Day 4: Task 2: SQL Practical

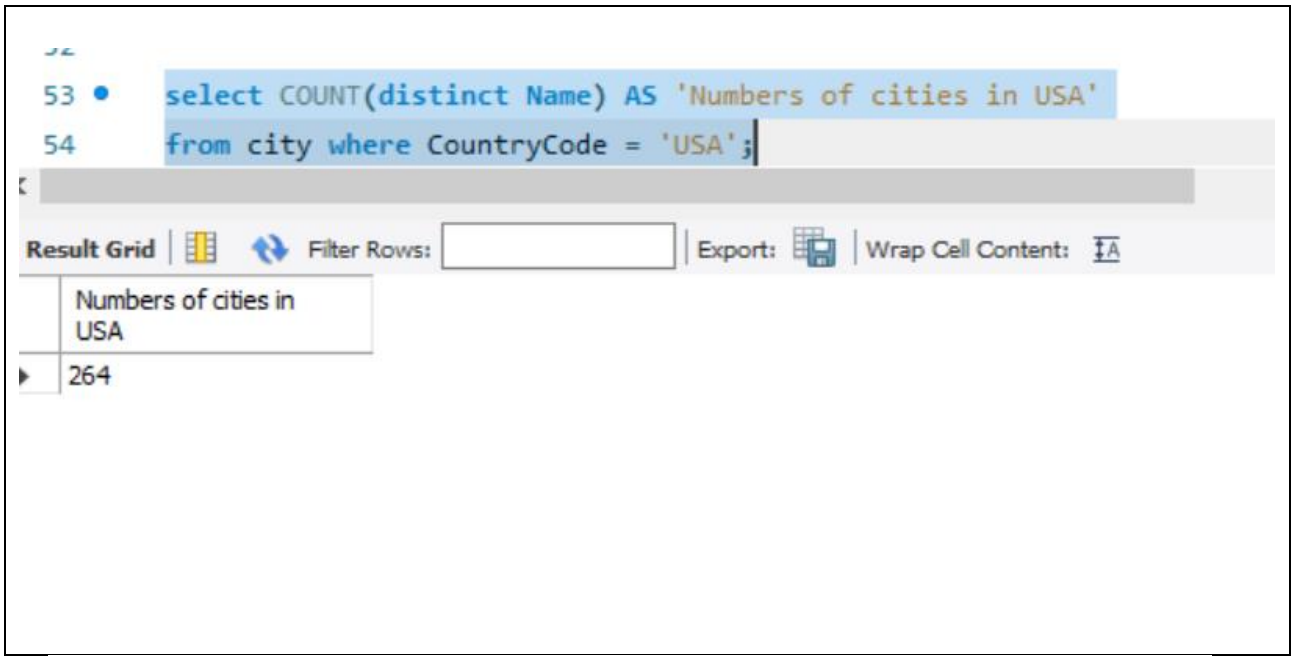
In your groups, work together to answer the below questions. It may be of benefit if one of you shares your screen with the group and as a team answer / take screen shots from there.

Setting up the database:

1. **Download world_db(1) here**
2. **Follow each step to create your database here**

For each question I would like to see both the syntax used and the output.

1. **Count Cities in USA:** *Scenario:* You've been tasked with conducting a demographic analysis of cities in the United States. Your first step is to determine the total number of cities within the country to provide a baseline for further analysis.



2. **Country with Highest Life Expectancy:** *Scenario:* As part of a global health initiative, you've been assigned to identify the country with the highest life expectancy. This information will be crucial for prioritising healthcare resources and interventions.

```
53 •  select name AS 'Country Name', LifeExpectancy from country
54    where LifeExpectancy = (select max(LifeExpectancy) from country);
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

Country Name	LifeExpectancy
Andorra	83.5

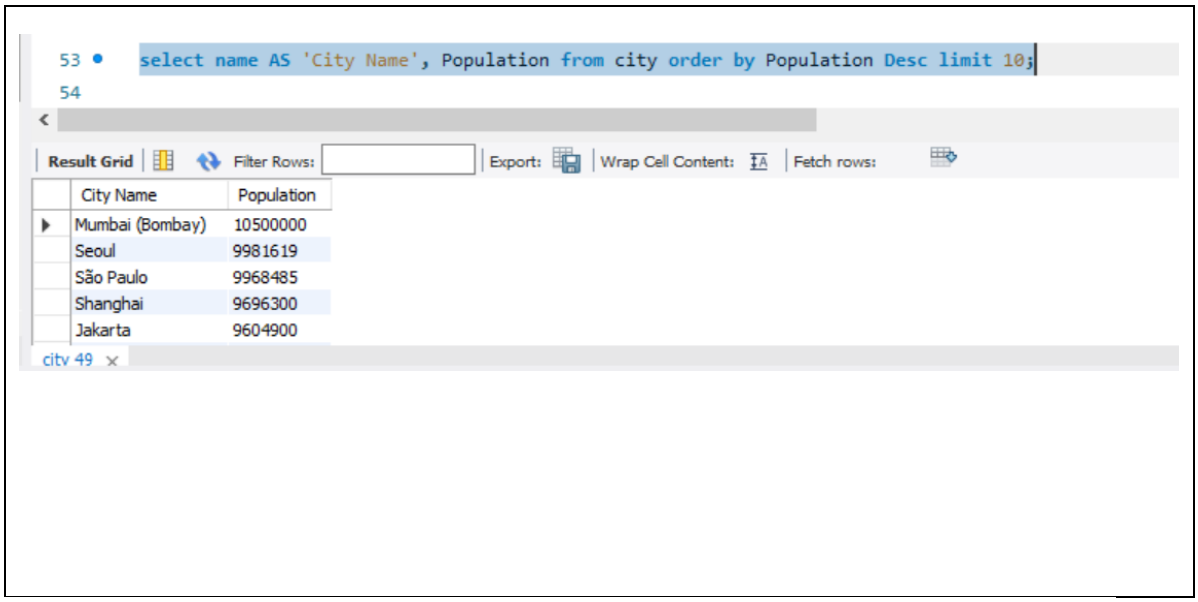
3. **"New Year Promotion: Featuring Cities with 'New :** *Scenario:* In anticipation of the upcoming New Year, your travel agency is gearing up for a special promotion featuring cities with names including the word 'New'. You're tasked with swiftly compiling a list of all cities from around the world. This curated selection will be essential in creating promotional materials and enticing travellers with exciting destinations to kick off the New Year in style.

```
53 •  select Name from city where Name like 'new%';
54
```

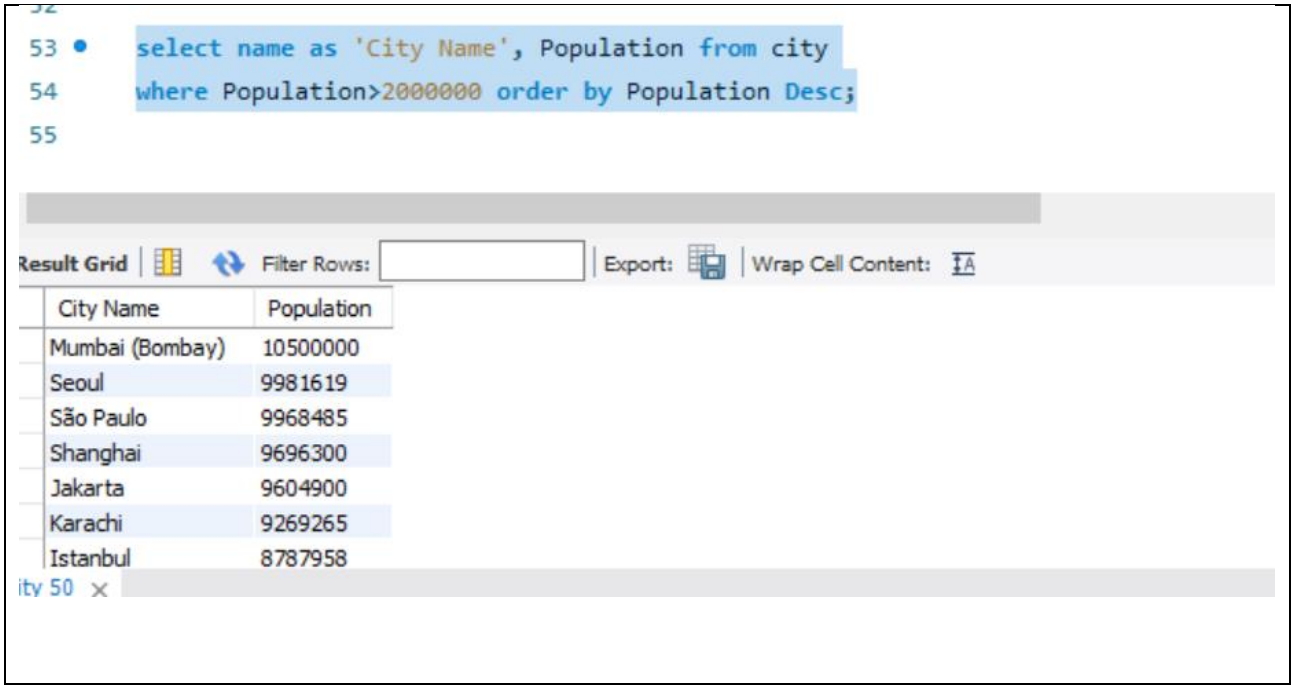
Result Grid | Filter Rows: | Export: | Wrap Cell Content:

Name
Newcastle
Newcastle upon Tyne
Newport
Newcastle
New Bombay

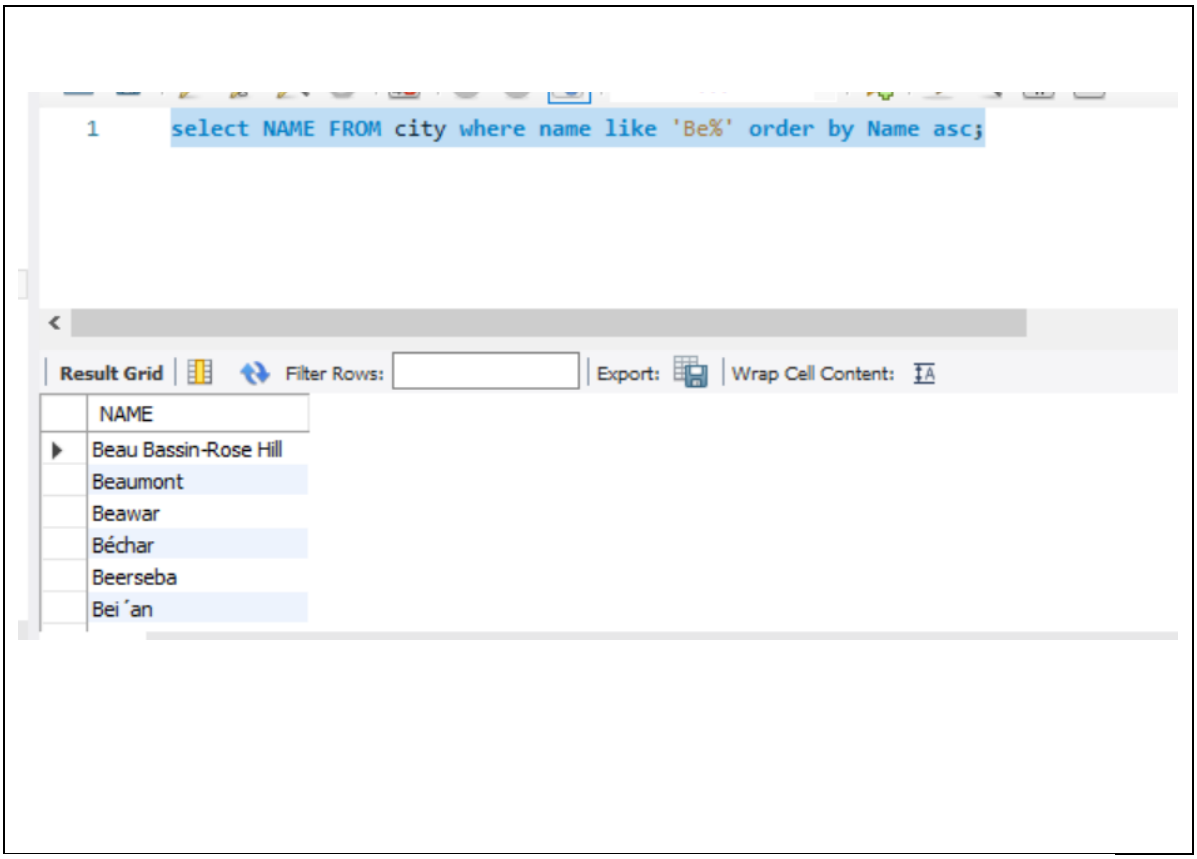
4. **Display Columns with Limit (First 10 Rows):** *Scenario:* You're tasked with providing a brief overview of the most populous cities in the world. To keep the report concise, you're instructed to list only the first 10 cities by population from the database.



5. **Cities with Population Larger than 2,000,000:** *Scenario:* A real estate developer is interested in cities with substantial population sizes for potential investment opportunities. You're tasked with identifying cities from the database with populations exceeding 2 million to focus their research efforts.



6. **Cities Beginning with 'Be' Prefix:** *Scenario:* A travel blogger is planning a series of articles featuring cities with unique names. You're tasked with compiling a list of cities from the database that start with the prefix 'Be' to assist in the blogger's content creation process.



7. **Cities with Population Between 500,000-1,000,000:** *Scenario:* An urban planning committee needs to identify mid-sized cities suitable for infrastructure development projects. You're tasked with identifying cities with populations ranging between 500,000 and 1 million to inform their decision-making process.

```
3 •  select name as 'City Name', Population
4    from city where Population between 500000 and 1000000 order by Population desc;
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

City Name	Population
Amman	1000000
Mogadishu	997000
Volgograd	993400
Sendai	989975
Peshawar	988005

city 3

8. **Display Cities Sorted by Name in Ascending Order:** *Scenario:* A geography teacher is preparing a lesson on alphabetical order using city names. You're tasked with providing a sorted list of cities from the database in ascending order by name to support the lesson plan.

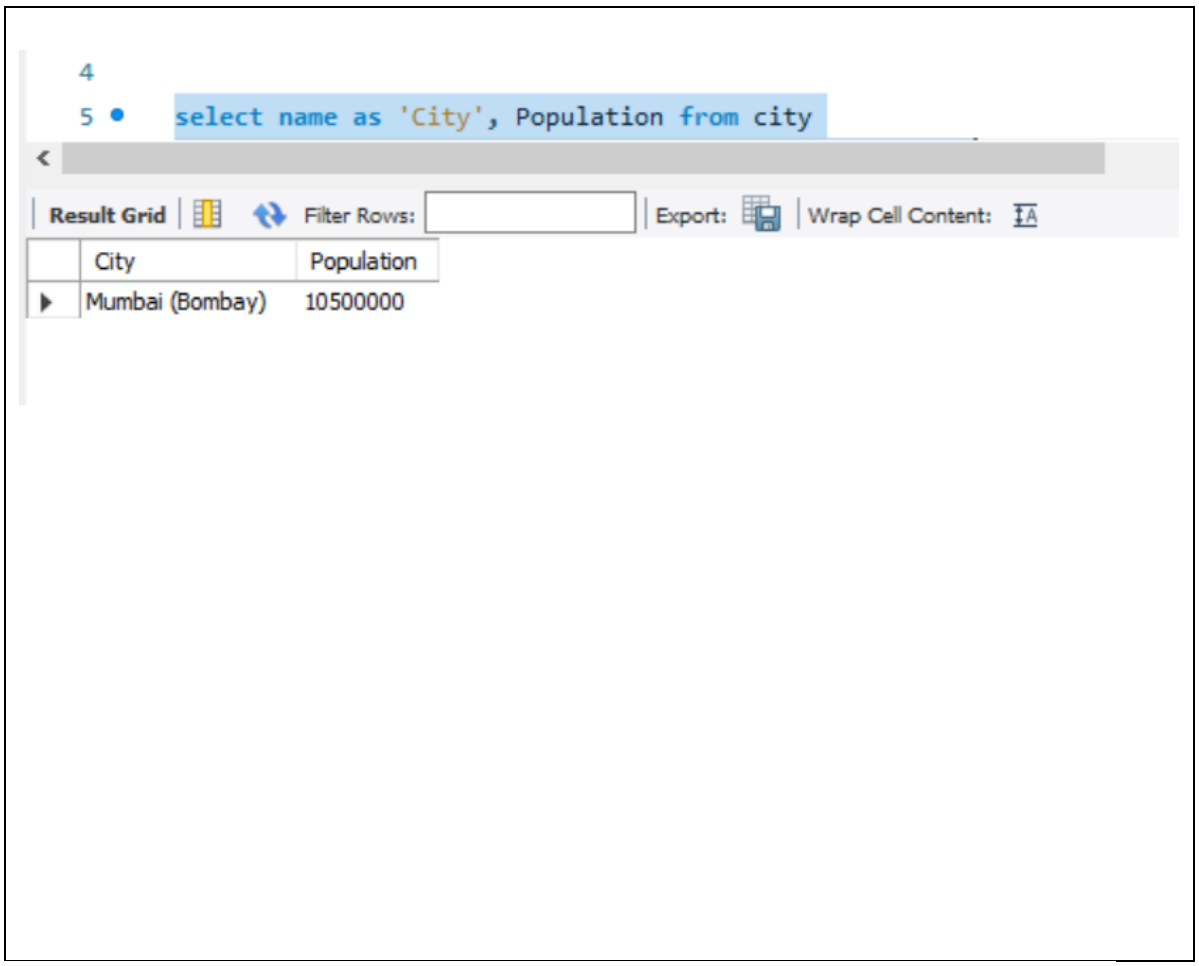
```
3 •  select * from city order by name asc;
```

Result Grid | Filter Rows: | Edit: | Export/Import: | Wrap Cell Content: | Fetch rows:

ID	Name	CountryCode	District	Population
698	[San Cristóbal de] la Laguna	ESP	Canary Islands	127945
20	´s-Hertogenbosch	NLD	Noord-Brabant	129170
670	A Coruña (La Coruña)	ESP	Galicia	243402
3097	Aachen	DEU	Nordrhein-Westfalen	243825
3318	Aalborg	DNK	Nordjylland	161161
2760	Aba	NGA	Imo & Abia	298900

city 4

9. **Most Populated City:** *Scenario:* A real estate investment firm is interested in cities with significant population densities for potential development projects. You're tasked with identifying the most populated city from the database to guide their investment decisions and strategic planning.



10. **City Name Frequency Analysis: Supporting Geography Education**
Scenario: In a geography class, students are learning about the distribution of city names around the world. The teacher, in preparation for a lesson on city name frequencies, wants to provide students with a list of unique city names sorted alphabetically, along with their respective counts of occurrences in the database. You're tasked with this sorted list to support the geography teacher.

```
5 •  SELECT name AS 'City', COUNT(*) AS 'Occurences_of_Name' FROM city GROUP BY name ORDER BY count(*) DESC;
```

esult Grid | Filter Rows: | Export: | Wrap Cell Content: | Fetch rows:

City	Occurences_of_Name
Richmond	3
Valencia	3
León	3
Victoria	3
Jining	2

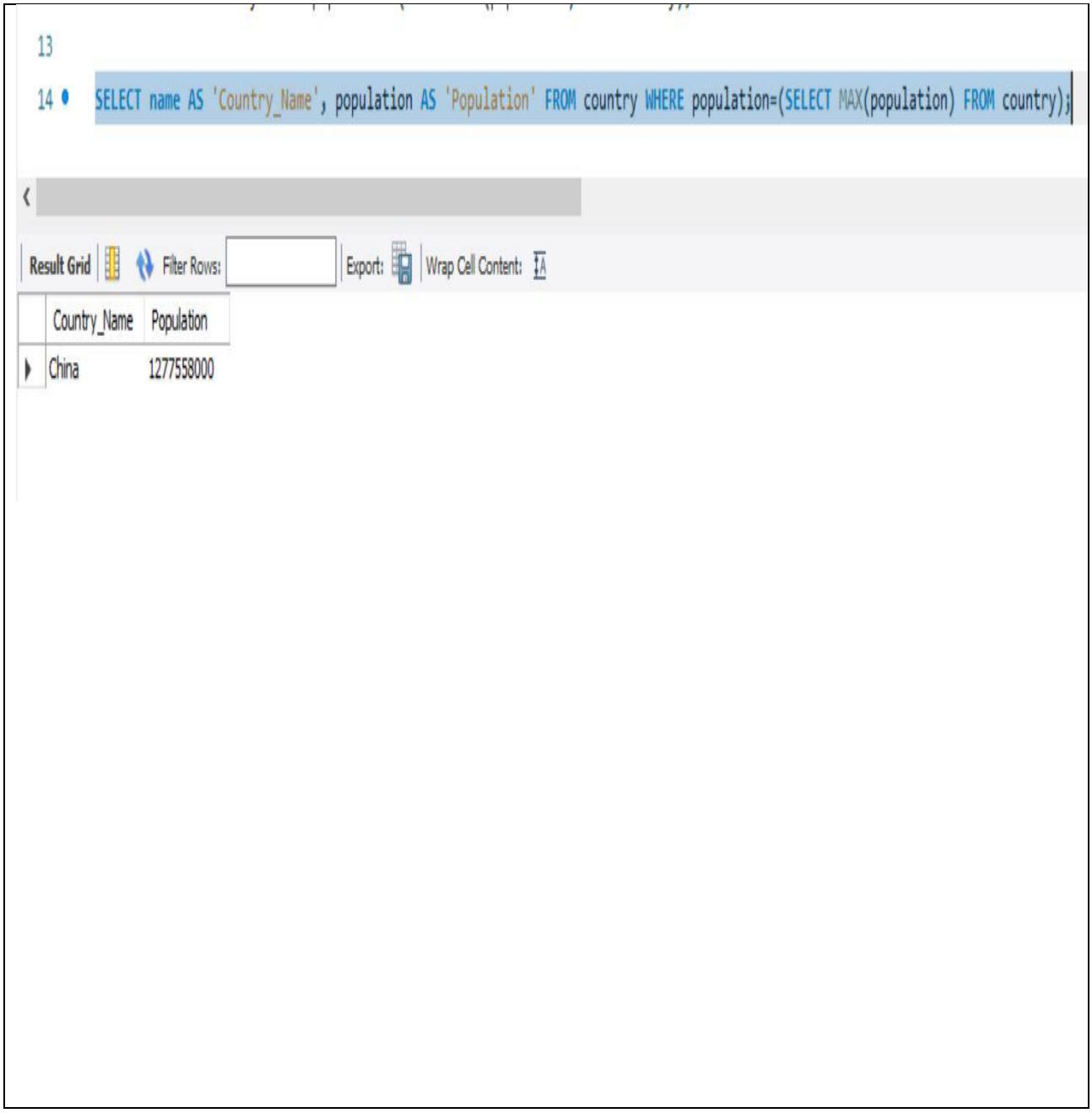
11. **City with the Lowest Population:** *Scenario:* A census bureau is conducting an analysis of urban population distribution. You're tasked with identifying the city with the lowest population from the database to provide a comprehensive overview of demographic trends.

```
8
9 •  SELECT * FROM city WHERE population=(SELECT min(population) FROM city);
```

sult Grid | Filter Rows: | Edit: | Export/Import: | Wrap Cell

ID	Name	CountryCode	District	Population
2912	Adamstown	PCN	–	42
NULL	NULL	NULL	NULL	NULL

12. **Country with Largest Population:** *Scenario:* A global economic research institute requires data on countries with the largest populations for a comprehensive analysis. You're tasked with identifying the country with the highest population from the database to provide valuable insights into demographic trends.

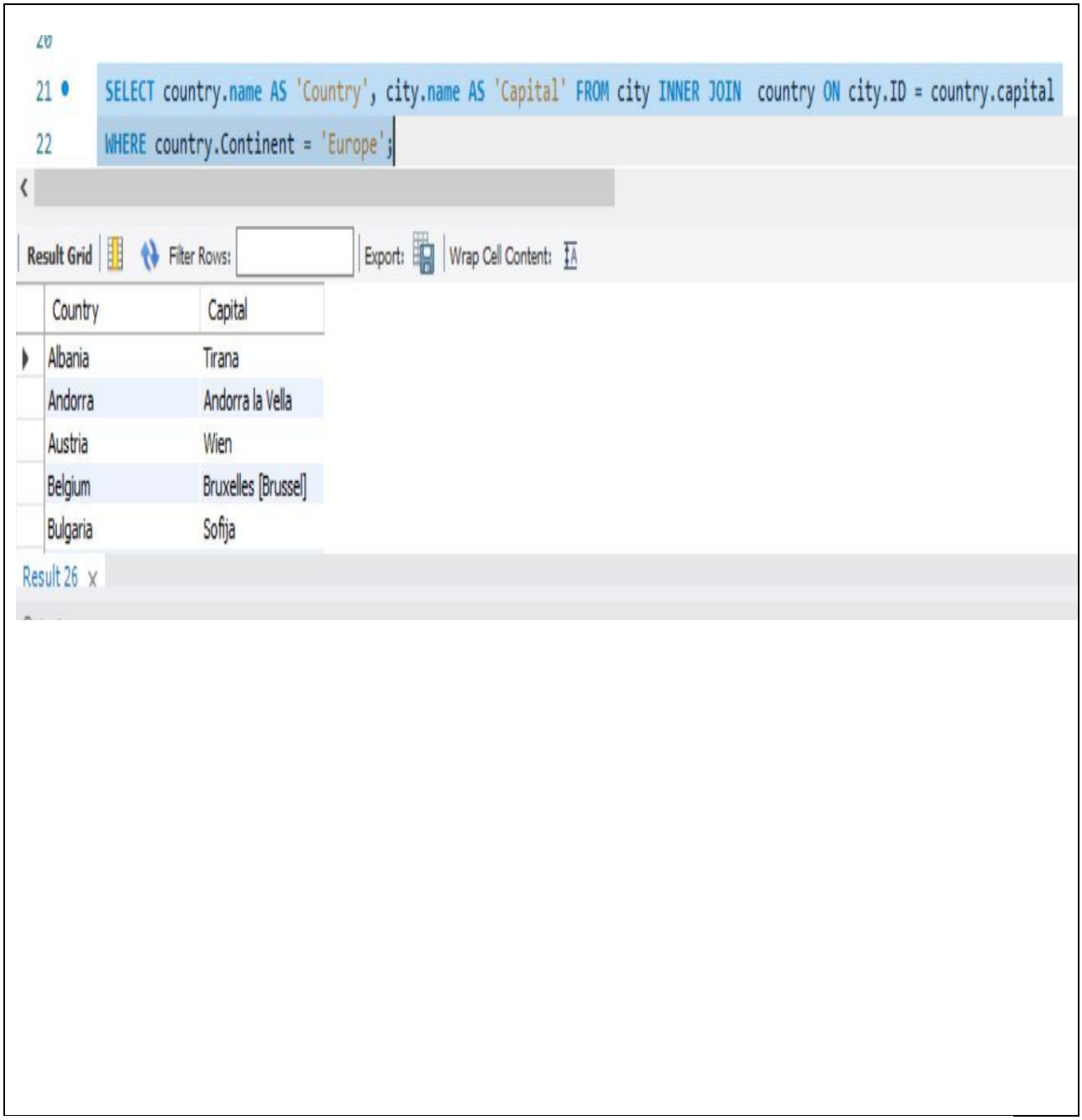


13. **Capital of Spain:** *Scenario:* A travel agency is organising tours across Europe and needs accurate information on capital cities. You're tasked with identifying the capital of Spain from the database to ensure itinerary accuracy and provide travellers with essential destination information.

```
18 •  SELECT country.name AS 'Country', city.name AS 'Capital' FROM city INNER JOIN  country ON city.ID = country.capital
19    WHERE country.name = 'Spain'
```

Country	Capital
Spain	Madrid

14. **Cities in Europe:** *Scenario:* A European cultural exchange program is seeking to connect students with cities across the continent. You're tasked with compiling a list of cities located in Europe from the database to facilitate program planning and student engagement.



15. **Pecentage Population by Country:** *Scenario:* A demographic research team is conducting a comparative analysis of population distributions across countries. You're tasked with calculating the average population for each country from the database to provide valuable insights into global population trends.

```
47
48 •  SELECT name AS Country, CONCAT(round(population * 100.0 / (SELECT SUM(population) FROM country), 2), '%')
49     AS Percentage_of_Global_Population
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

Country	Percentage_of_Global_Population
China	21.02%
India	16.68%
United States	4.58%
Indonesia	3.49%
Brazil	2.80%

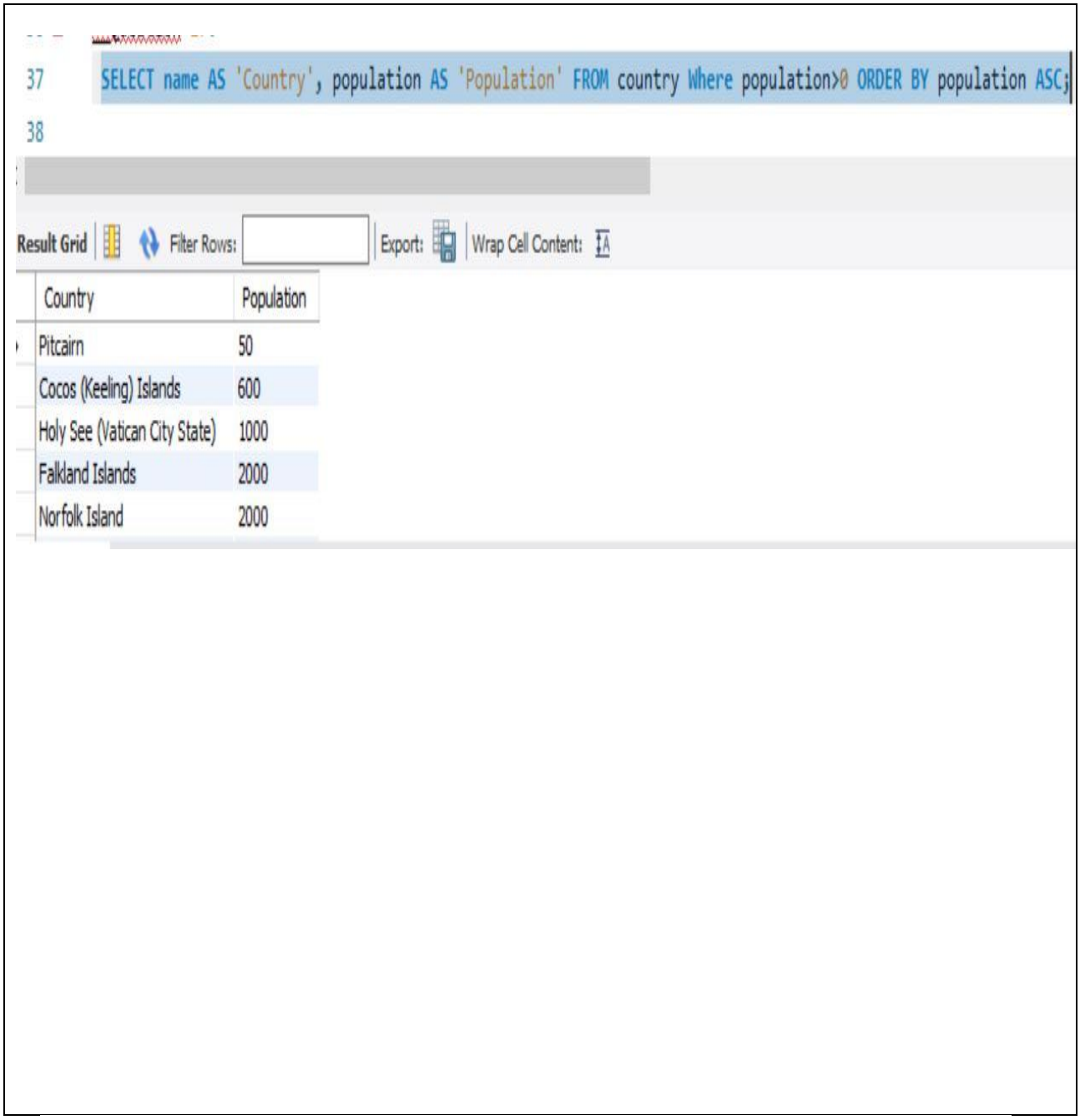
16. **Capital Cities Population Comparison:** *Scenario:* A statistical analysis firm is examining population distributions between capital cities worldwide. You're tasked with comparing the populations of capital cities from different countries to identify trends and patterns in urban demographics.

```
32
33 • SELECT Country.Name AS Country, City.Name AS City, City.Population FROM City INNER JOIN Country ON City.ID = Country.Capital
34   ORDER BY population DESC;
```

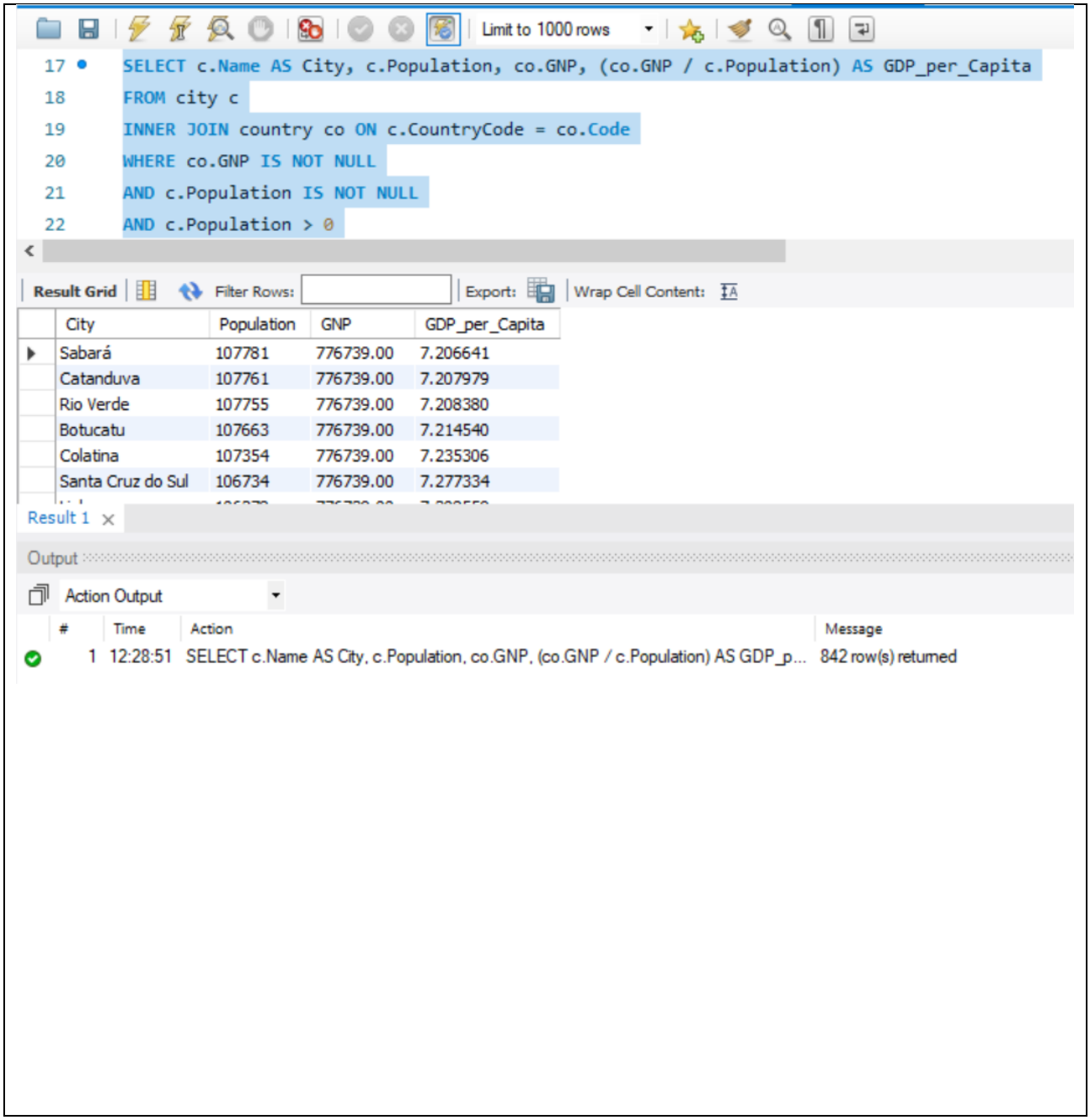
Result Grid | Filter Rows: | Export: | Wrap Cell Content:

Country	City	Population
South Korea	Seoul	9981619
Indonesia	Jakarta	9604900
Mexico	Ciudad de México	8591309
Russian Federation	Moscow	8389200
Japan	Tokyo	7980230

17. **Countries with Low Population Density:** *Scenario:* An agricultural research institute is studying countries with low population densities for potential agricultural development projects. You're tasked with identifying countries with sparse populations from the database to support the institute's research efforts.



18. **Cities with High GDP per Capita:** *Scenario:* An economic consulting firm is analysing cities with high GDP per capita for investment opportunities. You're tasked with identifying cities with above-average GDP per capita from the database to assist the firm in identifying potential investment destinations.



```
SELECT c.Name AS City, c.Population, co.GNP, (co.GNP / c.Population) AS GDP_per_Capita
FROM city c
INNER JOIN country co ON c.CountryCode = co.Code
WHERE co.GNP IS NOT NULL
AND c.Population IS NOT NULL
AND c.Population > 0
```

Limit to 1000 rows

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

City	Population	GNP	GDP_per_Capita
Sabará	107781	776739.00	7.206641
Catanduva	107761	776739.00	7.207979
Rio Verde	107755	776739.00	7.208380
Botucatu	107663	776739.00	7.214540
Colatina	107354	776739.00	7.235306
Santa Cruz do Sul	106734	776739.00	7.277334

Result 1

Output

Action Output

#	Time	Action	Message
1	12:28:51	SELECT c.Name AS City, c.Population, co.GNP, (co.GNP / c.Population) AS GDP_p...	842 row(s) returned

19. **Display Columns with Limit (Rows 31-40):** *Scenario:* A market research firm requires detailed information on cities beyond the top rankings for a comprehensive analysis. You're tasked with providing data on cities ranked between 31st and 40th by population to ensure a thorough understanding of urban demographics.

```
41
42  SELECT ROW_NUMBER() OVER (ORDER BY City.Population DESC) AS 'Row_Number', Country.Name AS Country, City.Name AS City,City.Population
43  FROM City
44  INNER JOIN Country ON City.ID = Country.Capital
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

Row_Number	Country	City	Population
31	Algeria	Alger	2168000
32	France	Paris	2125246
33	Uzbekistan	Toskent	2117500
34	Angola	Luanda	2022000
35	Romania	Bucuresti	2016131