Information and Database Management Systems I

(CIS 4301 UF Online)

Fall 2019

Instructor: Dr. Markus Schneider

Homework 3

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Pledge (Must be signed according to UF Honor Code)

On my honor, I have neither given nor received unauthorized aid in doing this assignment.

_____

Signature

For scoring use only:

	Maximum	Received
Exercise 1	85	
Exercise 2	15	
Total	100	

Exercise 1 (SQL Queries) [85 points]

We are given a geostatistical database about countries, continents, rivers, etc. The following information is available in Canvas together with this homework assignment for download:

- An ER diagram of the geostatistical database in PDF format (*HW3Ex1-geostatistical-database-ER-diagram.pdf*).
- An informal description of the database schema in PDF format (*HW3Ex1-geostatistical-database-schema-explanation.pdf*).
- A text file that contains *create table* commands to create the database schema (*HW3Ex1-geostatistical-database-schema.sql*).
- A text file hat contains *insert* commands for about 47,800 tuples to fill the database tables (*HW3Ex1-geostatistical-database-input-data.sql*).
- A text file that contains *drop table* commands to delete the database schema and the data in the database (*HW3Ex1-geostatistical-database-drop-tables.sql*).

In a first step, use the CISE Oracle DBMS and the Oracle SQL Developer software to create the database schema and fill the database with data. This will also help you learn about the system environment for your group project. In particular, the use of MySQL, PostgreSQL, and other database systems is not allowed.

In a second step, look at the database schema in the file *HW3Ex1-geostatistical-database-schema.sql*. From lines 38 to 52 you will find the following lines:

```
ALTER TABLE Country
  ADD CONSTRAINT FK_CountryREFCity
  FOREIGN KEY (Code, Capital, Province)
  REFERENCES City(Country, Name, Province)
  INITIALLY DEFERRED DEFERRABLE;

ALTER TABLE City
  ADD CONSTRAINT FK_CityREFProvince
  FOREIGN KEY (Country, Province)
  REFERENCES Province(Country, Name)
  INITIALLY DEFERRED DEFERRABLE;

ALTER TABLE Province
  ADD CONSTRAINT FK_ProvinceREFCountry
  FOREIGN KEY (Country)
  REFERENCES Country(Code)
  INITIALLY DEFERRED DEFERRABLE;

ALTER TABLE Province
  ADD CONSTRAINT FK_ProvinceREFCity
  FOREIGN KEY (Capital, Country, CapProv)
  REFERENCES City(Name, Country, Province)
  INITIALLY DEFERRED DEFERRABLE;
```

Your task is to explore this scenario by using the Internet. The keywords `INITIALLY DEFERRED DEFERRABLE` are non-standard SQL. They are supported by several database systems such as Oracle and PostgreSQL. Answer the following questions:

1. [4 points] What is the meaning of these keywords?
2. [6 points] Why is the action indicated by the keyword `INITIALLY DEFERRED DEFERRABLE` needed in the scenario above? What is the problem? How is the problem solved?

1. INITIALLY specifies default checking behavior for constraints that are DEFERRABLE. INITIALLY DEFERRED tells Oracle to check the constraint given above at the end of a transaction. INITIALLY DEFERRED DEFERRABLE allows a unique constraint to be defined.
2. The constraints are used to limit the type of data that can be entered into the table. The problem here is that someone could, for instance, enter a city name in the country table when it's not included in the references if a constraint isn't included.

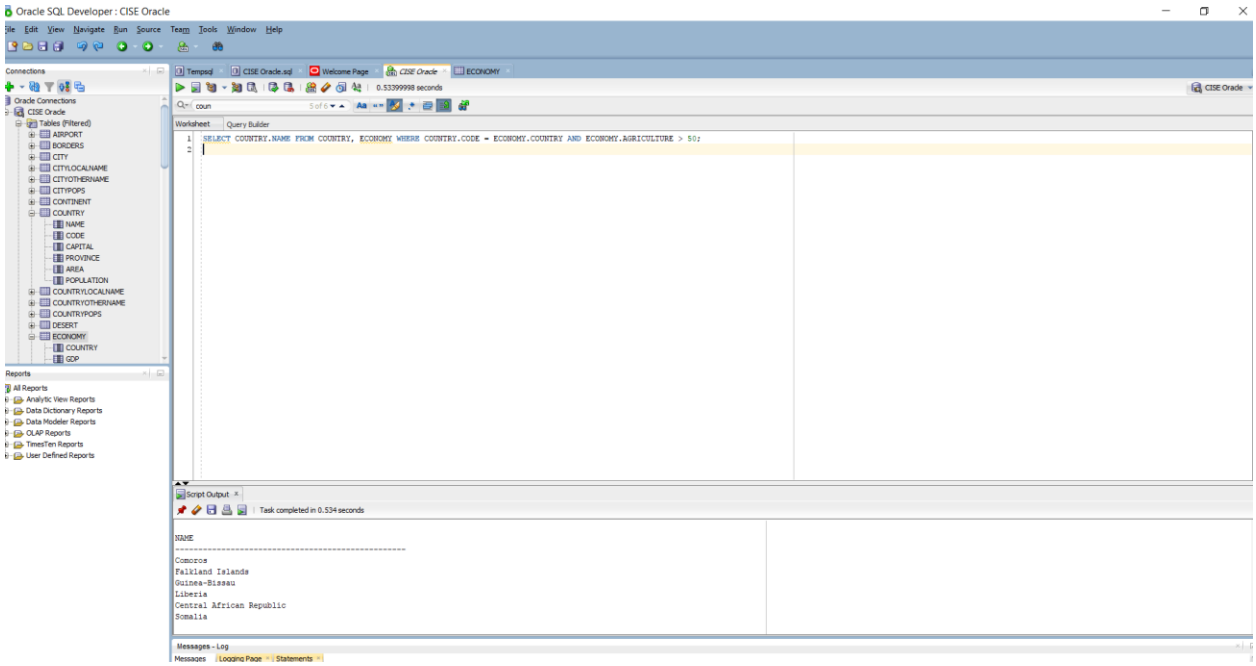
In a third step, write SQL queries for the colloquial queries below and **show the results by providing screenshots for both your SQL queries and query results**. The screenshots must be embedded into the PDF file that contains your solutions to this whole assignment. In order to increase readability, the SQL queries should be written in a structured manner, all SQL keywords should be fully capitalized, and the table and attribute names should be written in the same way as in the schema file.

1. [1 point] Find the names of countries where agriculture takes more than 50% of its gross domestic product (GPD).
2. [3 points] List the top five countries that will have the largest population after five years. [Assume that the population in five years is equal to the population this year * $(1 + \text{growth rate})^5$. The population growth in the database schema is in percentage and should be divided by 100. Use the new attributes *Country*, *Population after 5 years*, and *Rank* for the resulting table schema.
3. [4 points] Find the country c1 that *used to* have the maximum number n1 of countries/areas depending on it. Further, find the country c2 that *now* has the maximum number n2 of countries/areas depending on it. Output c1, n1, c2, n2, and the difference between n1 and n2.

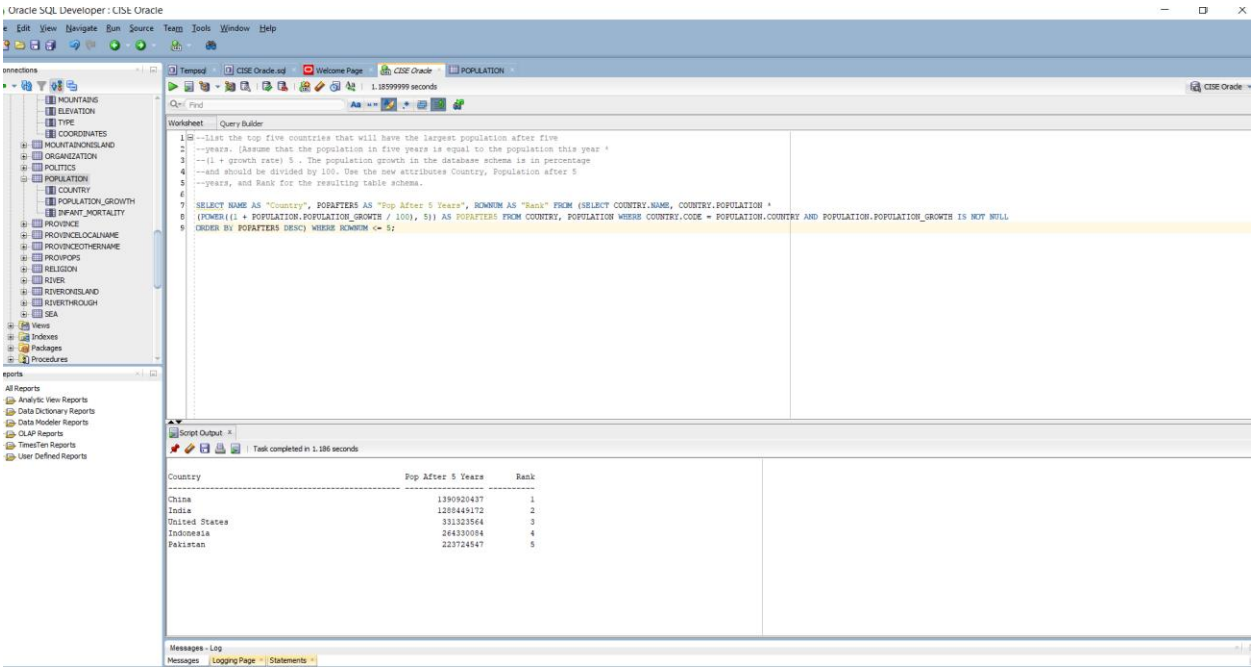
4. [4 points] List the country names that have more than 4 different kinds of religion and at least one religion takes more than 80%.
5. [3 points] Compute the total length of the border that China shares with its neighboring countries.
6. [4 points] Find the top five popular religions and the numbers of their believers in the world.
7. [3 points] Find the names of the lakes in the United States with an elevation that is above the average elevation of all lakes world-wide.
8. [4 points] Find the largest population density (population/area) of provinces that have mountains of the "volcano" type. Output the province name, mountain name, and the population density.
9. [3 points] Find the provinces that are located on more than 2 islands and whose country's GDP is greater than 1000000.
10. [3 points] Find the two longest rivers that flow through at least one lake and that finally flow into the Atlantic Ocean. Output the name and the length of the rivers.
11. [4 points] Determine the names of countries that have more than three rivers and that have lakes next to more than three provinces.
12. [4 points] Find the names of those countries that are bounded by the largest lake.
13. [2 points] Find the height of the highest mountain for each continent.

14. [3 points] Find the countries whose depth of the deepest sea is less than the elevation of the highest mountain. Display the country name, depth of its deepest sea, and the elevation of the highest mountain.
15. [4 points] Find the northernmost cities of each continent (except Asia). Display the names of these cities and their continent. List cities that are northern of other cities in the result table first.
16. [1 point] Find all countries whose capitals have positive latitudes and less than 10000 inhabitants.
17. [4 points] Find what is larger. Is it the sum of the areas of the 10 largest countries (attribute *top10*) or the sum of the areas of the remaining countries (attribute *rest_world*)? What is their difference (attribute *difference*)? Display the values for the attributes *top10*, *rest_world*, and *difference*.
18. [2 points] Find all countries that cross continental boundaries.
19. [2 points] Display each island in Africa and its area if the area is larger than 1000 square kilometers. The output should be in descending order of the size of the areas.
20. [3 points] List the names and GDPs of those countries which are members of the NATO and more than 5 percent of their population are Muslims.
21. [1 point] Find names of rivers which cross at least 12 provinces in the same country.
22. [2 points] Find the name and length of the longest river on the American continent.
23. [3 points] Find the provinces that have the largest number of islands in the world. Output the country code, the province, and the number of islands.
24. [3 points] List the 10 country names (attribute "Country Name") with the highest population density (attribute "Population Density") as well as the percentage of the world population (attribute "Percentage") each one contains.
25. [5 points] List the names of organizations that have only Asian countries as members.

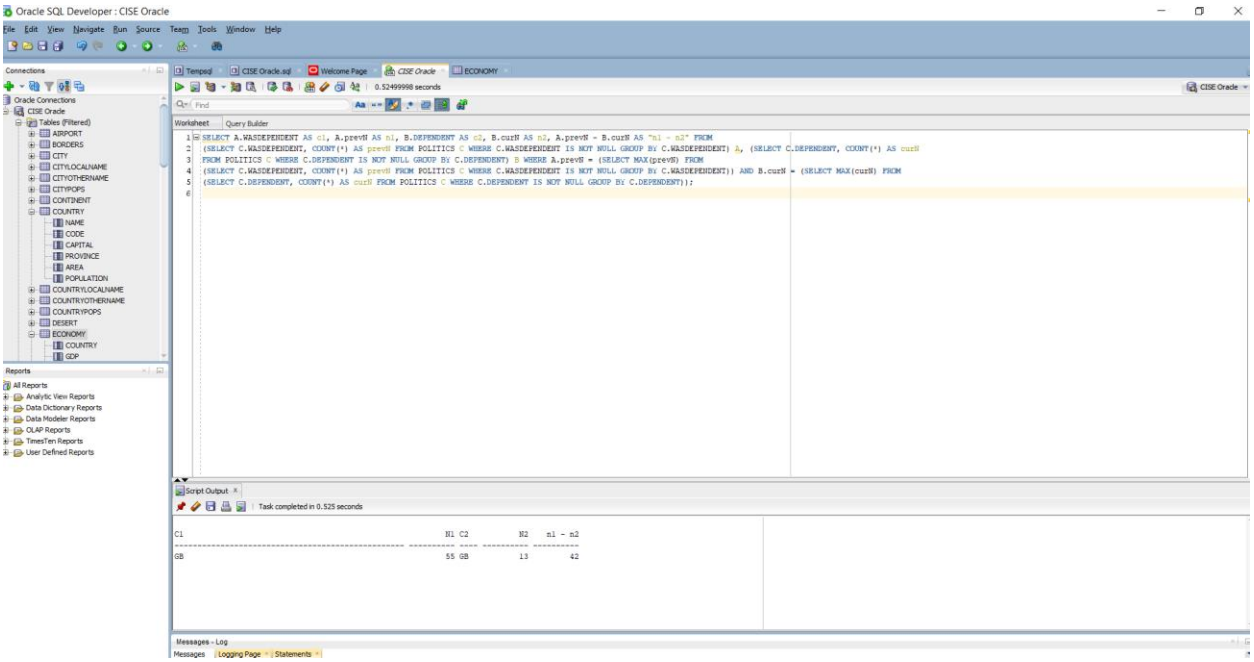
1.



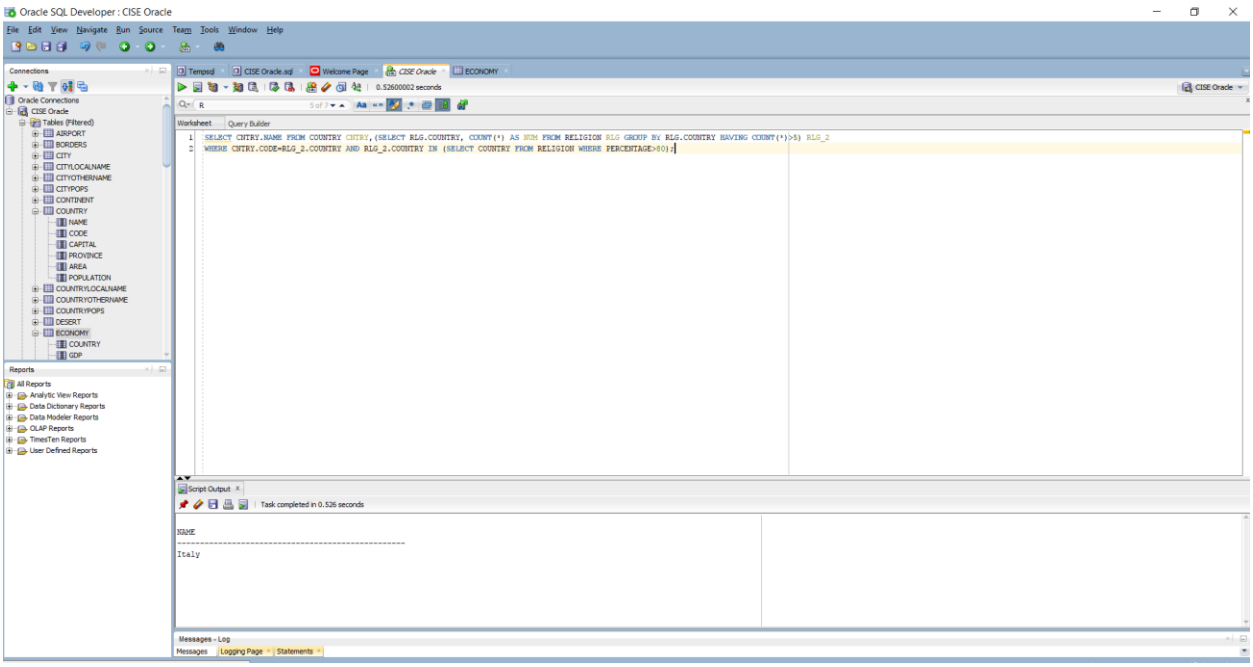
2.


Oracle SQL Developer : CISE Oracle
--List the top five countries that will have the largest population after five
--years. [Assume that the population in five years is equal to the population this year *
--(1 + growth rate) 5 . The population growth in the database schema is in percentage
--and should be divided by 100. Use the new attributes Country, Population after 5
--years, and Rank for the resulting table schema.
SELECT NAME AS "Country", POPAFTER5 AS "Pop After 5 Years", ROWNUM AS "Rank" FROM (SELECT COUNTRY.NAME, COUNTRY.POPULATION *
(POWER((1 + POPULATION.POPULATION_GROWTH / 100), 5)) AS POPAFTER5 FROM COUNTRY, POPULATION WHERE COUNTRY.CODE = POPULATION.COUNTRY AND POPULATION.POPULATION_GROWTH IS NOT NULL
ORDER BY POPAFTER5 DESC) WHERE ROWNUM <= 5;
Task completed in 1.186 seconds
Country Pop After 5 Years Rank
China 1390920437 1
India 1288449172 2
United States 331323564 3
Indonesia 264330084 4
Pakistan 223724547 5

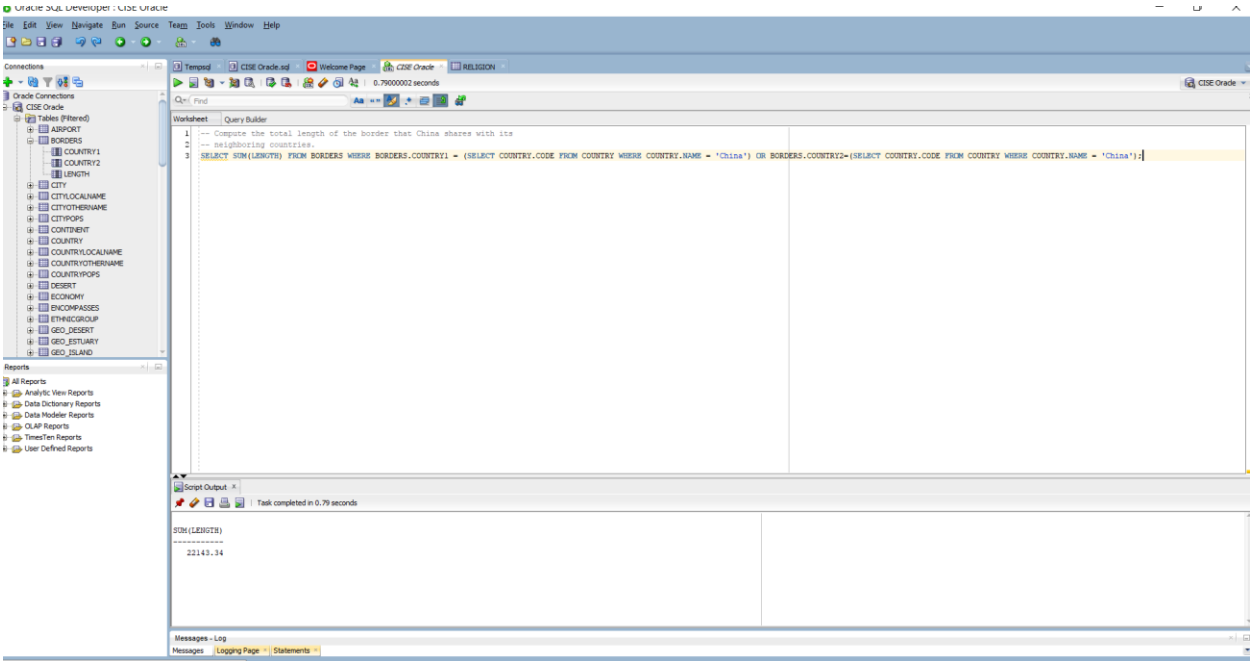
3.


Oracle SQL Developer : CISE Oracle
SELECT A.WASDEPENDENT AS c1, A.prevN AS n1, B.DEPENDENT AS c2, B.curN AS n2, A.prevN - B.curN AS "n1 - n2" FROM
(SELECT C.WASDEPENDENT, COUNT(*) AS prevN FROM POLITICS C WHERE C.WASDEPENDENT IS NOT NULL GROUP BY C.WASDEPENDENT) A, (SELECT C.DEPENDENT, COUNT(*) AS curN
FROM POLITICS C WHERE C.DEPENDENT IS NOT NULL GROUP BY C.DEPENDENT) B WHERE A.prevN = (SELECT MAX(prevN) FROM
(SELECT C.WASDEPENDENT, COUNT(*) AS prevN FROM POLITICS C WHERE C.WASDEPENDENT IS NOT NULL GROUP BY C.WASDEPENDENT)) AND B.curN = (SELECT MAX(curN) FROM
(SELECT C.DEPENDENT, COUNT(*) AS curN FROM POLITICS C WHERE C.DEPENDENT IS NOT NULL GROUP BY C.DEPENDENT));
Task completed in 0.525 seconds
C1 N1 C2 N2 n1 - n2
GB 55 GB 13 42

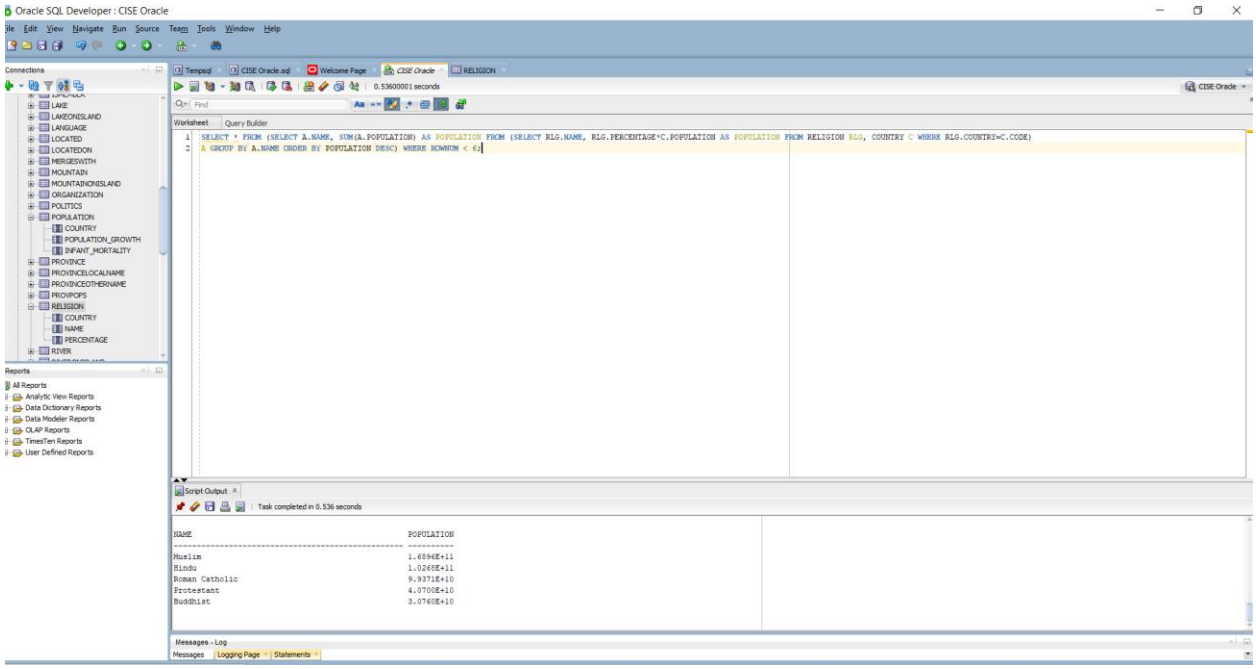
4.


Oracle SQL Developer : CISE Oracle
SELECT CNTRY.NAME FROM COUNTRY CNTRY,(SELECT RLG.COUNTRY, COUNT(*) AS NUM FROM RELIGION RLG GROUP BY RLG.COUNTRY HAVING COUNT(*)>5) RLG_2
WHERE CNTRY.CODE=RLG_2.COUNTRY AND RLG_2.COUNTRY IN (SELECT COUNTRY FROM RELIGION WHERE PERCENTAGE>80);
NAME
Italy

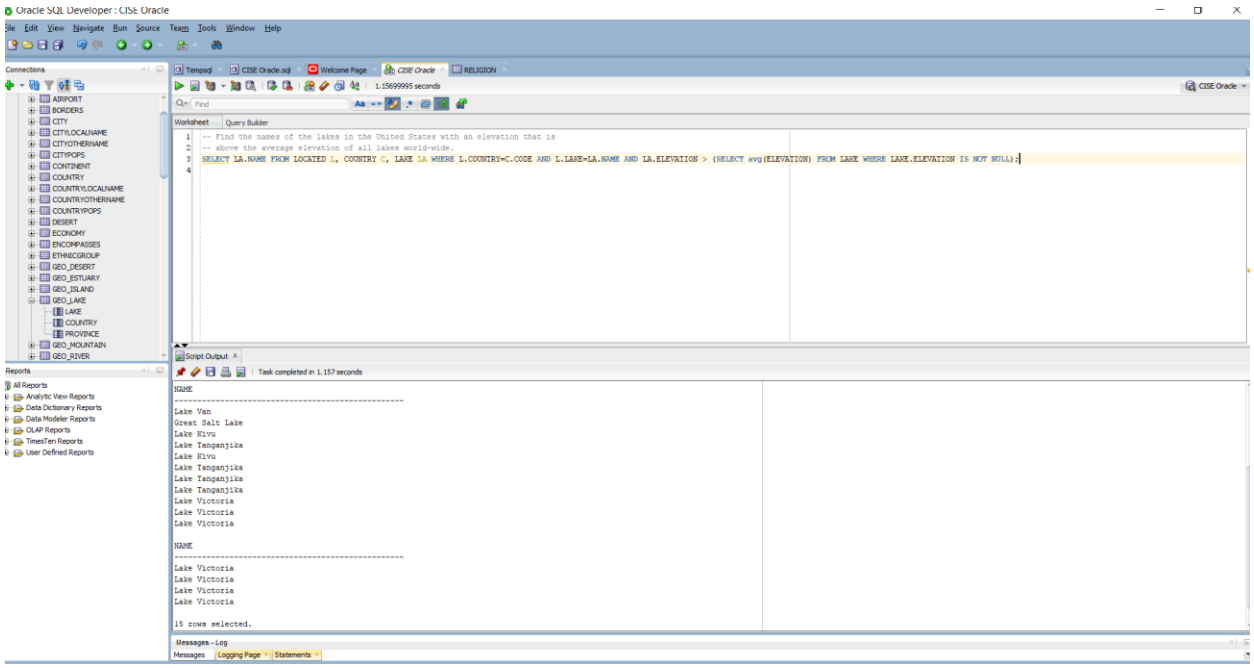
5.


-- Compute the total length of the border that China shares with its
-- neighboring countries.
SELECT SUM(LENGTH) FROM BORDERS WHERE BORDERS.COUNTRY1 = (SELECT COUNTRY.CODE FROM COUNTRY WHERE COUNTRY.NAME = 'China') OR BORDERS.COUNTRY2=(SELECT COUNTRY.CODE FROM COUNTRY WHERE COUNTRY.NAME = 'China');
SUM(LENGTH)
22143.34

6.


Oracle SQL Developer : CISE Oracle
SELECT * FROM (SELECT A.NAME, SUM(A.POPULATION) AS POPULATION FROM (SELECT RLG.NAME, RLG.PERCENTAGE*C.POPULATION AS POPULATION FROM RELIGION RLG, COUNTRY C WHERE RLG.COUNTRY=C.CODE)
A GROUP BY A.NAME ORDER BY POPULATION DESC) WHERE ROWNUM < 6;
NAME POPULATION
Muslim 1.689E+11
Hindu 1.026E+11
Roman Catholic 9.9371E+10
Protestant 4.0700E+10
Buddhist 3.0760E+10

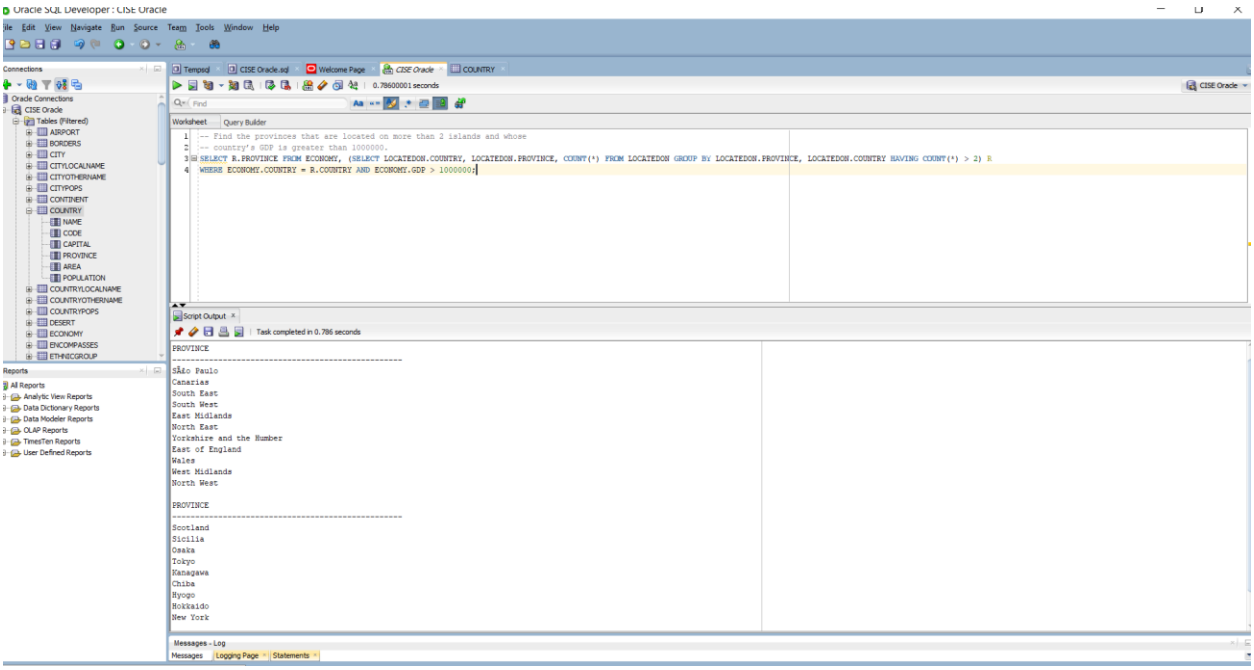
7.


Oracle SQL Developer : CISE Oracle
-- Find the names of the lakes in the United States with an elevation that is
-- above the average elevation of all lakes world-wide.
SELECT LA.NAME FROM LOCATED L, COUNTRY C, LAKE LA WHERE L.COUNTRY=C.CODE AND L.LAKE=LA.NAME AND LA.ELEVATION > (SELECT avg(ELEVATION) FROM LAKE WHERE LAKE.ELEVATION IS NOT NULL);
NAME
Lake Van
Great Salt Lake
Lake Kivu
Lake Tanganjika
Lake Kivu
Lake Tanganjika
Lake Tanganjika
Lake Tanganjika
Lake Victoria
Lake Victoria
Lake Victoria
NAME
Lake Victoria
Lake Victoria
Lake Victoria
Lake Victoria
15 rows selected.

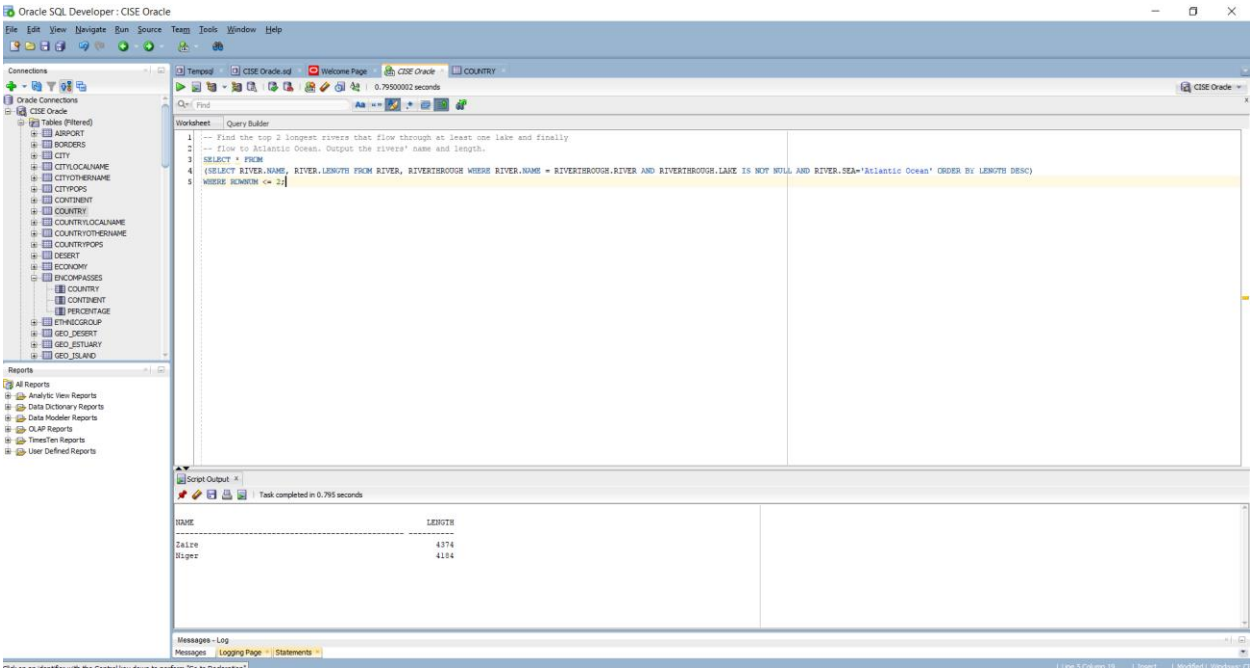
8.

☹

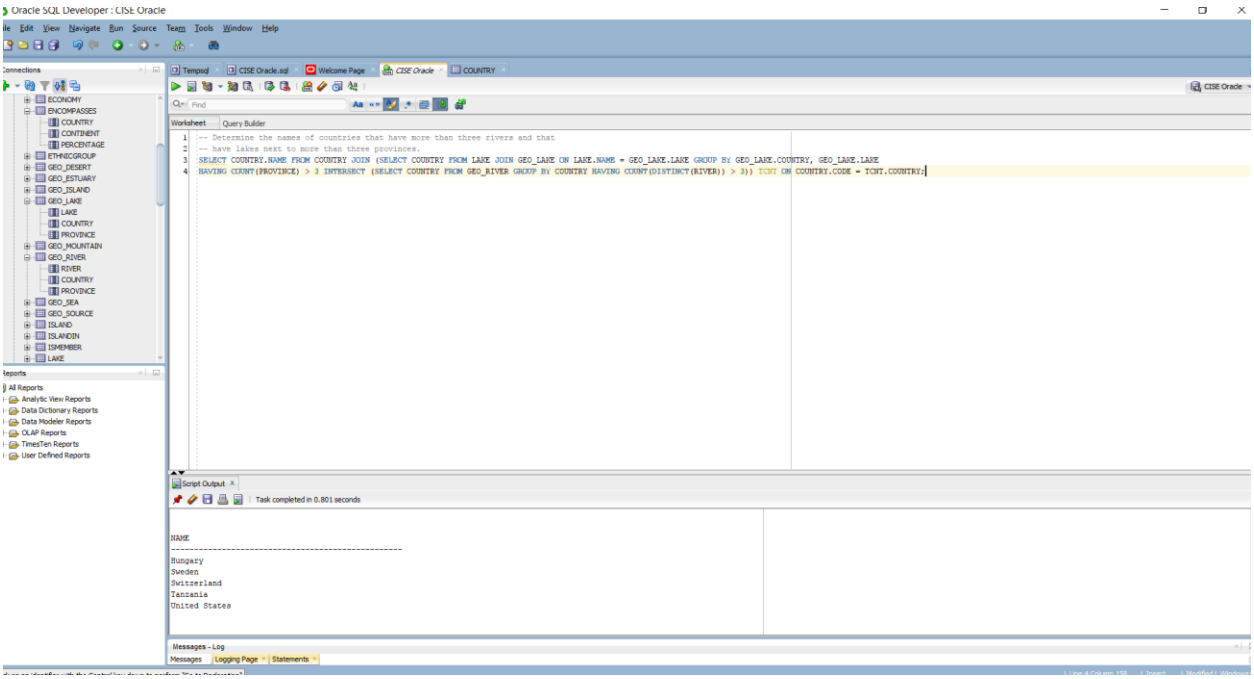
9.


Oracle SQL Developer : CISE Oracle
-- Find the provinces that are located on more than 2 islands and whose
-- country's GDP is greater than 1000000.
SELECT R.PROVINCE FROM ECONOMY, (SELECT LOCATEDON.COUNTRY, LOCATEDON.PROVINCE, COUNT(*) FROM LOCATEDON GROUP BY LOCATEDON.PROVINCE, LOCATEDON.COUNTRY HAVING COUNT(*) > 2) R
WHERE ECONOMY.COUNTRY = R.COUNTRY AND ECONOMY.GDP > 1000000;
0.78600001 seconds
Task completed in 0.786 seconds
PROVINCE
São Paulo
Canarias
South East
South West
East Midlands
North East
Yorkshire and the Humber
East of England
Wales
West Midlands
North West
PROVINCE
Scotland
Sicilia
Osaka
Tokyo
Kanagawa
Chiba
Hyogo
Hokkaido
New York

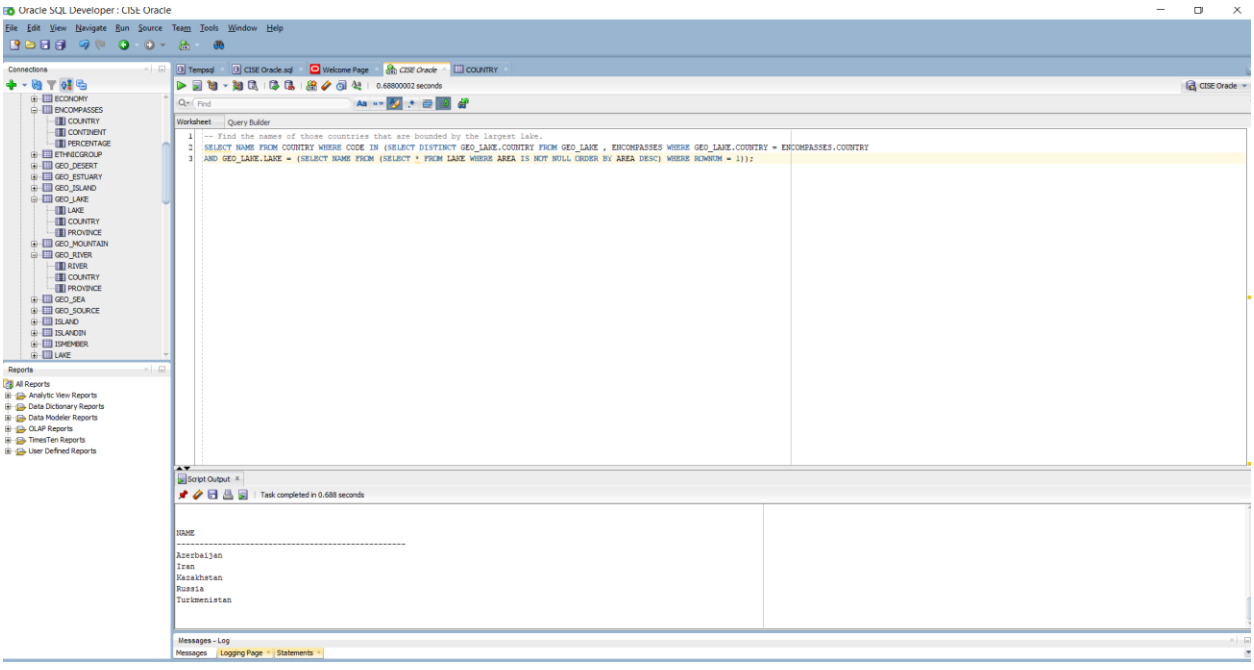
10.


Oracle SQL Developer : CISE Oracle
-- Find the top 2 longest rivers that flow through at least one lake and finally
-- flow to Atlantic Ocean. Output the rivers' name and length.
SELECT * FROM
(SELECT RIVER.NAME, RIVER.LENGTH FROM RIVER, RIVERTHROUGH WHERE RIVER.NAME = RIVERTHROUGH.RIVER AND RIVERTHROUGH.LAKE IS NOT NULL AND RIVER.SEA='Atlantic Ocean' ORDER BY LENGTH DESC)
WHERE ROWNUM <= 2;
0.79500002 seconds
Task completed in 0.795 seconds
NAME LENGTH
Zaire 4374
Niger 4184

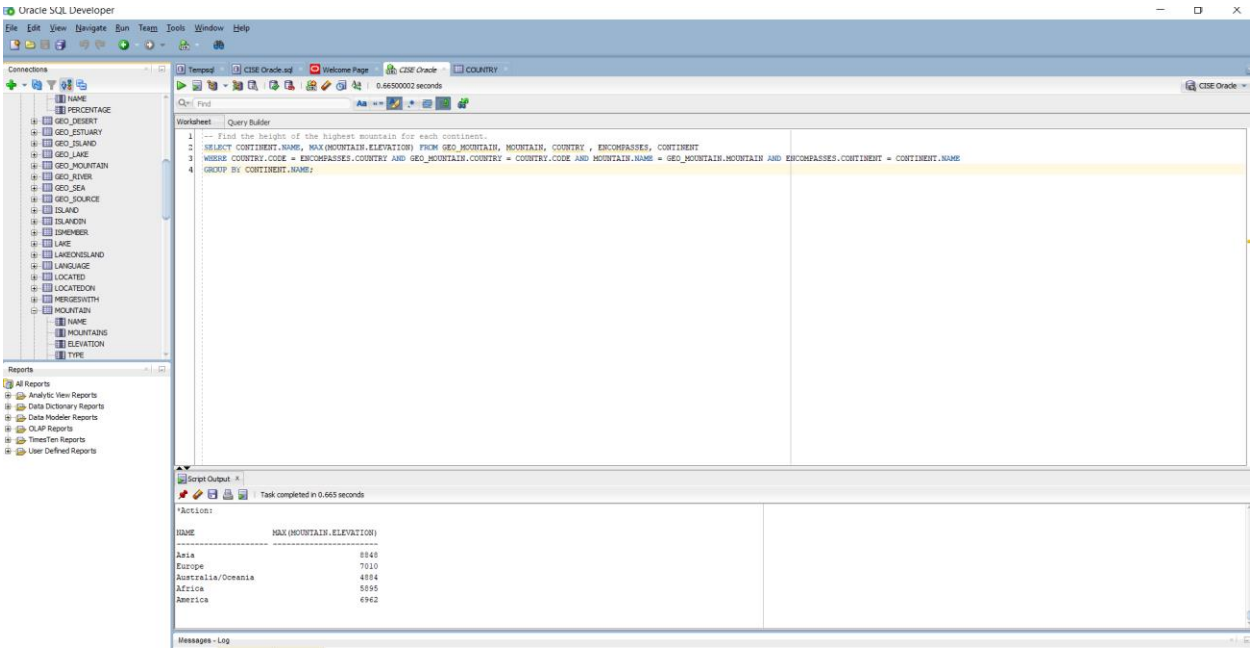
11.


Oracle SQL Developer : CISE Oracle
-- Determine the names of countries that have more than three rivers and that
-- have lakes next to more than three provinces.
SELECT COUNTRY.NAME FROM COUNTRY JOIN (SELECT COUNTRY FROM LAKE JOIN GEO_LAKE ON LAKE.NAME = GEO_LAKE.LAKE GROUP BY GEO_LAKE.COUNTRY, GEO_LAKE.LAKE
HAVING COUNT(PROVINCE) > 3 INTERSECT (SELECT COUNTRY FROM GEO_RIVER GROUP BY COUNTRY HAVING COUNT(DISTINCT(RIVER)) > 3)) TCNT ON COUNTRY.CODE = TCNT.COUNTRY;
Task completed in 0.801 seconds
NAME
Hungary
Sweden
Switzerland
Tanzania
United States

12.


Oracle SQL Developer : CISE Oracle
-- Find the names of those countries that are bounded by the largest lake.
SELECT NAME FROM COUNTRY WHERE CODE IN (SELECT DISTINCT GEO_LAKE.COUNTRY FROM GEO_LAKE , ENCOMPASSES WHERE GEO_LAKE.COUNTRY = ENCOMPASSES.COUNTRY
AND GEO_LAKE.LAKE = (SELECT NAME FROM (SELECT * FROM LAKE WHERE AREA IS NOT NULL ORDER BY AREA DESC) WHERE ROWNUM = 1));
0.68800002 seconds
Task completed in 0.688 seconds
NAME
Azerbaijan
Iran
Kazakhstan
Russia
Turkmenistan

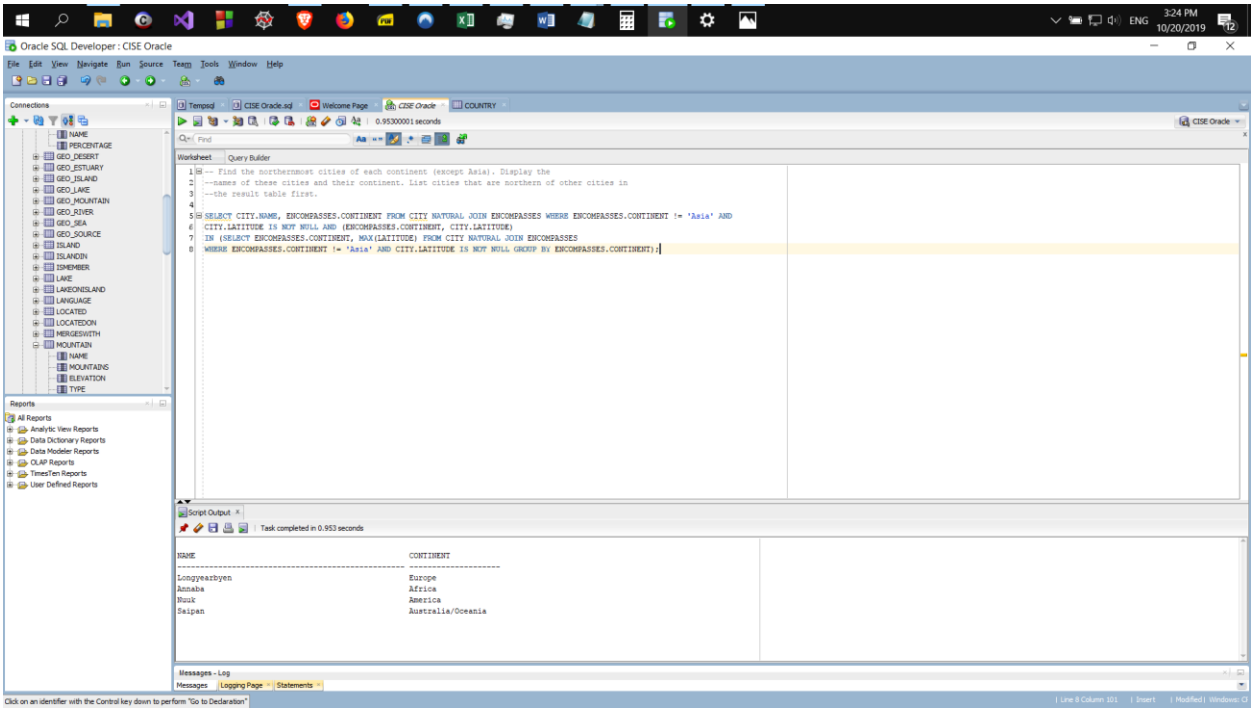
13.


Oracle SQL Developer
-- Find the height of the highest mountain for each continent.
SELECT CONTINENT.NAME, MAX(MOUNTAIN.ELEVATION) FROM GEO_MOUNTAIN, MOUNTAIN, COUNTRY , ENCOMPASSES, CONTINENT
WHERE COUNTRY.CODE = ENCOMPASSES.COUNTRY AND GEO_MOUNTAIN.COUNTRY = COUNTRY.CODE AND MOUNTAIN.NAME = GEO_MOUNTAIN.MOUNTAIN AND ENCOMPASSES.CONTINENT = CONTINENT.NAME
GROUP BY CONTINENT.NAME;
Task completed in 0.665 seconds
*Action:
NAME MAX(MOUNTAIN.ELEVATION)
Asia 8848
Europe 7010
Australia/Oceania 4884
Africa 5995
America 6962

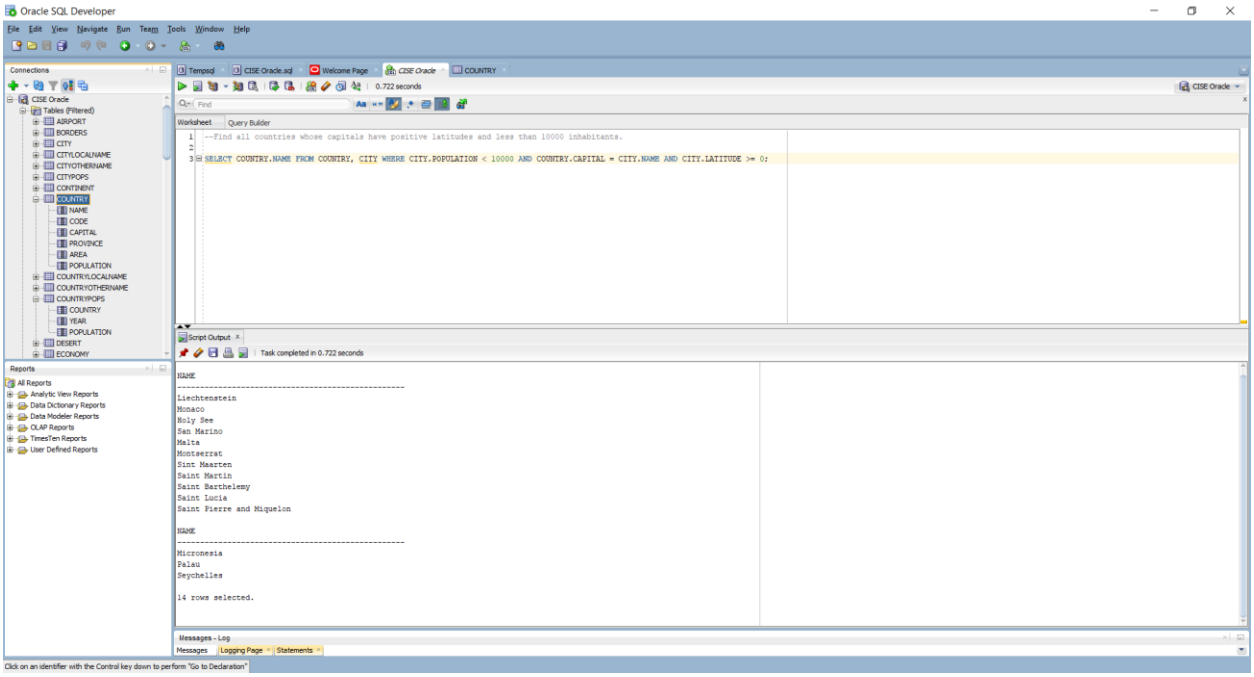
14.

☹

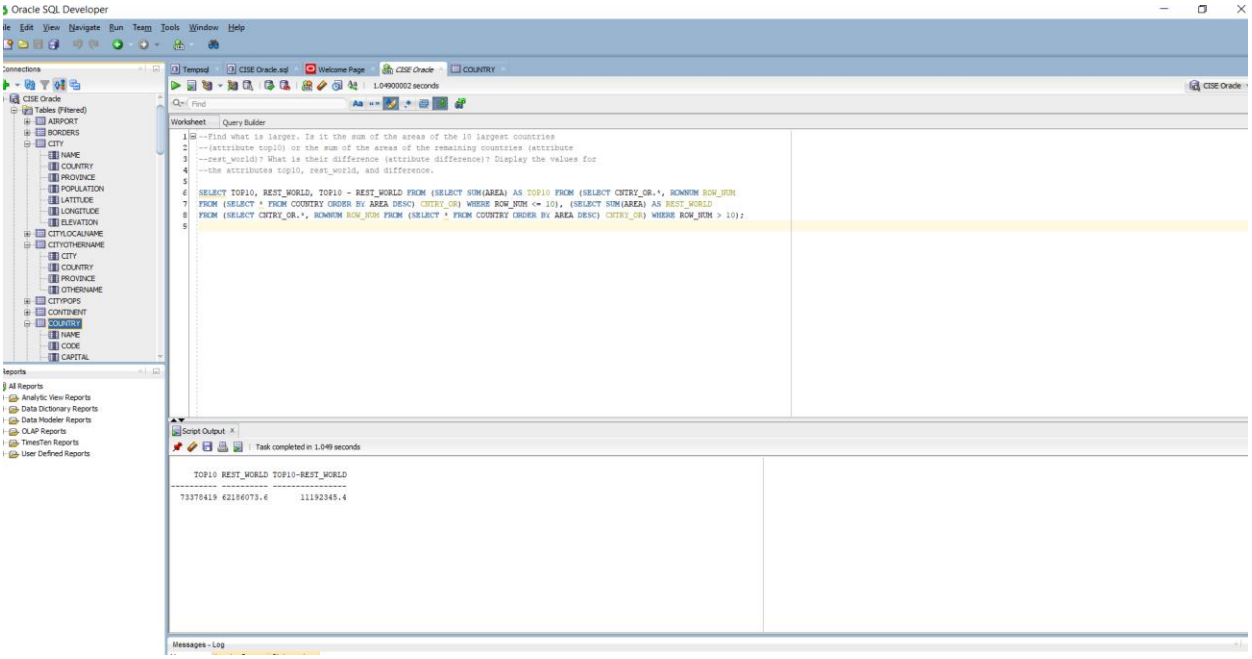
15.


Oracle SQL Developer : CISE Oracle
-- Find the northernmost cities of each continent (except Asia). Display the
--names of these cities and their continent. List cities that are northern of other cities in
--the result table first.
SELECT CITY.NAME, ENCOMPASSES.CONTINENT FROM CITY NATURAL JOIN ENCOMPASSES WHERE ENCOMPASSES.CONTINENT != 'Asia' AND
CITY.LATITUDE IS NOT NULL AND (ENCOMPASSES.CONTINENT, CITY.LATITUDE)
IN (SELECT ENCOMPASSES.CONTINENT, MAX(LATITUDE) FROM CITY NATURAL JOIN ENCOMPASSES
WHERE ENCOMPASSES.CONTINENT != 'Asia' AND CITY.LATITUDE IS NOT NULL GROUP BY ENCOMPASSES.CONTINENT);
Task completed in 0.953 seconds
NAME CONTINENT
Longyearbyen Europe
Annaba Africa
Nuuk America
Saipan Australia/Oceania

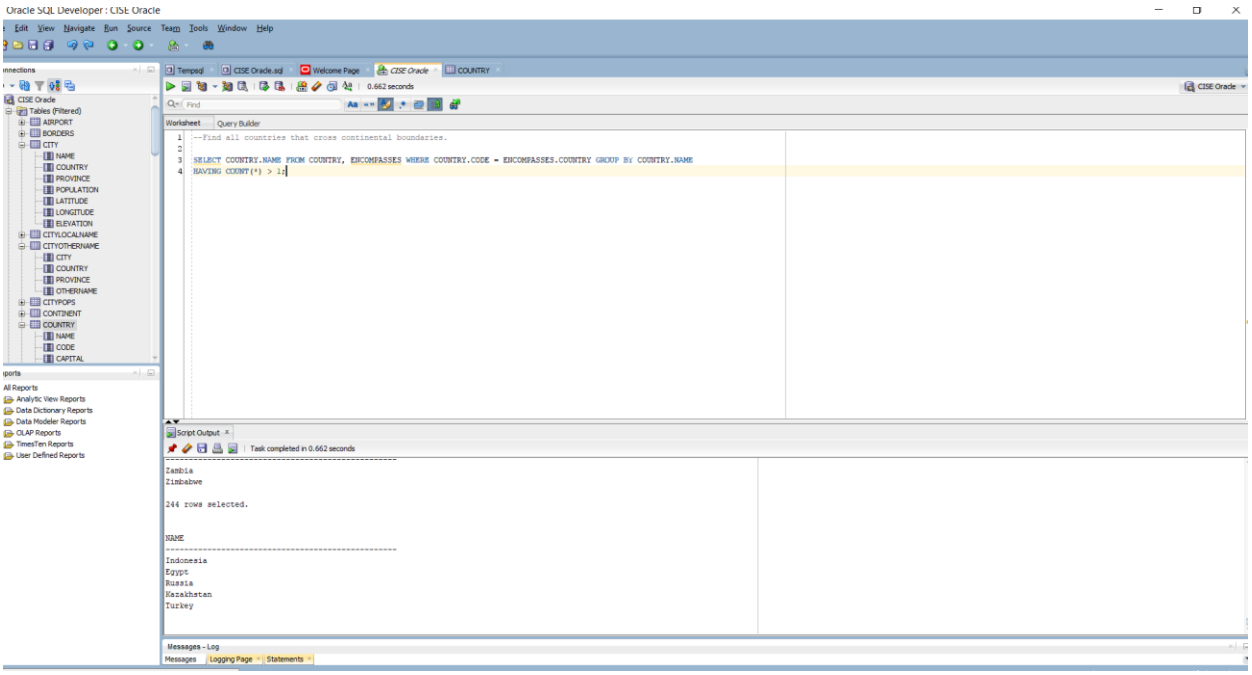
16.


Oracle SQL Developer
--Find all countries whose capitals have positive latitudes and less than 10000 inhabitants.
SELECT COUNTRY.NAME FROM COUNTRY, CITY WHERE CITY.POPULATION < 10000 AND COUNTRY.CAPITAL = CITY.NAME AND CITY.LATITUDE >= 0;
Task completed in 0.722 seconds
NAME
Liechtenstein
Monaco
Holy See
San Marino
Malta
Montserrat
Sint Maarten
Saint Martin
Saint Barthelemy
Saint Lucia
Saint Pierre and Miquelon
NAME
Micronesia
Palau
Seychelles
14 rows selected.

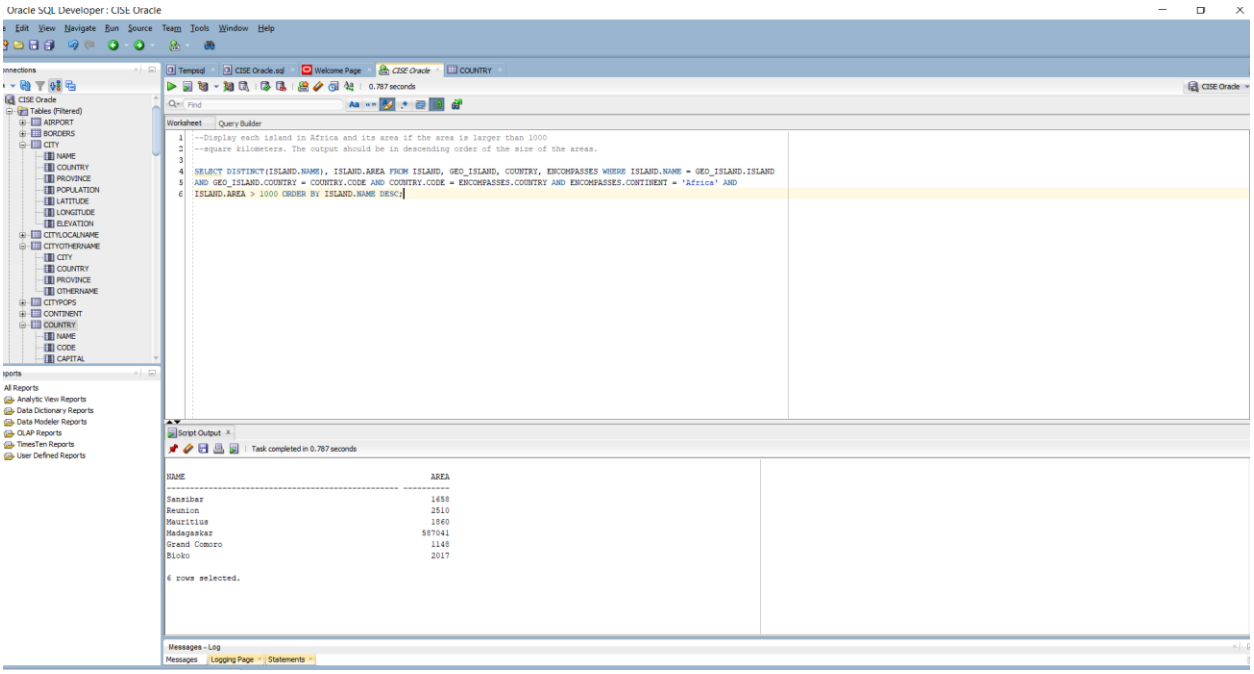
17.


Oracle SQL Developer
--Find what is larger. Is it the sum of the areas of the 10 largest countries
--(attribute top10) or the sum of the areas of the remaining countries (attribute
--rest_world)? What is their difference (attribute difference)? Display the values for
--the attributes top10, rest_world, and difference.
SELECT TOP10, REST_WORLD, TOP10 - REST_WORLD FROM (SELECT SUM(AREA) AS TOP10 FROM (SELECT CNTRY_OR.*, ROWNUM ROW_NUM
FROM (SELECT * FROM COUNTRY ORDER BY AREA DESC) CNTRY_OR) WHERE ROW_NUM <= 10), (SELECT SUM(AREA) AS REST_WORLD
FROM (SELECT CNTRY_OR.*, ROWNUM ROW_NUM FROM (SELECT * FROM COUNTRY ORDER BY AREA DESC) CNTRY_OR) WHERE ROW_NUM > 10);
Task completed in 1.049 seconds
TOP10 REST_WORLD TOP10-REST_WORLD
73370419 62186073.6 11192345.4

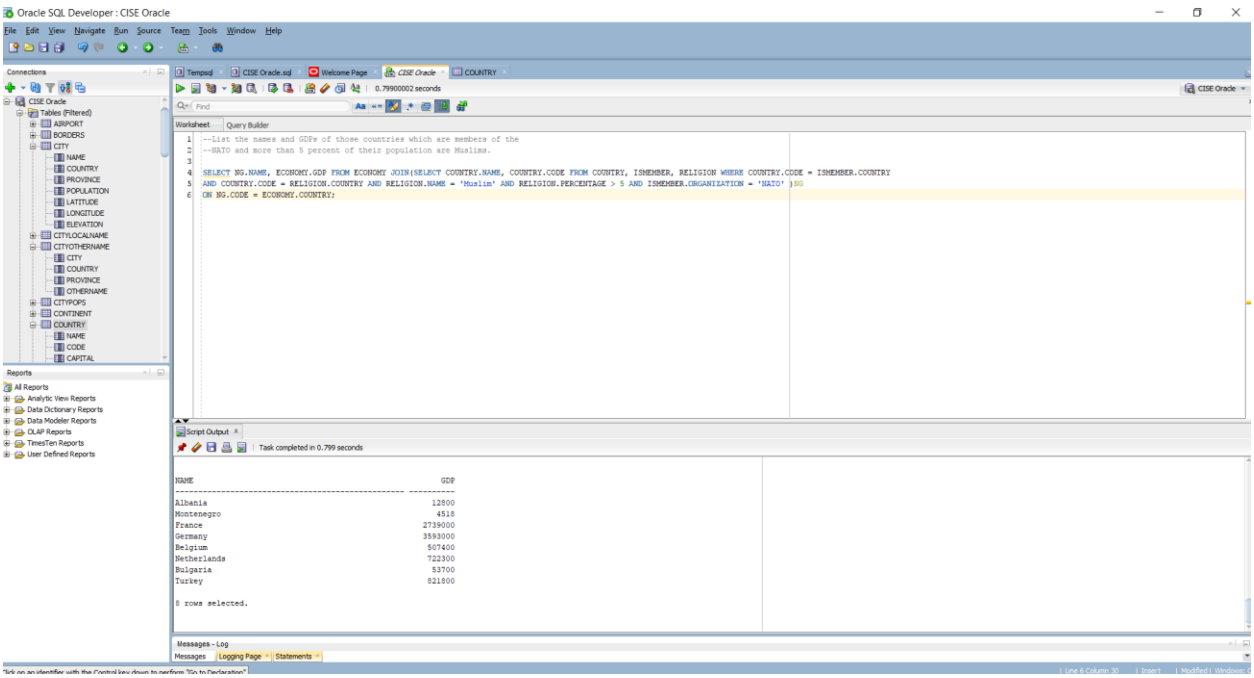
18.


Oracle SQL Developer : CISE Oracle
--Find all countries that cross continental boundaries.
SELECT COUNTRY.NAME FROM COUNTRY, ENCOMPASSES WHERE COUNTRY.CODE = ENCOMPASSES.COUNTRY GROUP BY COUNTRY.NAME
HAVING COUNT(*) > 1;
Task completed in 0.662 seconds
Zambia
Zimbabwe
244 rows selected.
NAME
Indonesia
Egypt
Russia
Kazakhstan
Turkey

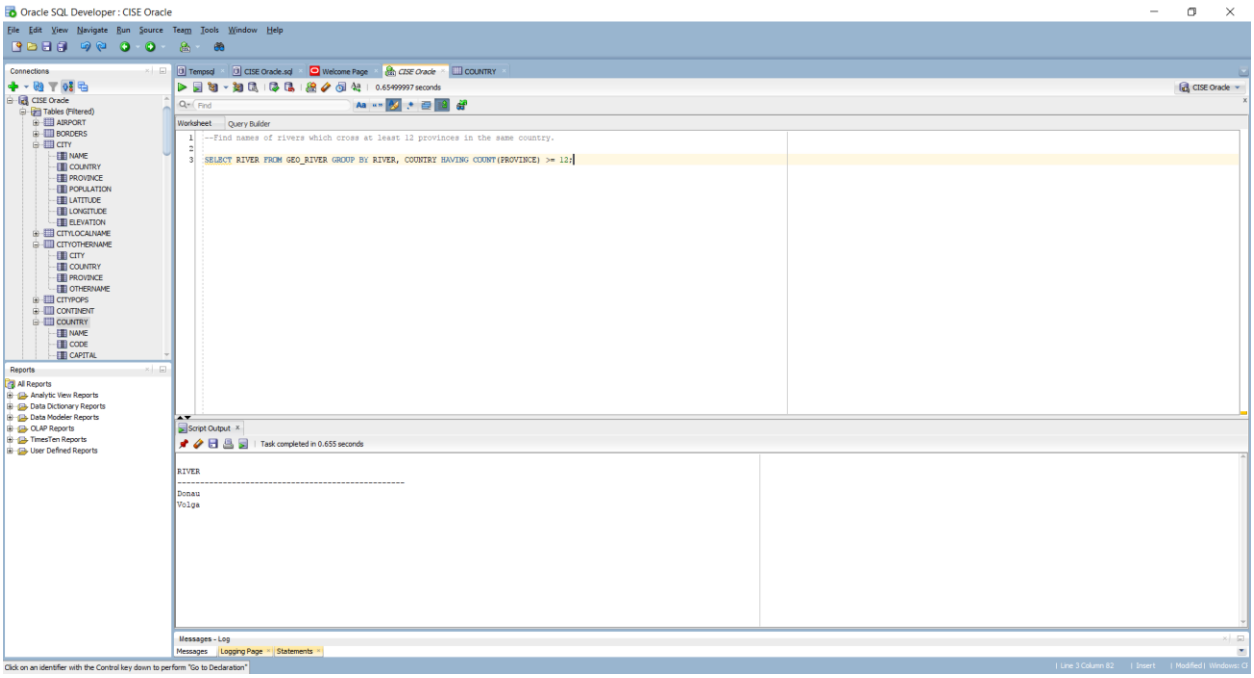
19.


Oracle SQL Developer : CISE Oracle
--Display each island in Africa and its area if the area is larger than 1000
--square kilometers. The output should be in descending order of the size of the areas.
SELECT DISTINCT(ISLAND.NAME), ISLAND.AREA FROM ISLAND, GEO_ISLAND, COUNTRY, ENCOMPASSES WHERE ISLAND.NAME = GEO_ISLAND.ISLAND
AND GEO_ISLAND.COUNTRY = COUNTRY.CODE AND COUNTRY.CODE = ENCOMPASSES.COUNTRY AND ENCOMPASSES.CONTINENT = 'Africa' AND
ISLAND.AREA > 1000 ORDER BY ISLAND.NAME DESC;
Task completed in 0.787 seconds
NAME AREA
Sansibar 1658
Reunion 2510
Mauritius 1860
Madagaskar 587041
Grand Comoro 1148
Bioko 2017
6 rows selected.

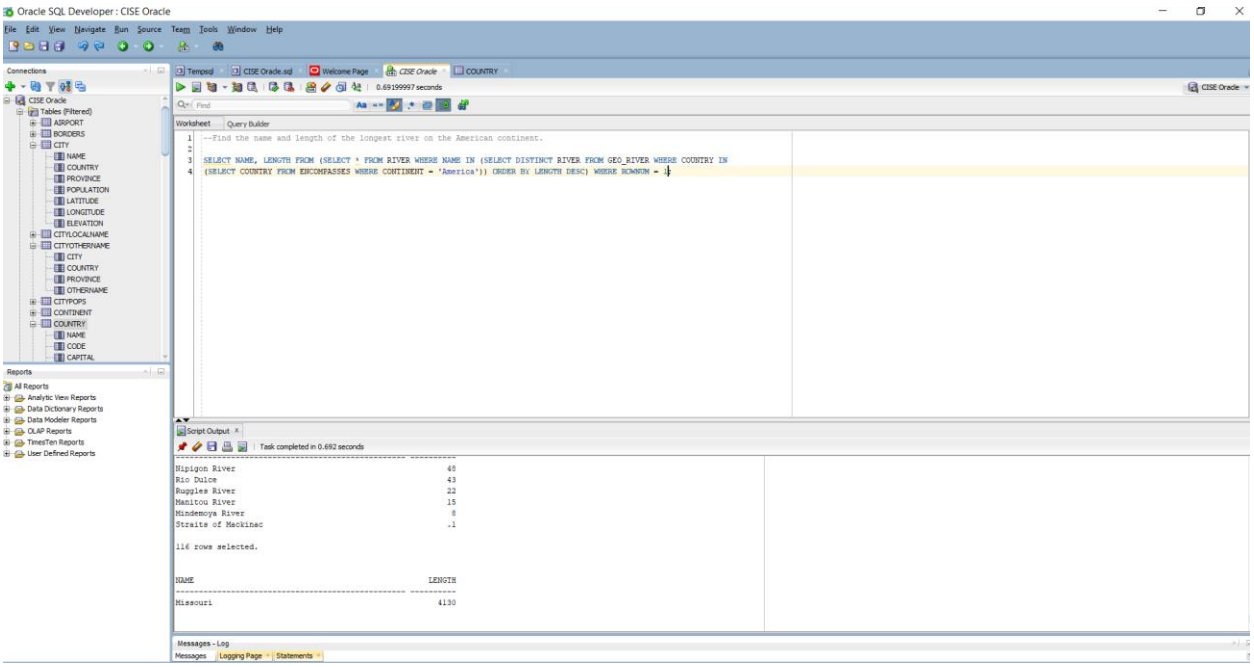
20.


Oracle SQL Developer : CISE Oracle
--List the names and GDPs of those countries which are members of the
--NATO and more than 5 percent of their population are Muslims.
SELECT NG.NAME, ECONOMY.GDP FROM ECONOMY JOIN(SELECT COUNTRY.NAME, COUNTRY.CODE FROM COUNTRY, ISMEMBER, RELIGION WHERE COUNTRY.CODE = ISMEMBER.COUNTRY
AND COUNTRY.CODE = RELIGION.COUNTRY AND RELIGION.NAME = 'Muslim' AND RELIGION.PERCENTAGE > 5 AND ISMEMBER.ORGANIZATION = 'NATO')NG
ON NG.CODE = ECONOMY.COUNTRY;
Task completed in 0.799 seconds
NAME GDP
Albania 12800
Montenegro 4518
France 2739000
Germany 3593000
Belgium 507400
Netherlands 722300
Bulgaria 53700
Turkey 821800
8 rows selected.

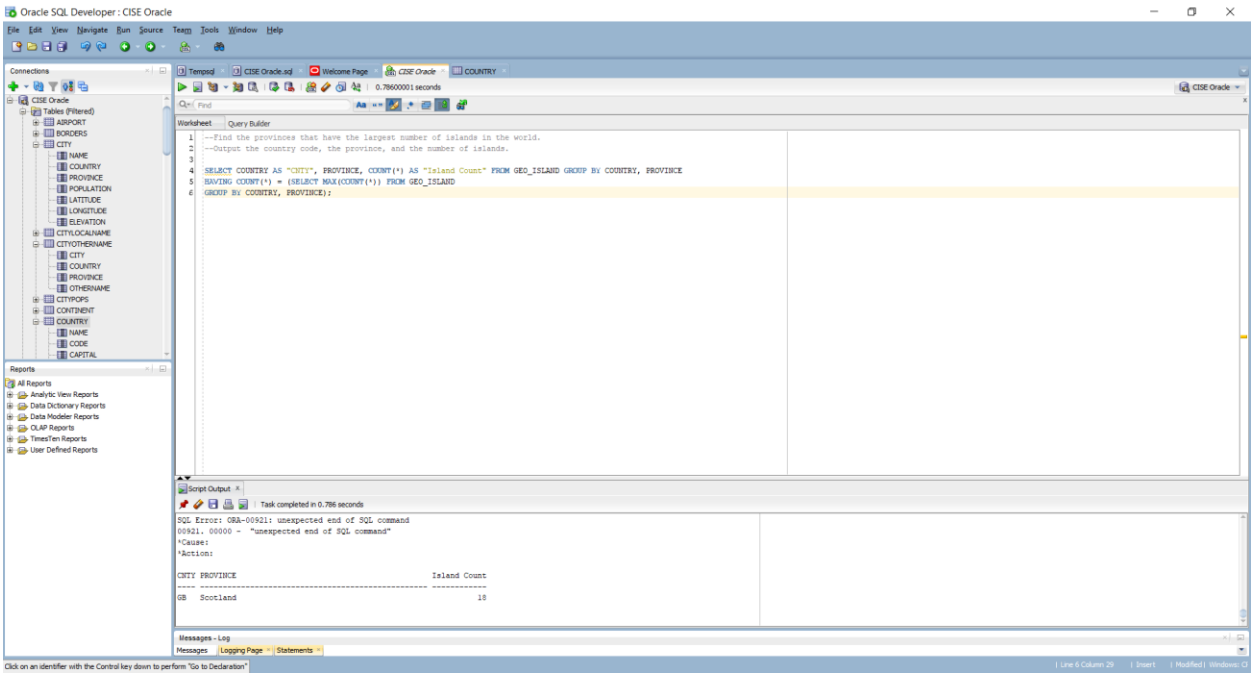
21.


Oracle SQL Developer : CISE Oracle
--Find names of rivers which cross at least 12 provinces in the same country.
SELECT RIVER FROM GEO_RIVER GROUP BY RIVER, COUNTRY HAVING COUNT(PROVINCE) >= 12;
Task completed in 0.655 seconds
RIVER
Donau
Volga

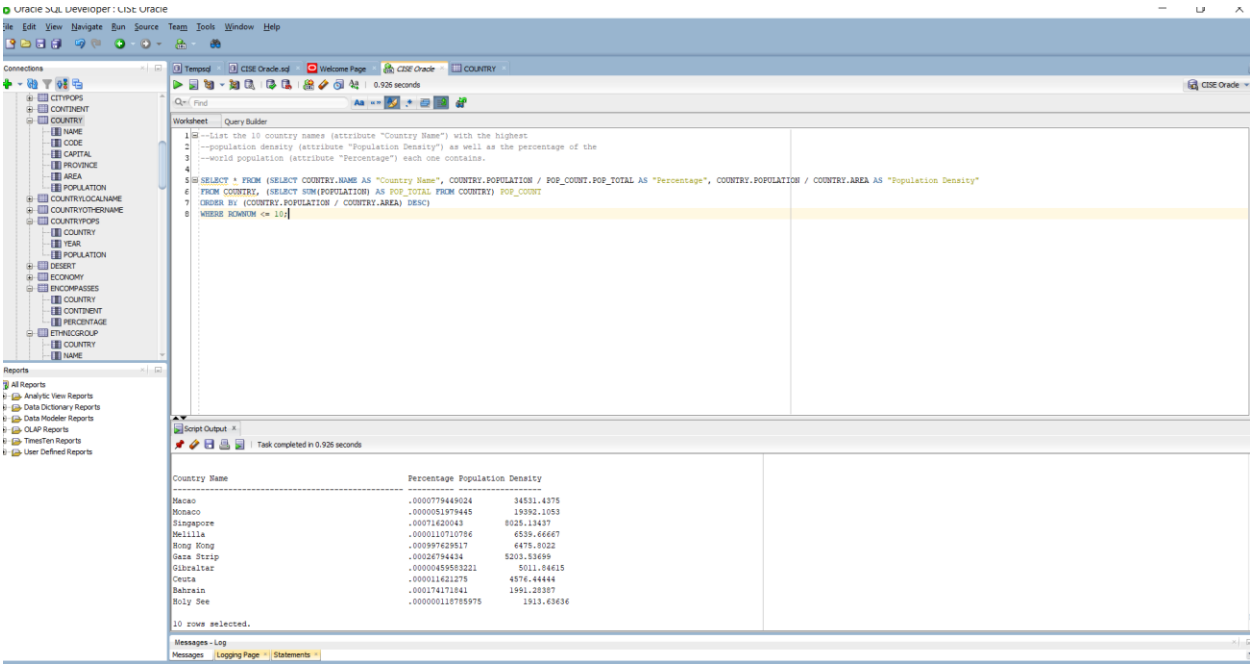
22.


Oracle SQL Developer : CISE Oracle
--Find the name and length of the longest river on the American continent.
SELECT NAME, LENGTH FROM (SELECT * FROM RIVER WHERE NAME IN (SELECT DISTINCT RIVER FROM GEO_RIVER WHERE COUNTRY IN
(SELECT COUNTRY FROM ENCOMPASSES WHERE CONTINENT = 'America')) ORDER BY LENGTH DESC) WHERE ROWNUM = 1;
Nipigon River 48
Rio Dulce 43
Ruggles River 22
Manitou River 15
Mindemoya River 8
Straits of Mackinac .1
116 rows selected.
NAME LENGTH
Missouri 4130

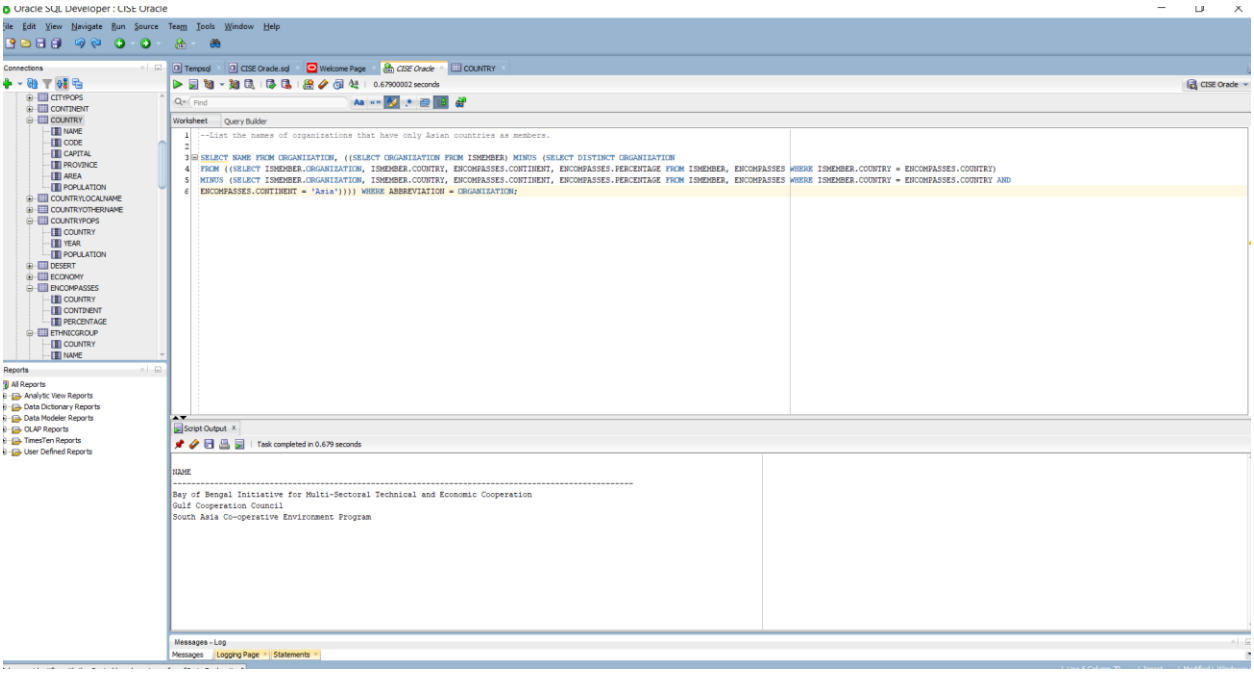
23.


Oracle SQL Developer : CISE Oracle
--Find the provinces that have the largest number of islands in the world.
--Output the country code, the province, and the number of islands.
SELECT COUNTRY AS "CNTY", PROVINCE, COUNT(*) AS "Island Count" FROM GEO_ISLAND GROUP BY COUNTRY, PROVINCE
HAVING COUNT(*) = (SELECT MAX(COUNT(*)) FROM GEO_ISLAND
GROUP BY COUNTRY, PROVINCE);
SQL Error: ORA-00921: unexpected end of SQL command
00921. 00000 - "unexpected end of SQL command"
*Cause:
*Action:
CNTY PROVINCE Island Count
GB Scotland 18

24.


--List the 10 country names (attribute "Country Name") with the highest
--population density (attribute "Population Density") as well as the percentage of the
--world population (attribute "Percentage") each one contains.
SELECT * FROM (SELECT COUNTRY.NAME AS "Country Name", COUNTRY.POPULATION / POP_COUNT.POP_TOTAL AS "Percentage", COUNTRY.POPULATION / COUNTRY.AREA AS "Population Density"
FROM COUNTRY, (SELECT SUM(POPULATION) AS POP_TOTAL FROM COUNTRY) POP_COUNT
ORDER BY (COUNTRY.POPULATION / COUNTRY.AREA) DESC)
WHERE ROWNUM <= 10;
Task completed in 0.926 seconds
Country Name Percentage Population Density
Macao .0000779449024 34531.4375
Monaco .0000051979445 19392.1053
Singapore .0007620043 8025.13437
Melilla .0000110710786 6539.66667
Hong Kong .0009762917 6475.8022
Gaza Strip .00026794434 5203.53699
Gibraltar .00000459583221 5011.84615
Ceuta .000011621275 4576.44444
Bahrain .00017417841 1991.28387
Holy See .000000118755975 1913.63636
10 rows selected.

25.


--List the names of organizations that have only Asian countries as members.
SELECT NAME FROM ORGANIZATION, ((SELECT ORGANIZATION FROM ISMEMBER) MINUS (SELECT DISTINCT ORGANIZATION
FROM ((SELECT ISMEMBER.ORGANIZATION, ISMEMBER.COUNTRY, ENCOMPASSES.CONTINENT, ENCOMPASSES.PERCENTAGE FROM ISMEMBER, ENCOMPASSES WHERE ISMEMBER.COUNTRY = ENCOMPASSES.COUNTRY)
MINUS (SELECT ISMEMBER.ORGANIZATION, ISMEMBER.COUNTRY, ENCOMPASSES.CONTINENT, ENCOMPASSES.PERCENTAGE FROM ISMEMBER, ENCOMPASSES WHERE ISMEMBER.COUNTRY = ENCOMPASSES.COUNTRY AND
ENCOMPASSES.CONTINENT = 'Asia'))) WHERE ABBREVIATION = ORGANIZATION;
Task completed in 0.679 seconds
NAME
Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation
Gulf Cooperation Council
South Asia Co-operative Environment Program

Exercise 2 (QBE) [15 points]

Consider the following database schema:

Drivers (did, dname, gender, age)

Reserve (did, cid, day, cost)

Cars (cid, cname, model, color, rid)

RentalCompany (rid, rname, revenue, rating)

IsMember(did, rid, join_time, member_type)

Display the QBE tables that will answer the following questions.

1. [2 points] Find the names of drivers who have reserved a red car on day "02/14/2017" of model "Chevrolet".
2. [2 points] Find the names of all drivers that are members of a rental company whose rating is greater than 6.5.
3. [3 points] Find the youngest driver who is a member of both company 'Avis' and company 'Hertz'.
4. [2 points] Update the member type to 'VIP' for those drivers who were members of company 'Avis' and have spent more than 2000 in renting (reserving) cars from Avis.
5. [3 points] Find the rental company which has the largest number of members.
6. [3 points] Find the car model that is rented most frequently by drivers whose age is between 21 and 30 (not equal to 21 or 30).

1.

Drivers	did	dname	gender	Age
	_id	p._x		

Reserve	Did	cid	Day	Cost
	_id	_y	02/14/2017	

Cars	cid	Cname	Model	color	Rid
	_y		Chevrolet	Red	

2.

Drivers	did	dname	gender	Age
	_id	p._x		

IsMember	Did	Rid	Join_time	Member_time
	_id	_y		

RentalCompany	Rid	Rname	Revenue	Rating
	_y	_y		>6.5

3.

Drivers	Did	Gender	Age
	_id1 _id2		age < age

IsMember	Did	Rid	Join_time	Member_type
	_id1 _id1 _id2 _id2	_y1 _y2 _y1 _y2		

RentalCompany	Rid	Rname	revenue	Rating
	_y1 _y2	Avis Hertz		