PROJECT SPECIFICATION
Deforestation Exploration

BUILDING A VIEW	
CRITERIA Write a CREATE statement that results in creation of a View	MEETS SPECIFICATIONS The create a forestation view query that the student writes prior to answering the questions joins all three tables on the columns indicated, and creates a new column by performing a calculation that compares two columns.

```
DROP view IF EXISTS forestation;
CREATE view forestation
AS
  (SELECT f.country_code,
          f.country_name,
          f.year,
          f.forest_area_sqkm,
          l.total_area_sq_mi * 2.59 AS total_area_sqkm,
          r.region,
          r.income_group,
          forest_area_sqkm / ( l.total_area_sq_mi * 2.59 ) AS forest_
perc
   FROM   forest_area f
          JOIN land_area l
            ON f.country_code = l.country_code
               AND f.year = l.year
          JOIN regions r
            ON r.country_code = l.country_code);
```

BASIC SQL QUERIES	
CRITERIA Write SQL queries that execute properly	Each query is included in the Appendix and executes properly. A reviewer should be able to execute this same query and get the correct output.
SELECT	`SELECT *` `FROM forestation` `WHERE country name = 'World'`

WHERE	SELECT year, country_name, forest_area_sqkm FROM forestation WHERE country_name = 'World' AND year = 1990;
ORDER BY	SELECT country_name, total_area_sqkm FROM forestation WHERE year = 2016 AND total_area_sqkm <= (with forest_loss_perc_1990_2016 AS (SELECT a.forest_area_sqkm in_1990, b.forest_area_sqkm in_2016 FROM forestation a, forestation b WHERE a.year = 1990 AND b.year = 2016 AND a.country_name = 'World' AND b.country_name = 'World') SELECT abs(in_2016 - in_1990) country_close_to_forest_area_lost FROM forest_loss_perc_1990_2016) ORDER BY 2 DESC LIMIT 1 ;
GROUP BY	SELECT country_name, total_area_sqkm FROM forestation WHERE year = 2016 AND total_area_sqkm <= (with forest_loss_perc_1990_2016 AS (SELECT a.forest_area_sqkm in_1990, b.forest_area_sqkm in_2016 FROM forestation a, forestation b WHERE a.year = 1990 AND b.year = 2016 AND a.country_name = 'World' AND b.country_name = 'World') SELECT abs(in_2016 - in_1990) country_close_to_forest_area_lost FROM forest_loss_perc_1990_2016)

	`` ORDER BY 2 DESC LIMIT 1 ; ```
BOOLEAN OPERATORS	``` SELECT ntile, Count(*) FROM (SELECT country_name, forest_perc, Ntile(4) OVER (ORDER BY forest_perc) FROM forestation WHERE year = 2016 AND forest_perc IS NOT NULL) sub GROUP BY 1; ```

WINDOWS FUNCTIONS	
CRITERIA Write SQL queries that makes use of Windows functions	MEETS SPECIFICATIONS Queries make use of Windows Functions such as SUM, COUNT, ROUND and/or ABS as needed to perform the appropriate calculation in order to answer the questions posed.

```
SELECT a.region,
       a.forest_area_decrease_btw_1990_2016
       AS forest_perc_1990,
       b.forest_area_decrease_btw_1990_2016
       AS forest_perc_2016,
       b.forest_area_decrease_btw_1990_2016 -
       a.forest_area_decrease_btw_1990_2016 AS
       forest_perc_decrease
FROM   (SELECT region,
               Sum(forest_area_sqkm) forest_area_sum,
               Sum(total_area_sqkm)  total_area_sum,
               Round(Cast(Sum(forest_area_sqkm) / Sum(total_area_sqkm
) * 100 AS
                          NUMERIC
                     ), 2)
                                    forest_area_decrease_btw_1990_20
16
        FROM   forestation
        WHERE  year = 1990
        GROUP  BY 1
        ORDER  BY 4 DESC) a
       JOIN (SELECT region,
```

```
                    Sum(forest_area_sqkm) forest_area_sum,
                    Sum(total_area_sqkm)  total_area_sum,
                    Round(Cast(Sum(forest_area_sqkm) / Sum(total_area
_sqkm) *
                                       100 AS
                                       NUMERIC
                              ), 2)
                                                forest_area_decrease_btw_19
90_2016
             FROM   forestation
             WHERE  year = 2016
             GROUP  BY 1
             ORDER  BY 4 DESC) b
         ON a.region = b.region
ORDER  BY 4;
```

```
SELECT ntile,
       Count(*)
FROM   (SELECT country_name,
               forest_perc,
               Ntile(4)
                 OVER (
                   ORDER BY forest_perc)
        FROM   forestation
        WHERE  year = 2016
               AND forest_perc IS NOT NULL) sub
GROUP  BY 1;
```

JOIN COMMAND	
CRITERIA The project contains properly formatted SQL Joins	MEETS SPECIFICATIONS Queries include the appropriate form of Join (Inner, Left, Right, Outer) clause to ensure that no necessary rows are left out.

The project uses a JOIN to perform row-level calculations on a single table like difference and percent difference.	`SELECT a.country_name,` `  a.forest_area_sqkm forest_90,` `  b.forest_area_sqkm forest_16,` `  a.forest_area_sqkm - b.forest_area_sqkm forest_loss` `FROM (SELECT country_name,` `  forest_area_sqkm` `  FROM forestation` `  WHERE year = 1990) a` `  JOIN (SELECT country_name,` `  forest_area_sqkm` `  FROM forestation` `  WHERE year = 2016) b` `  ON a.country_name = b.country_name` `ORDER BY 4` `LIMIT 2;`
The project contains a JOIN that combines disparate tables together on one or multiple columns	`SELECT f.country_code,` `  f.country_name,` `  f.year,` `  f.forest_area_sqkm,` `  l.total_area_sq_mi * 2.59 AS total_area_sqkm,` `  r.region,` `  r.income_group,` `  forest_area_sqkm / ( l.total_area_sq_mi * 2.59 ) AS forest_perc` `FROM forest_area f` `  JOIN land_area l` `  ON f.country_code = l.country_code` `  AND f.year = l.year` `  JOIN regions r` `  ON r.country_code = l.country_code`

CASE COMMAND	
CRITERIA Write a CASE statement to return values based on specific conditions	MEETS SPECIFICATIONS The query the student writes for question 3(c) includes a CASE statement that addresses the question.

CASE	

```
WITH forestation_quartiles_2016
     AS (SELECT country_name,
                forest_perc,
                CASE
                  WHEN forest_perc > 0.75 THEN 4
                  WHEN forest_perc <= 0.75
                       AND forest_perc > 0.5 THEN 3
                  WHEN forest_perc <= 0.5
                       AND forest_perc > 0.25 THEN 2
                  WHEN forest_perc <= 0.25 THEN 1
                END AS level
         FROM   forestation
         WHERE  year = 2016)
SELECT level,
       Count(*)
FROM   forestation_quartiles_2016
GROUP  BY 1
```