**### a. Creating View of ‘forestation’**

**CREATE VIEW forestation**

**AS**

**SELECT f.country\_code, f.country\_name,f.year, l.country\_name land\_name, r.region, r.income\_group, l.total\_area\_sq\_mi, f.forest\_area\_sqkm, (l.total\_area\_sq\_mi\*2.59) land\_area\_sqkm, 100\* (f.forest\_area\_sqkm/(l.total\_area\_sq\_mi\*2.59)) percentage**

**FROM forest\_area f**

**JOIN land\_area l**

**ON f.year= l.year AND l.country\_code = f.country\_code**

**JOIN regions r**

**ON l.country\_code = r.country\_code**

**### b. What was the total forest area (in sq km) of the world in 2016? Please keep in mind that you can use the country record in the table is denoted as “World.”**

**c. What was the change (in sq km) in the forest area of the world from 1990 to 2016?**

**d. What was the percent change in forest area of the world between 1990 and 2016**

**with t1 as (SELECT \***

**FROM forest\_area**

**WHERE country\_name = 'World' and year = '1990'),**

**t2 as (SELECT \***

**FROM forest\_area**

**WHERE country\_name = 'World' and year = '2016')**

**SELECT t1.forest\_area\_sqkm forest\_area\_sqkm\_1990, t2.forest\_area\_sqkm forest\_area\_sqkm\_2016, t2.forest\_area\_sqkm - t1.forest\_area\_sqkm difference, 100\*((t2.forest\_area\_sqkm - t1.forest\_area\_sqkm)/t1.forest\_area\_sqkm) percentage\_change**

**from t1**

**join t2**

**on t1.country\_name = t2.country\_name**

**### e. If you compare the amount of forest area lost between 1990 and 2016, to which country's total area in 2016 is it closest to?**

**select country\_name, (total\_area\_sq\_mi \* 2.59) total\_land\_area\_sqkm, year**

**from land\_area**

**where year = 2016 AND (total\_area\_sq\_mi \* 2.59) <= 1324449**

**order by 2 desc**

**or from the forestation table we created through CREATE VIEW in the beginning**

**SELECT country\_name, land\_area\_sqkm**

**FROM forestation**

**WHERE year = 2016 and land\_area\_sqkm < 1324449**

**ORDER BY land\_area\_sqkm desc**

1. **What was the percent forest of the entire world in 2016?**

**SELECT year, region region\_name, 100\* (sum (forest\_area\_sqkm)/ sum (land\_area\_sqkm)) percentage\_forest\_area**

**from forestation**

**where year = '2016' and region = 'World'**

**group by 1,2**

**order by 1 desc**

**Which region had the HIGHEST percent forest in 2016?**

**with t1 as (SELECT year, region region\_name, 100\* (sum (forest\_area\_sqkm)/ sum (land\_area\_sqkm)) percentage\_forest\_area**

**from forestation**

**where year BETWEEN '1990' and '2016'**

**group by 1,2**

**order by 1 desc)**

**SELECT year, region\_name, MAX (percentage\_forest\_area) max\_forest\_area**

**FROM t1**

**WHERE year = '2016'**

**GROUP BY 1,2**

**ORDER BY 3 DESC**

**Which had the LOWEST, to 2 decimal places?**

**with t1 as (SELECT year, region region\_name, 100\* (sum (forest\_area\_sqkm)/ sum (land\_area\_sqkm)) percentage\_forest\_area**

**from forestation**

**where year BETWEEN '1990' and '2016'**

**group by 1,2**

**order by 1 desc),**

**max\_2016 as (SELECT year, region\_name, percentage\_forest\_area, MAX (percentage\_forest\_area) max\_forest\_area**

**FROM t1**

**WHERE year = '2016'**

**GROUP BY 1,2,3**

**ORDER BY 4 DESC)**

**SELECT year, region\_name, MIN (percentage\_forest\_area) min\_forest\_area**

**FROM t1**

**WHERE year = '2016'**

**GROUP BY 1,2**

**ORDER BY 3 ASC**

1. **What was the percent forest of the entire world in 1990?**

**SELECT year, region region\_name, 100\* (sum (forest\_area\_sqkm)/ sum (land\_area\_sqkm)) percentage\_forest\_area**

**from forestation**

**where year = '1990' and region = 'World'**

**group by 1,2**

**order by 1 desc**

**Which region had the HIGHEST percent forest in 1990?**

**WITH t1 as (SELECT year, region region\_name, 100\* (sum (forest\_area\_sqkm)/ sum (land\_area\_sqkm)) percentage\_forest\_area**

**from forestation**

**where year = '1990'**

**group by 1,2**

**order by 1 desc),**

**t2 as (SELECT year, region\_name, percentage\_forest\_area**

**from t1**

**where year = '1990' and region\_name = 'World')**

**select year, region\_name, MAX (percentage\_forest\_area)**

**FROM t1**

**group by 1,2**

**order by 3 desc**

**which had the LOWEST, to 2 decimal places?**

**WITH t1 as (SELECT year, region region\_name, 100\* (sum (forest\_area\_sqkm)/ sum (land\_area\_sqkm)) percentage\_forest\_area**

**from forestation**

**where year = '1990'**

**group by 1,2**

**order by 1 desc),**

**t2 as (SELECT year, region\_name, percentage\_forest\_area**

**from t1**

**where year = '1990' and region\_name = 'World'),**

**Max\_1990 as (select year, region\_name, MAX (percentage\_forest\_area)**

**FROM t1**

**group by 1,2**

**order by 3 desc)**

**select year, region\_name, MIN (percentage\_forest\_area)**

**FROM t1**

**group by 1,2**

**order by 3 ASC**

**Based on the table you created, which regions of the world DECREASED in forest area from 1990 to 2016?**

with t1 as (SELECT year year\_1990, region region\_name, 100\* (sum (forest\_area\_sqkm)/ sum (land\_area\_sqkm)) percentage\_forest\_area\_1990

from forestation

where year = '1990'

group by 1,2

order by 1 desc),

t2 as (SELECT year year\_2016, region region\_name\_2016, 100\* (sum (forest\_area\_sqkm)/ sum (land\_area\_sqkm)) percentage\_forest\_area\_2016

from forestation

where year = '2016'

group by 1,2

order by 1 desc)

SELECT year\_1990 year\_list, percentage\_forest\_area\_1990, percentage\_forest\_area\_2016,region\_name, year\_2016

FROM t1

JOIN t2

ON t1.region\_name = t2.region\_name\_2016

WHERE region\_name != 'World'

order by 4 DESC

**Which 5 countries saw the largest amount decrease in forest area from 1990 to 2016? What was the difference in forest area for each?**

with t1 as (Select region region\_1990, country\_name country\_1990, year year\_1990, forest\_area\_sqkm forest\_1990

from forestation

Where year = '1990'),

t2 as (Select region region\_2016, country\_name country\_2016, year year\_2016, forest\_area\_sqkm forest\_2016

from forestation

Where year = '2016')

SELECT region\_2016, country\_1990 countries, year\_1990, year\_2016, forest\_1990, forest\_2016, forest\_2016- forest\_1990 difference

from t1

join t2

on t1.country\_1990 = t2. country\_2016

AND country\_1990 != 'World'

AND (forest\_2016 - forest\_1990) IS NOT NULL

order by 7 ASC

LIMIT 5

**Which 5 countries saw the largest percent decrease in forest area from 1990 to 2016? What was the percent change to 2 decimal places for each?**

with t1 as (Select country\_name country\_1990, region region\_1990, year year\_1990, forest\_area\_sqkm forest\_1990, percentage percentage\_1990

from forestation

Where year = '1990'),

t2 as (Select country\_name country\_2016,region region\_2016, year year\_2016, forest\_area\_sqkm forest\_2016, percentage percentage\_2016

from forestation

Where year = '2016')

SELECT country\_1990 countries, region\_2016 region, forest\_1990, percentage\_1990, percentage\_2016, 100\*(percentage\_2016 - percentage\_1990)/ percentage\_1990 percentage\_difference

from t1

join t2

on t1.country\_1990 = t2. country\_2016

AND country\_1990 != 'World'

AND (forest\_2016 - forest\_1990) IS NOT NULL

AND (percentage\_2016 - percentage\_1990) IS NOT NULL

order by 6 ASC

**If countries were grouped by percent forestation in quartiles, which group had the most countries in it in 2016?**

WITH t1 AS (SELECT year year\_2016, CASE WHEN percentage <= 25 THEN 'first\_quartile' WHEN percentage <=50 THEN 'second\_quartile' WHEN percentage <=75 THEN 'third\_quartile' WHEN percentage > 75 THEN 'fourth\_quartile' END as quartiles

FROM forestation

WHERE year='2016')

SELECT quartiles, COUNT (quartiles)

from t1

group by 1

order by 2 desc

**List all of the countries that were in the 4th quartile (percent forest > 75%) in 2016**

Select country\_name, quartiles

from (SELECT year year\_2016, country\_name, CASE WHEN percentage <= 25 THEN 'first\_quartile' WHEN percentage <=50 THEN 'second\_quartile' WHEN percentage <=75 THEN 'third\_quartile' WHEN percentage > 75 THEN 'fourth\_quartile'END as quartiles

FROM forestation

WHERE year='2016') t1

WHERE quartiles = 'fourth\_quartile'

**How many countries had a percent forestation higher than the United States in 2016?**

SELECT year year\_2016, country\_name, percentage

FROM forestation

WHERE year='2016' and percentage > 33.9297857030622