# LABORATORY REPORT

## LABORATORY REPORT

| COMMON DATA | |
|---|---|
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| LABORATORY TIME: 09/03/2022 | |
| TITLE OR SEQUENCE NUMBER: LABORATORY REPORT #2 | |

| EXERCISES | |
|---|---|
| **TASK 1** | ☐ |
| **TASK 2** | ☐ |
| **TASK 3** | ☐ |
| **TASK 4** | ☐ |
| **TASK 5** | ☐ |
| **TASK 6** | ☐ |
| **TASK 7** | ☐ |
| **TASK 8** | ☐ |
| **TASK 9** | ☐ |
| **TASK 10** | ☐ |

## EXERCISES

### TASK #1

#### Problem statement:

We need to create a table including all countries in the Middle East from the database. This table should be sorted by the 2004 population count and in descending order.

#### Solution:

By Data Definition Language scripts : we use SELECT command which is one of the most widely used SQL command. We have to choose which column and attribute we want to choose:
*after SELECT we add the column name (in this case it is : name)
*after FROM we add the table name ( in this caste it is : country)
*after WHERE we specify which region (middle east) and year (2004) And since we want the data(population) to appear in a descending order we add order by population desc.

### Code:

```
use lab21;
select name from country  where (region = 'Middle East' and year =
'2004') order by population desc;

     + CREATE TABLE [dbo].[country](…
```

**Reasoning:**

## Result :

| | name |
|---|---|
| 1 | Iran |
| 2 | Turkey |
| 3 | Saudi Arabia |
| 4 | Iraq |
| 5 | Yemen |
| 6 | Israel |
| 7 | Jordan |
| 8 | Georgia |
| 9 | Lebanon |
| 10 | Oman |
| 11 | United Arab Emirates |
| 12 | Kuwait |
| 13 | Qatar |
| 14 | Cyprus |
| 15 | Bahrain |

We have got table with different middle eastern countries ordered by their population.

## TASK #2

### Problem statement:

We need to create a table including the name, area and GDP of only european countries with a 2009 population of more than 10,000,000.

### Solution:

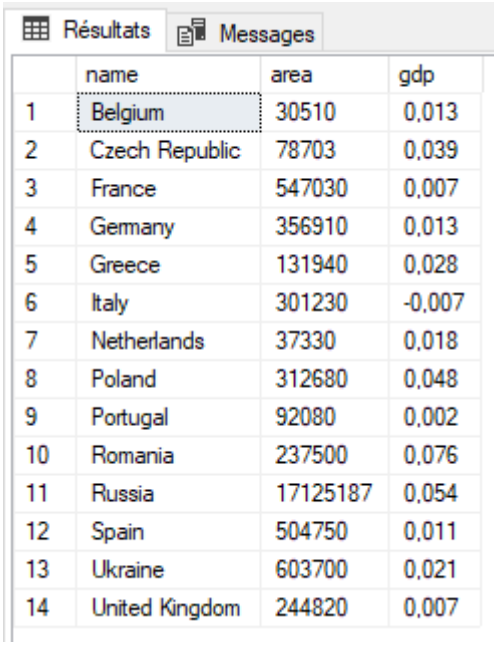
By Data Definition Language scripts : we use SELECT command which is one of the most widely used SQL command. We have to choose which column and attribute we want to choose:
*after SELECT :
-we add the column name (in this case it is : name)
-we add the column name (in this case it is : area)
-we add the column name (in this case it is : gdp)
*after FROM we add the table name ( in this caste it is : country)
*after WHERE we specify which region (europe) and year (2004) and population (more than 1000000

### Code:

```
use lab21;
select  name, area, gdp from country where (region like '%Europe%' )
and year = 2009 and population >10000000;
 <
     + CREATE TABLE [dbo].[country](…
```

## Reasoning:

## Result:



Résultats | Messages

| | name | area | gdp |
|---|---|---|---|
| 1 | Belgium | 30510 | 0,013 |
| 2 | Czech Republic | 78703 | 0,039 |
| 3 | France | 547030 | 0,007 |
| 4 | Germany | 356910 | 0,013 |
| 5 | Greece | 131940 | 0,028 |
| 6 | Italy | 301230 | -0,007 |
| 7 | Netherlands | 37330 | 0,018 |
| 8 | Poland | 312680 | 0,048 |
| 9 | Portugal | 92080 | 0,002 |
| 10 | Romania | 237500 | 0,076 |
| 11 | Russia | 17125187 | 0,054 |
| 12 | Spain | 504750 | 0,011 |
| 13 | Ukraine | 603700 | 0,021 |
| 14 | United Kingdom | 244820 | 0,007 |

We have got table with different european countries which everyone has its own area and gdp.

TASK #3

## Problem statement:

We need to create a table including the name and region of countries with an area larger than 2,000,000 and smaller than 5,000,000, ordred in descending order by 2002 GDP.

## Solution:

By Data Definition Language scripts : we use SELECT command which is one of the most widely used SQL command. We have to choose which column and attribute we want to choose:

*after SELECT :

-we add the column name (in this case it is : name)

-we add the column name (in this case it is : region)

*after FROM we add the table name ( in this caste it is : country)

*after WHERE we specify which year (2002) and population (between 2000000 and 5000000)

## Code:

```
use lab21;
select  name, region from country where (year =2002) and
area>2000000 and area <5000000 order by gdp desc;


  + CREATE TABLE [dbo].[country](…
```

## Reasoning:

## Result:

Résultats | Messages

| | name | region |
|---|---|---|
| 1 | Kazakhstan | Commonwealth of Independent States - Central Asi... |
| 2 | Sudan | Africa |
| 3 | India | Asia |
| 4 | Algeria | Africa |
| 5 | Argentina | South America |
| 6 | Greenland | Arctic Region |
| 7 | Zaire | Africa |

We have got table with different countries which everyone has its own area and gdp.

TASK #4

## Problem statement:

We need to create a table with regions of all countries whose names start with 'S' (uppercase).

## Solution:

By Data Definition Language scripts :
We use SELECT command and DISTINCT keyword to list only unique values (Region) in a table.
*after SELECT distinct we add the column name (in this case it is : region)
*after FROM we add the table name ( in this caste it is : country)
Then we add Like operator to search for a specified pattern(countries names starting with S in a column).

### Code:

```
use lab21;
select distinct region from country where name like 'S%'

  + CREATE TABLE [dbo].[country](…
```

## Reasoning:

### Result:

Résultats | Messages

| | region |
|---|---|
| 1 | Africa |
| 2 | Asia |
| 3 | Central America and the Caribbean |
| 4 | Ethnic Groups in Eastern Europe, Europe |
| 5 | Europe |
| 6 | Middle East |
| 7 | Oceania |
| 8 | South America |
| 9 | Southeast Asia |

We have got table with different regions that includes countries starting with ‘S’

TASK #5

## Problem statement:

We need to insert a new row in the table with country name "SQLvania", with year = 2004, area = 4707 and population = 65550.

## Solution:

By Data Definition Language scripts : we use INSERT INTO statement with specifying both the column names which we want to fill and their corresponding values.

We have to add the table name ( country) which we are going to insert data in.
Then we have to choose which attributes are going to add.
After values we add the new data (sqlvania as name , 2004 as year, 4707 as area…).
Since we only need the row that includes informations about 'sqlvania', we mention SELECT command.

### Code:

```
use lab21;
insert into country (name, year, area, population) values
('SQLvania' , 2004, 4707 ,65550);

SELECT * FROM country where name = 'SQLvania';

        + CREATE TABLE [dbo].[country](…
```

## Reasoning:

### Result:

Résultats | Messages

| | name | year | region | area | population | gdp |
|---|---|---|---|---|---|---|
| 1 | SQLvania | 2004 | NULL | 4707 | 6500 | NULL |

We have got table with one single row(entity) but with different columns values(attributes).

TASK #6

## Problem statement:

We need to update data about the population of some countries with area less than 10000.

## Solution:

We need to use UPDATE command because the population exists already as one of the attributes.
According to 2007 population , we should add 15000 to the countries that has less than 10000.
The new population is the actual population + 15000 : SET command
*after WHERE we specify which year (2004).
We should also specify which area (in this case less than 10000).

Code:

```
use lab21;
UPDATE country
SET population=population+15000
WHERE (year=2004);

select name, year , region, area, population, gdp from country where
area <10000

        + CREATE TABLE [dbo].[country](…
```

## Reasoning:

## Result:

Résultats | Messages

| | name | year | region | area | population | gdp |
|---|---|---|---|---|---|---|
| 33 | Andorra | 1998 | Europe | 450 | 79716 | NULL |
| 34 | Andorra | 1999 | Europe | 450 | 80939 | NULL |
| 35 | Andorra | 2000 | Europe | 450 | 81824 | NULL |
| 36 | Andorra | 2001 | Europe | 450 | 82627 | NULL |
| 37 | Andorra | 2002 | Europe | 450 | 83403 | 0,038 |
| 38 | Andorra | 2003 | Europe | 450 | 84150 | 0,038 |
| 39 | Andorra | 2004 | Europe | 450 | 84865 | 0,038 |
| 40 | Andorra | 2005 | Europe | 450 | 85549 | 0,02 |
| 41 | Andorra | 2006 | Europe | 450 | 86201 | 0,04 |
| 42 | Andorra | 2007 | Europe | 450 | 86822 | 0,035 |
| 43 | Andorra | 2008 | Europe | 450 | 86822 | 0,035 |

We have got an updated table with new population number ( +15000)

TASK #7

## Problem statement:

We need to delete all rows that have a negative GDP. And we have to count the number of rows after deletion.

## Solution:

We need to use DELETE command to delete rows from the table: those rows with a negative gdp.(gdp<0)
We should add count function to calculate the number of rows left after deletion.

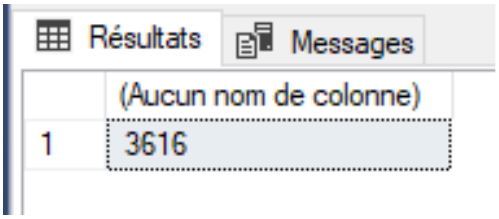
Code:

```
use lab21;
delete from country where gdp<0
SELECT count(name)from country

        + CREATE TABLE [dbo].[country](…
```

## Reasoning:

## Result:




*After the deletion of the negative gdp rows

We have got a table with the number of the rest of rows.

TASK #8

## Problem statement:

We need to create a table  country with the biggest population in 2010

## Solution:

We use SELECT and we have to mention 3 columns :name, region and population after the command )

*after FROM we add the table name ( in this caste it is : country)

*after WHERE we specify which year (2010)  And since we want the data(population) to appear in a descending order we add order by population desc.

Code:

```
use lab21;
select name,region, population
from country  where ( year = '2010') order by population desc;

        + CREATE TABLE [dbo].[country](…
```

## Reasoning:

## Result:

Résultats | Messages

| | name | region | population |
|---|---|---|---|
| 1 | China | Asia | 1330141295 |
| 2 | India | Asia | 1173108018 |
| 3 | Indonesia | Southeast Asia | 242968342 |
| 4 | Pakistan | Asia | 184404791 |
| 5 | Bangladesh | Asia | 156118464 |
| 6 | Nigeria | Africa | 152217341 |
| 7 | Russia | Europe, Asia | 142856536 |
| 8 | Philippines | Southeast Asia | 99900177 |
| 9 | Ethiopia | Africa | 88013491 |
| 10 | Egypt | Africa | 80471869 |
| 11 | Iran | Middle East | 76923300 |

We have got a table with the highest population according to to the year 2010.

TASK #9

## Problem statement:

We need to list three Asian countries with the smallest total GDP growth for all years.

## Solution:

We need to use SELECT command and the TOP clause to specify the number of records to return.
Using TOP(3) since we need only to get the 1st 3 rows from the asian table with the smallest GDP growth for all years.
Also we've used SUM function to get the total gdp in the 2nd column of the table.
*after FROM we add the table name ( in this caste it is : country)
*after WHERE we specify which region (asia)

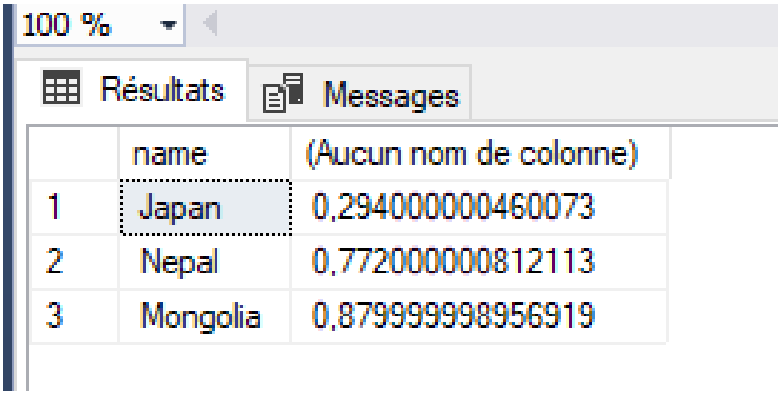
Code:

```
use lab21;
select TOP(3)  name, sum(gdp)
from country  where (region = 'asia')group by name order by
sum(gdp);

        + CREATE TABLE [dbo].[country](…
```

## Reasoning:

### Result:




| | name | (Aucun nom de colonne) |
|---|---|---|
| 1 | Japan | 0,294000000460073 |
| 2 | Nepal | 0,772000000812113 |
| 3 | Mongolia | 0,879999998956919 |

We have got a table including the 3 asian countries with the smallest total(gdp) growth for all years.

TASK #10

## Problem statement:

We need to list the countries with total GDP growth greater than 1.4

**Solution:**

We use SELECT and we have to mention 3 columns :name, region and total(gdp) after the command.
Here we've used SUM function to get the total gdp in the 3nd column of the table.
Using group statement to assemble the result-set by 3 columns.
Also here we've used the HAVING clause because the WHERE keyword cannot be used with aggregate functions.

```
use lab21;

select name, region, sum(gdp)
from country  group by name,region having sum(gdp)>1.4 ;

        + CREATE TABLE [dbo].[country](…
```

## Reasoning:

## Result:

Résultats | Messages

| | name | region | (Aucun nom de colonne) |
|---|---|---|---|
| 1 | Angola | Africa | 1,42000001110137 |
| 2 | Equatorial Guinea | Africa | 1,92400003038347 |
| 3 | Bhutan | Asia | 1,48999999091029 |
| 4 | China | Asia | 1,84600000083447 |
| 5 | Maldives | Asia | 1,43700000457466 |
| 6 | Turkmenistan | Commonwealth of Independent States - Central Asia... | 1,43900000851136 |
| 7 | Azerbaijan | Commonwealth of Independent States - European St... | 1,95399999897927 |
| 8 | Kuwait | Middle East | 1,83300002105534 |
| 9 | Malaysia | Southeast Asia | 1,42900000652298 |
| 10 | Singapore | Southeast Asia | 1,47900000028312 |

We have got a table including the countries with the total(gdp) greater than 1.4.