[DOCUMENT TITLE]

[Document subtitle]

[DATE]

[COMPANY NAME]

[Company address]

Info to be deleted by you afterwards:

There are four parts to this Assignment. Please update the cover page and table of contents as you see fit. Include screenshots of the outcome of your queries.

Contents

Task1 – MySQL Part 1:

Read from PPT for this task first.

(Done)

Task 2 – My SQL Part 2:

Read from PPT for this task first.

DONE

Tasks

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.

**REPEATED*

```
17 •  select COUNT(city.name)
18    from country
19    join city
20    ON country.code = city.countrycode
21    WHERE country.name = 'United States'
22    ;
```

100% 36:21

Result Grid | Filter Rows: Search | Export:

COUNT(city.name)
274

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 prioritizing healthcare resources and interventions.

**REPEATED*

Page 13 Task 3

Which country has highest life expectancy?

```
32    -- Task 3
33    -- Which country has highest life expectancy?
34 •  select code, name, LifeExpectancy
35    from country
36    ORDER BY LifeExpectancy DESC
37    Limit 1;
38
```

100% 8:37

Result Grid | Filter Rows: Search | Export: Fet

code	name	LifeExpectancy
AND	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.

```
28    -- Task 3 - New Year Promotion
29    -- All cities with the word 'NEW" in it
30
31 •  select* from city
32    WHERE name LIKE '%New%'
33    ;
34    -- Got 14 rows. Sure they dont want Khanewal...hmm Do they want Newcastle? One word?
35    -- Just the word New space or Space New. Got 8 hits. Missed Newcastle etc
36 •  select* from city
37    WHERE name LIKE '%New %'
38    OR name LIKE '% New%'
39    ;
40    -- This will capture all Newcastles and Newarks, and second word New and first word New.
41 •  select* from city
42    WHERE name LIKE 'New%'
43    OR name LIKE '% New%'
44    ;
45
```

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.

```
47    -- Task 4 - 10 most populated cities
48 •  select*
49    from city
50    order by Population desc
51    Limit 10;
52
53
100%   37:47
```

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.

*** REPEATED**

Page 16 Task 6

```
56    -- Task 6
57 •  select ID, Name, Population
58    from city
59    where Population > 2000000
60    ;
61
```

100% 2:60

Result Grid Filter Rows: Search

ID	Name	Population
69	Buenos Aires	2982146
130	Sydney	3276207
131	Melbourne	2865329
150	Dhaka	3612850

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.

*** REPEATED ***

Page 17 Task 7

```
61    -- Task 7
62    -- City names with 'Be' but eye balling it I saw Be and Be^ accent e.
63    -- Just ran 'B%' first. Ok, can see few types of be
64    -- Now run multiple where to capture all
65    -- Ah, no need, BE captures accent e too. i.e Bechar and Benguela. yolo
66    select *
67    from city
68    WHERE name LIKE 'Be%'
69    ;
```

100% 68:65

Result Grid | Filter Rows: Search | Edit: | Export/Import:

ID	Name	CountryCode	District	Population
45	Béjaïa	DZA	Béjaïa	117162
49	Béchar	DZA	Béchar	107311
59	Benguela	AGO	Benguela	128300
93	Berazategui	ARG	Buenos Aires	276916

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.

*** REPEATED***

Page 18 Task 8

301 with Two WHERE, 303 with WHERE BETWEEN. Fun!

```
-- Task 8
-- Pop between 500,000 and 1,000,000
-- Not sure if its between or two where , so checkcing the difference first.
-- BETWEEN gave me 303, Two WHERE gave me 301. Hmm investigate
-- Order by limit 5 then DSC limit 5. See which ones are different
-- Order by and limit, didnt work. So googled it.
-- Between is inclusive i.e 500,000 =< and >= 1,000,000 whereas WHERE is > and <.
-- So made a query, ran it. This tells you the difference between WHERE and BETWEEN. BOOM! it was Amman and Pointe-Noire
            /*select ID, Name, Population
            from city
            where Population = 500000
            or population = 1000000
            ;
            */

select ID, Name, Population
from city
where Population between 500000 AND 1000000
Order by Population
;
select ID, Name, Population
from city
where Population > 500000
AND population < 1000000
Order by Population
;
```

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.

```
-- Task 8 Sort citys ascending order
select* from city
Order by name;
```

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.

```
61    -- Task 9 Most Populated city
62 •  select*from city order by population desc limit 1;
63
```

100% 50:62

Result Grid Filter Rows: Search Edit:

ID	Name	CountryCode	District	Population
1024	Mumbai (Bombay)	IND	Maharashtra	10500000
NULL	NULL	NULL	NULL	NULL

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's l

```
64    -- Task 10 Frequency of City names
65    -- Explore tables
66 •  select*
67    from city
68    where name like 'San%'
69    order by name ;
70    -- Checked some San Jose and San Juan, makes sense.
71 •  select count(name), name
72    from city
73    Group by name
74    order by count(name) desc
75    ;
76
```

100% 53:70

Result Grid | Filter Rows: Search | Export:

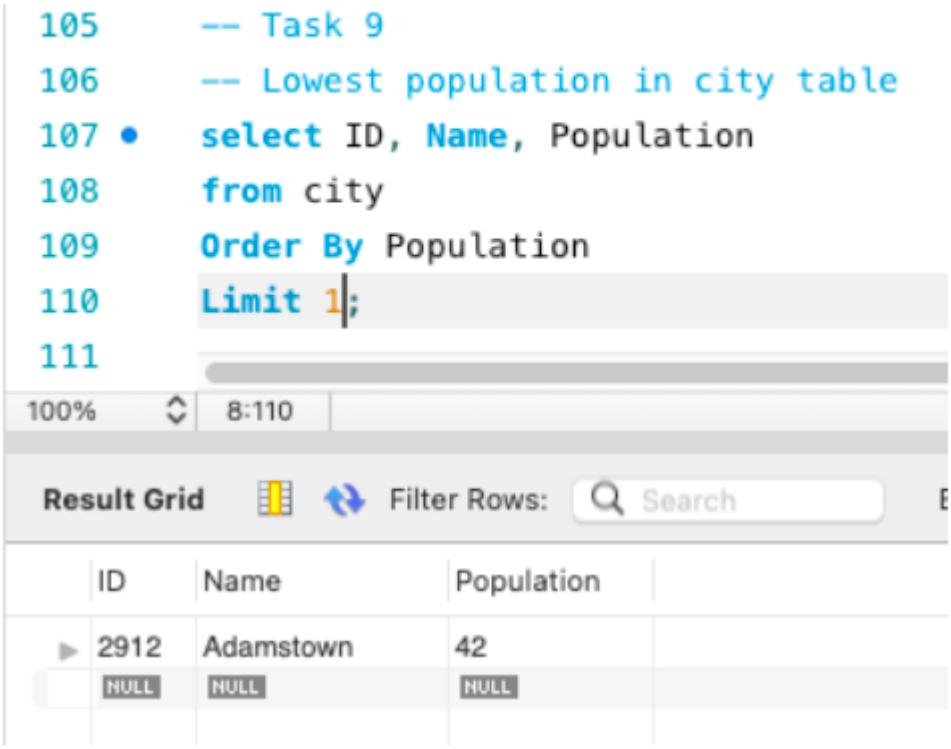
count(name)	name
4	San José
3	Córdoba
3	San Miguel
3	San Fernando

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.

**** REPEATED***

Page 19 Task 9

Lowest population in city table



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.

```
78    -- Task 12 Country largest Population
79 •  select*
80    from country
81    ORDER BY population desc
82    LIMIT 1
83    ;
```

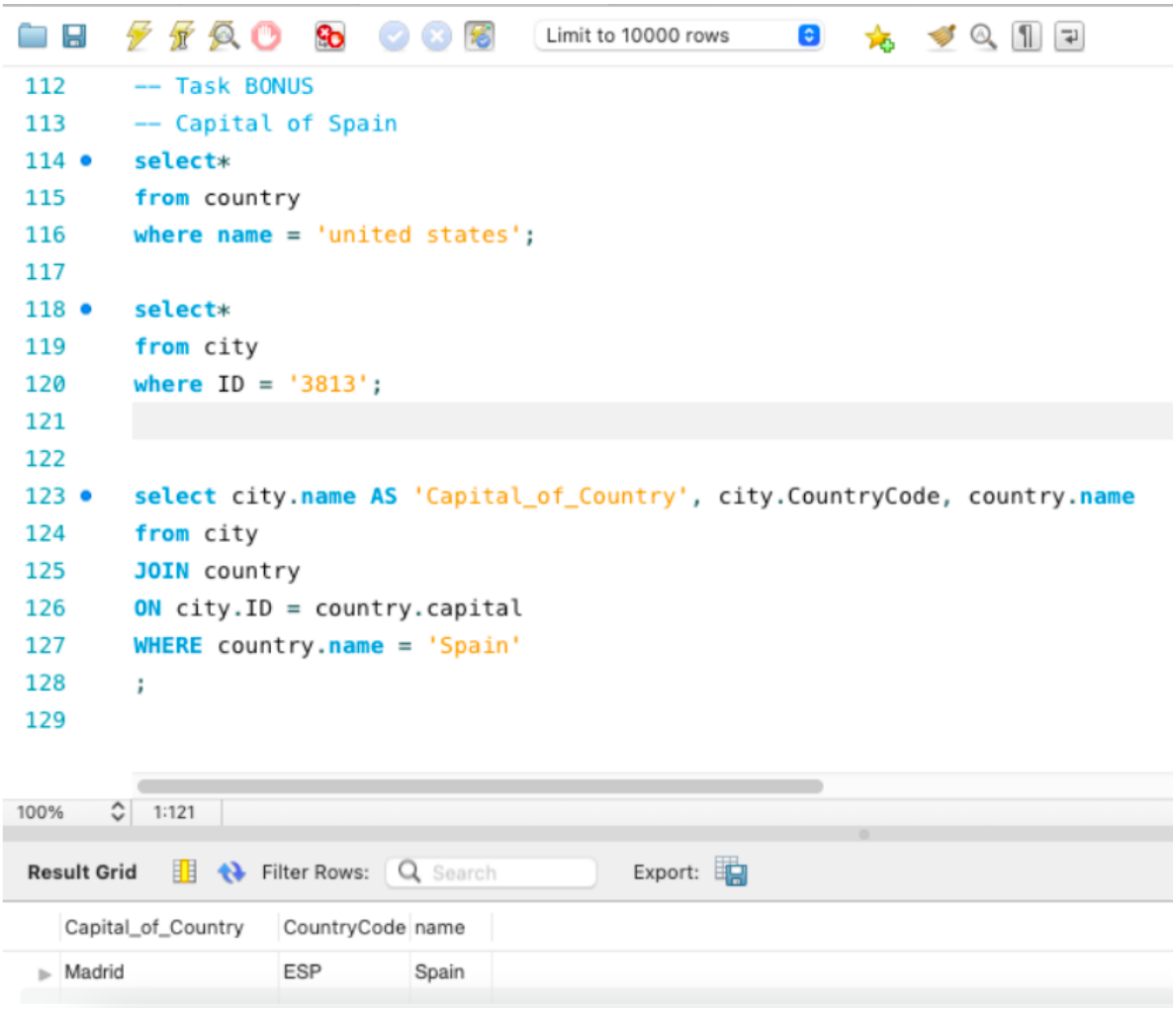
100% 1:82

Result Grid | Filter Rows: Search | Edit: | Export/Import:

Code	Name	Continent	Region	SurfaceArea	IndepYear	Population
CHN	China	Asia	Eastern Asia	9572900.00	-1523	1277558000
NULL	NULL	NULL	NULL	NULL	NULL	NULL

13. **Capital of Spain:** *Scenario:* A travel agency is organizing 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.

*** REPEATED***



14. **Country with Highest Life Expectancy:** *Scenario:* A healthcare foundation is conducting research on global health indicators. You're tasked with identifying the country with the highest life expectancy from the database to inform their efforts in improving healthcare systems and policies.

**** REPEATED***

Page 13 Task 3

Which country has highest life expectancy?

```
32    -- Task 3
33    -- Which country has highest life expectancy?
34 •  select code, name, LifeExpectancy
35    from country
36    ORDER BY LifeExpectancy DESC
37    Limit 1;
38
```

100% 8:37

Result Grid Filter Rows: Search Export: Fet

code	name	LifeExpectancy
AND	Andorra	83.5

15. **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.

*** REPEATED***

All cities in European Continent

```
157    -- Page 20 Bonus 3
158    -- All cities in Europe continent
159    -- Exploring tables, select* from country; select* from city;
160    -- found search and result columns; Country.Continent and city.name
161    -- Will only join on city.countrycode and country.code
162
163 •  select city.countrycode, city.name AS 'CityName', country.continent
164    from country
165    join city
166    ON country.code = city.countrycode
167    WHERE country.continent = 'Europe';
168
169
```

100% 5:160

Result Grid Filter Rows: Search Export:

countrycode	CityName	continent
BLR	Pinsk	Europe
BLR	Orša	Europe
BLR	Mozyr	Europe

16. **Average 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.

```
-- Task 16 - Average Population by country
-- Feels like I'm missing something, why so easy?
select Name, LifeExpectancy from country;
```

17. **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.

```
90    -- Task 17 - Capital cities' population comparison
91    -- No one table has 'capital city'. The city table has cities.
92    -- The country table has a column called 'Capital'. it can be null.
93    -- Explore tables
94 •  select* from city;
95 •  select* from country;
96    -- ID in City and Capital in Country table are keys
97    -- Figure out the joins first.
98    -- Worried about Capital being null. Messing with left join and order of tables.
99 •  Select *
100   from country
101   left join city
102   ON city.ID = country.Capital
103   ;
104   -- Join works, now re-lable confusing column headings
105 •  Select
106   city.name AS 'Capital City',
107   country.name AS 'Country',
108   city.Population AS 'Population of City',
109   country.population AS 'Population of Country'
110   from country
111   left join city
112   ON city.ID = country.Capital
113   ;
114
115
```

100% 1:109

Result Grid | Filter Rows: Search | Export:

Capital City	Country	Population of City	Population of Country
Fagatogo	American Samoa	2323	68000
NULL	Antarctica	NULL	0

Result 63

Action Output

	Time	Action	Response
69	23:33:45	Select city.name AS 'Capital City', country.name AS 'Country', city.Pop...	239 row(s) returned

18. **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.

```
-- TASK 18 - Countries with Low Population Density
-- Agricultural, low density is population/surface area
select* from country; -- Nothing specific about agriculture land. Just surface area
-- Explore REAL vs interger stuff first
-- SA is decimal and Population is int
select name, SurfaceArea, population, population/surfacearea
from country
WHERE name = 'Albania';
-- Checked above that 28,748.00 (number) divided by 3,401,200 (int) results in 118.3108.
-- No need for CAST or *1.0 etc. YOLO. Onwards!

select name, SurfaceArea, population, population/surfacearea as 'Population Density'
from country
Order by 4;
```

100% 85:127

Result Grid Filter Rows: Search Export:

name	SurfaceArea	population	Population Dens...
Antarctica	13120000.00	0	0.0000
French Southern territories	7780.00	0	0.0000
Bouvet Island	59.00	0	0.0000
Heard Island and McDonald Islands	359.00	0	0.0000
British Indian Ocean Territory	78.00	0	0.0000
South Georgia and the South Sandwich Islands	3903.00	0	0.0000
United States Minor Outlying Islands	16.00	0	0.0000
Greenland	2166090.00	56000	0.0259
Svalbard and Jan Mayen	62422.00	3200	0.0513
Falkland Islands	12173.00	2000	0.1643
Pitcairn	49.00	50	1.0204
Western Sahara	266000.00	293000	1.1015
Mongolia	1566500.00	2662000	1.6993
French Guiana	90000.00	181000	2.0111

BONUS TASKS: Challenge yourself: These are optional tasks. Feel free to skip.

19. **Cities with High GDP per Capita:** *Scenario:* An economic consulting firm is analyzing 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.

-- BONUS TIME!

--

-- TASK 19 Cities with High GDP per capita

```
-- Explore tables. City has population, but not GDP/GNP
select* from country; -- 239 countries
select* from city; -- 4079 cities
-- CountyCode in City table maps to Code in Country table.
select*
from city
JOIN country
ON city.countrycode = country.Code;

-- Time for better column names and only the ones we need

select
city.name AS 'CityName',
city.population AS 'Population_of_City',
country.name AS 'Country',
country.GNP AS 'GNP of Country',
country.population as 'Country Population'

from city
JOIN country
ON city.countrycode = country.Code;
-- How to allocation GDP to City?
-- GNP 500. Total Pop=12. City1pop= 2. City2pop = 8.
-- GNP per capita 500/12 = 41.67
```

-- City 1 has (2/12) or 17% of the population.

-- Now im stuck. As 17% of GDP is 83.3. But dividing that back by the city pop, gets you exactly Country GDP

```
WITH  TempTable AS
(select
city.name AS 'CityName',
city.population AS 'Population_of_City',
country.name AS 'Country',
country.GNP AS 'GNP_of_Country',
country.population as 'Country_Population'

from city
JOIN country
ON city.countrycode = country.Code
-- WHERE country.name = 'Afghanistan'
)
SELECT
CityName,
(Population_of_city/Country_Population) *GNP_of_Country AS 'CityEstimatedGNP',
GNP_of_country/Country_population as 'GNPperCapita',
GNP_of_Country,
```

```
Population_of_city,

Country_population

from temptable

Order by 2 desc;
```

20. **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.

```
190    -- Task 20 Show cities in specific range of Rows
191    -- Show 31st to 40th by ranked by population
192    -- Rank 1 is highest population city btw
193 •  select* from city
194    Order by Population desc
195    -- LIMIT 2 OFFSET 3;
196    LIMIT 10 OFFSET 30;
197
```

100% 41:192

Result Grid Filter Rows: Search Edit: Export/I

ID	Name	CountryCode	District	Population
1896	Shenyang	CHN	Liaoning	4265200
1897	Kanton [Guangzhou]	CHN	Guangdong	4256300
3208	Singapore	SGP	–	4017733
3769	Ho Chi Minh City	VNM	Ho Chi Minh City	3980000
1027	Chennai (Madras)	IND	Tamil Nadu	3841396
2332	Pusan	KOR	Pusan	3804522
3794	Los Angeles	USA	California	3694820
150	Dhaka	BGD	Dhaka	3612850
3068	Berlin	DEU	Berliini	3386667
2710	Rangoon (Yangon)	MMR	Rangoon [Yangon]	3361700
NULL	NULL	NULL	NULL	NULL

Task 3 – Interview Part 1:

Read from PPT for this task first.

Task 4 – Interview questions Part 2:

Read from PPT for this task first.