bottom shows the results of the query:

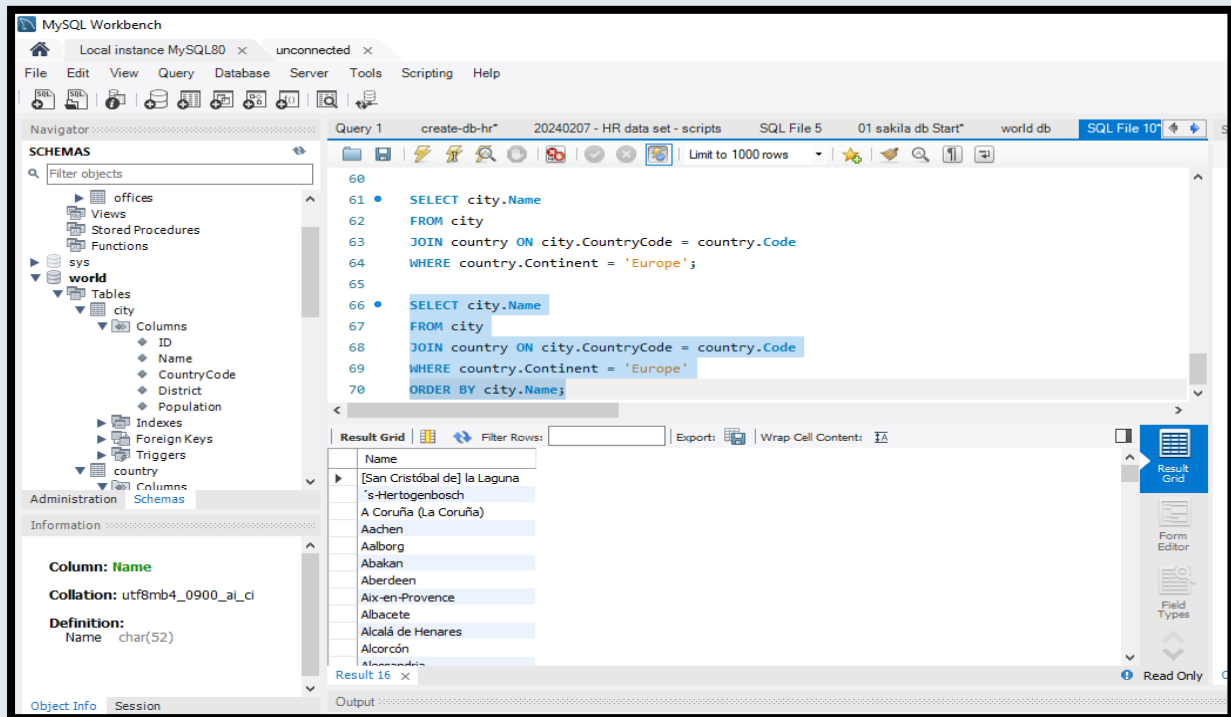
Language
Dutch
English
Papiamentu
Spanish
Creole English
Creole French
Bajan
French
Haiti Creole
Hindi

The 'Information' panel at the bottom left shows details for the 'Name' column: Column: Name, Collation: utf8mb4\_0900\_ai\_ci, Definition: Name char(52).

The task is to select the distinct languages from the 'countrylanguage' table and retrieve the languages spoken in the Caribbean region, this is done by joining with the 'country' table on the 'CountryCode' column and filtering rows where the region is 'Caribbean'.

## Task 12

- . Create a SQL statement to find all cities from the Europe continent.



This query selects the city names from the 'city' table by joining it with the 'country' table on the 'CountryCode' column. It then filters the rows where the continent is 'Europe' from the 'country' table.





**1. Primary key in country table:**

- In the 'country' table of the 'world' database, **the primary key is the 'Code' column**. This column uniquely identifies each country in the table.

**2. Primary key in city table:**

- In the 'city' table of the 'world' database, **the primary key is the 'ID' column**. This column uniquely identifies each city in the table.

**3. Primary key in countrylanguage table:**

- In the 'countrylanguage' table of the 'world' database, **the primary key is composed of the combination of the 'CountryCode' and 'Language' columns**. Together, these columns uniquely identify each language associated with a country in the table.

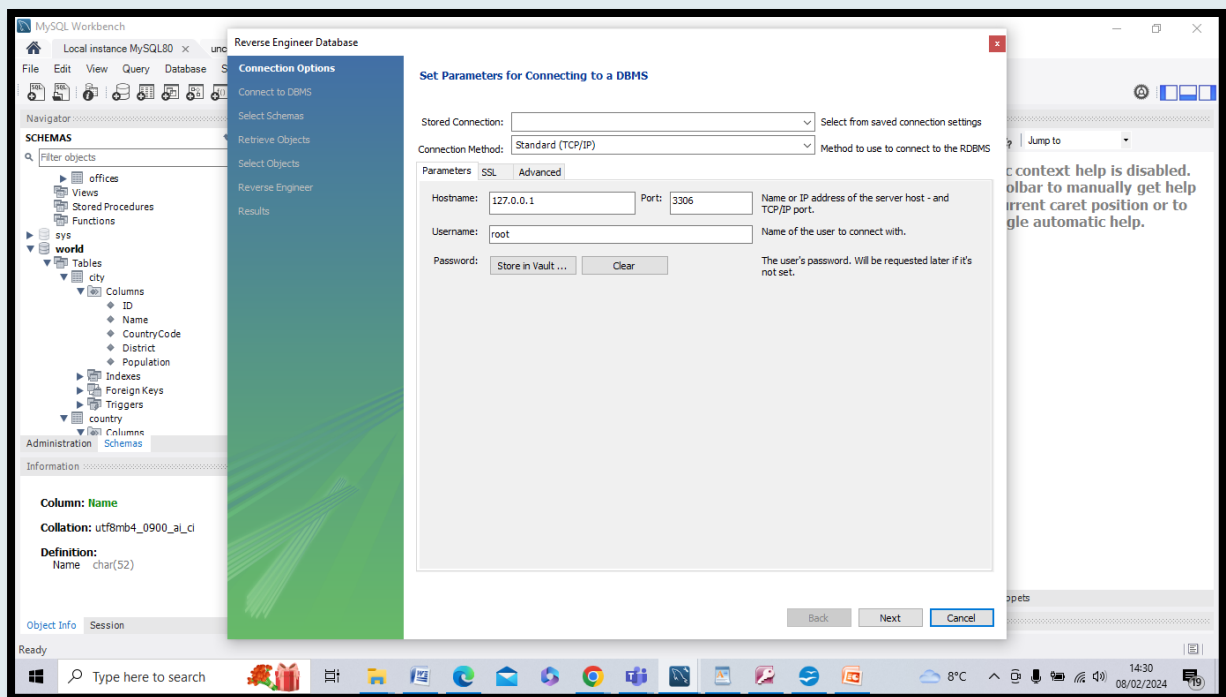
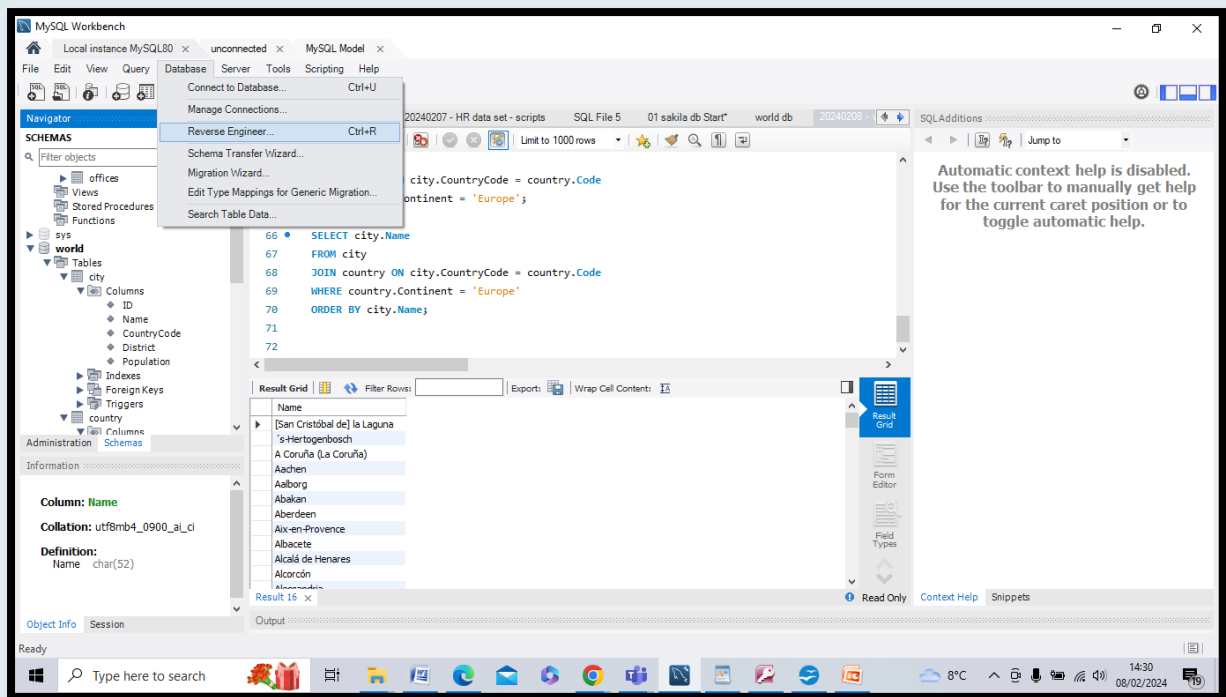
**4. Foreign key in city table:**

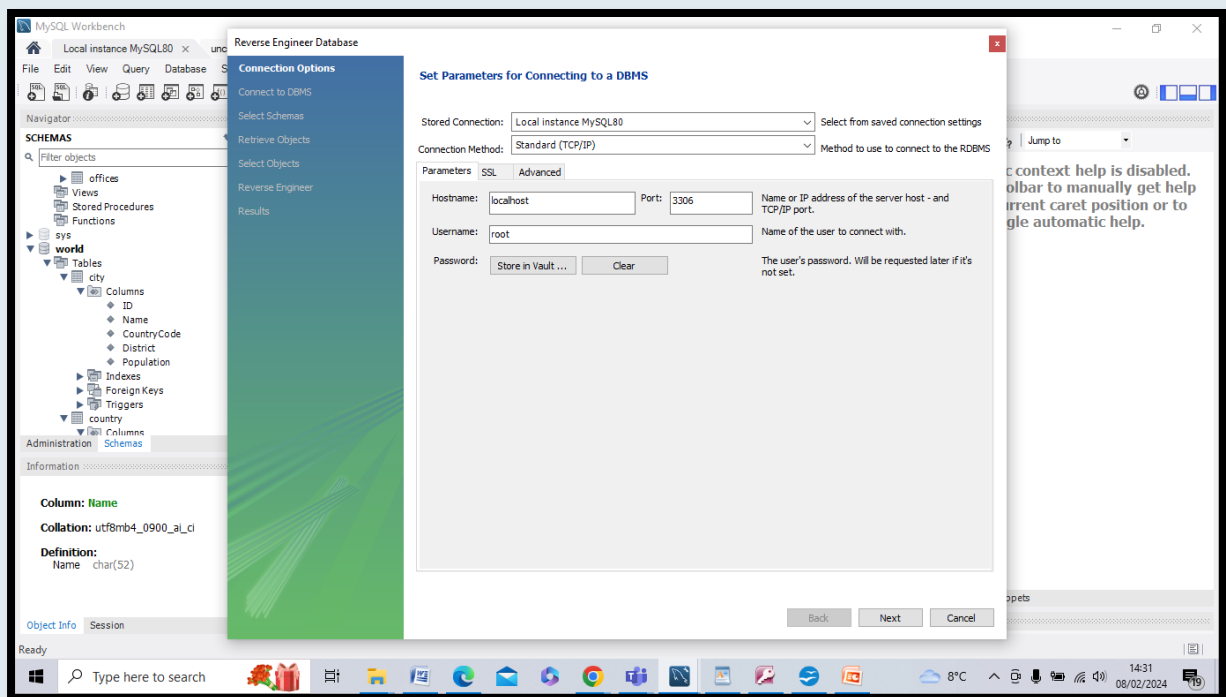
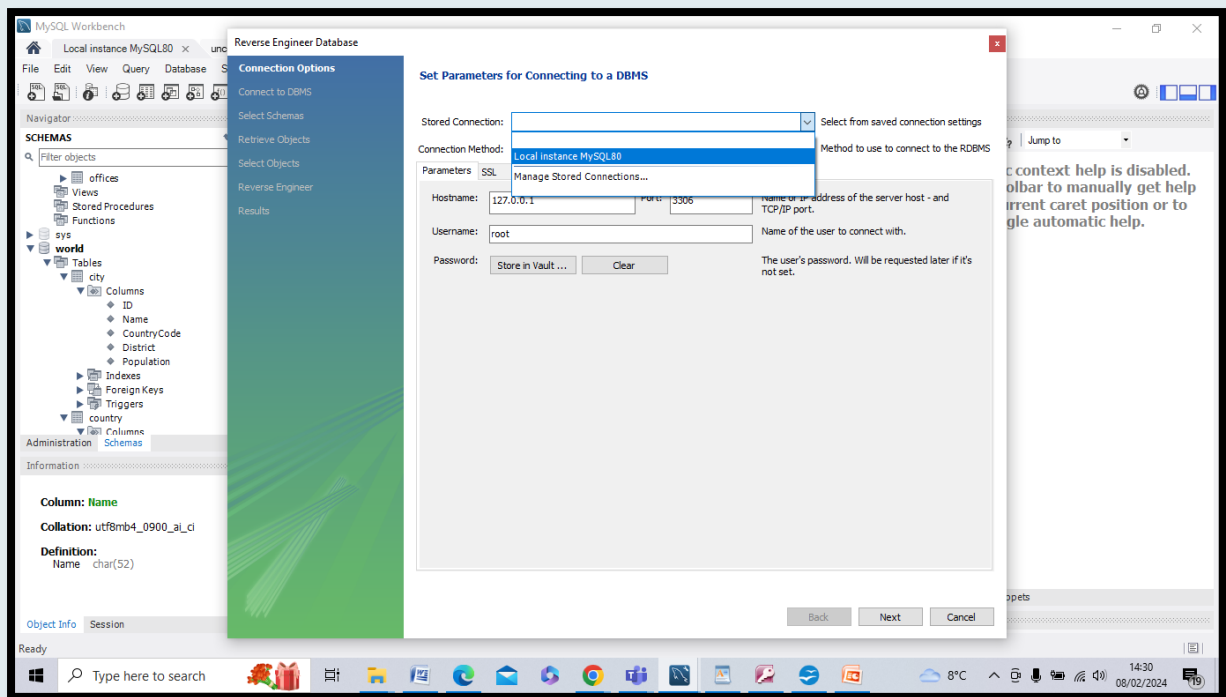
- In the 'city' table of the 'world' database, **the 'CountryCode' column serves as a foreign key**. It references the 'Code' column in the 'country' table, establishing a relationship between cities and their respective countries.

**5. Foreign key in countrylanguage table:**

- In the 'countrylanguage' table of the 'world' database, **the 'CountryCode' column serves as a foreign key**. Similar to the 'city' table, it references the 'Code' column in the 'country' table, establishing a relationship between languages and their respective countries.

**An easy way to find this using the EER Diagram is to click on the drop down 'Indexes' which then illuminates the Primary and Foreign Keys active in the Diagram.**





Press 'Next' which produces the following screen:

