

Scienceqtech Employee Performance Mapping Project Solution:

Description:

ScienceQtech is a startup that works in the Data Science field. ScienceQtech has worked on fraud detection, market basket, self-driving cars, supply chain, algorithmic early detection of lung cancer, customer sentiment, and the drug discovery field. With the annual appraisal cycle around the corner, the HR department has asked you (Junior Database Administrator) to generate reports on employee details, their performance, and on the project that the employees have undertaken, to analyse the employee database and extract specific data based on different requirements.

Tasks to be performed:

1. Create a database named **employee**, then import **data_science_team.csv**, **proj_table.csv** and **emp_record_table.csv** into the **employee** database from the given resources.
2. Create an ER diagram for the given **employee** database.
3. Write a query to fetch EMP_ID, FIRST_NAME, LAST_NAME, GENDER, and DEPARTMENT from the employee record table, and make a list of employees and details of their department.
4. Write a query to fetch EMP_ID, FIRST_NAME, LAST_NAME, GENDER, DEPARTMENT, and EMP_RATING if the EMP_RATING is:
 - less than two
 - greater than four
 - between two and four
5. Write a query to concatenate the FIRST_NAME and the LAST_NAME of employees in the Finance department from the employee table and then give the resultant column alias as NAME.
6. Write a query to list only those employees who have someone reporting to them. Also, show the number of reporters (including the President).
7. Write a query to list down all the employees from the healthcare and finance departments using union. Take data from the employee record table.
8. Write a query to list down employee details such as EMP_ID, FIRST_NAME, LAST_NAME, ROLE, DEPARTMENT, and EMP_RATING grouped by dept. Also include the respective employee rating along with the max emp rating for the department.

9. Write a query to calculate the minimum and the maximum salary of the employees in each role. Take data from the employee record table.
10. Write a query to assign ranks to each employee based on their experience. Take data from the employee record table.
11. Write a query to create a view that displays employees in various countries whose salary is more than six thousand. Take data from the employee record table.
12. Write a nested query to find employees with experience of more than ten years. Take data from the employee record table.
13. Write a query to create a stored procedure to retrieve the details of the employees whose experience is more than three years. Take data from the employee record table.
14. Write a query using stored functions in the project table to check whether the job profile assigned to each employee in the data science team matches the organization's set standard.

The standard being:

For an employee with experience less than or equal to 2 years assign 'JUNIOR DATA SCIENTIST',

For an employee with the experience of 2 to 5 years assign 'ASSOCIATE DATA SCIENTIST',

For an employee with the experience of 5 to 10 years assign 'SENIOR DATA SCIENTIST',

For an employee with the experience of 10 to 12 years assign 'LEAD DATA SCIENTIST',

For an employee with the experience of 12 to 16 years assign 'MANAGER'.

15. Create an index to improve the cost and performance of the query to find the employee whose FIRST_NAME is 'Eric' in the employee table after checking the execution plan.
16. Write a query to calculate the bonus for all the employees, based on their ratings and salaries (Use the formula: 5% of salary * employee rating).
17. Write a query to calculate the average salary distribution based on the continent and country. Take data from the employee record table.

Project Solution:

```
CREATE DATABASE employee;
```

```
USE EMPLOYEE;
```

```
SELECT EMP_ID, FIRST_NAME, LAST_NAME, GENDER, DEPT
```

```
FROM emp_record_table;
```

EMP_ID	FIRST_NAME	LAST_NAME	GENDER	DEPT
E001	Arthur	Black	M	ALL
E005	Eric	Hoffman	M	FINANCE
E010	William	Butler	M	AUTOMOTIVE
E052	Dianna	Wilson	F	HEALTHCARE
E057	Dorothy	Wilson	F	HEALTHCARE
E083	Patrick	Voltz	M	HEALTHCARE
E103	Emily	Grove	F	FINANCE
E204	Karene	Nowak	F	AUTOMOTIVE
E245	Nian	Zhen	M	RETAIL
E260	Roy	Collins	M	RETAIL
E403	Steve	Hoffman	M	FINANCE
E428	Pete	Allen	M	AUTOMOTIVE
E478	David	Smith	M	RETAIL
E505	Chad	Wilson	M	HEALTHCARE
E532	Claire	Brennan	F	AUTOMOTIVE
E583	Janet	Hale	F	RETAIL
E612	Tracy	Norris	F	RETAIL
E620	Katrina	Allen	F	RETAIL
E640	Jenifer	Jhones	F	RETAIL

```
SELECT EMP_ID, FIRST_NAME, LAST_NAME, GENDER, DEPT,EMP_RATING
```

```
FROM emp_record_table
```

```
WHERE EMP_RATING <2 ;
```

Result Grid						
		Filter Rows:		Export:		Wrap Cell Content:
	EMP_ID	FIRST_NAME	LAST_NAME	GENDER	DEPT	EMP_RATING
▶	E057	Dorothy	Wilson	F	HEALTHCARE	1
	E532	Claire	Brennan	F	AUTOMOTIVE	1
	E620	Katrina	Allen	F	RETAIL	1

```
SELECT EMP_ID, FIRST_NAME, LAST_NAME, GENDER, DEPT,EMP_RATING
```

```
FROM emp_record_table
```

```
WHERE EMP_RATING > 4 ;
```

Result Grid						
		Filter Rows:				
		Export:				
		Wrap Cell Content:				
	EMP_ID	FIRST_NAME	LAST_NAME	GENDER	DEPT	EMP_RATING
▶	E001	Arthur	Black	M	ALL	5
	E052	Dianna	Wilson	F	HEALTHCARE	5
	E083	Patrick	Voltz	M	HEALTHCARE	5
	E204	Karene	Nowak	F	AUTOMOTIVE	5

```
SELECT EMP_ID, FIRST_NAME, LAST_NAME, GENDER, DEPT, EMP_RATING
FROM emp_record_table
WHERE EMP_RATING BETWEEN 2 AND 4 ;
```

Result Grid						
		Filter Rows:				
		Export:				
		Wrap Cell Content:				
	EMP_ID	FIRST_NAME	LAST_NAME	GENDER	DEPT	EMP_RATING
▶	E005	Eric	Hoffman	M	FINANCE	3
	E010	William	Butler	M	AUTOMOTIVE	2
	E103	Emily	Grove	F	FINANCE	4
	E245	Nian	Zhen	M	RETAIL	2
	E260	Roy	Collins	M	RETAIL	3
	E403	Steve	Hoffman	M	FINANCE	3
	E428	Pete	Allen	M	AUTOMOTIVE	4
	E478	David	Smith	M	RETAIL	4
	E505	Chad	Wilson	M	HEALTHCARE	2
	E583	Janet	Hale	F	RETAIL	2
	E612	Tracy	Norris	F	RETAIL	4
	E640	Jenifer	Jhones	F	RETAIL	4

```
SELECT concat(FIRST_NAME, ' ', LAST_NAME) AS NAME
FROM emp_record_table;
```

Result Grid	
Filter Rows:	
	NAME
▶	Arthur Black
	Eric Hoffman
	William Butler
	Dianna Wilson
	Dorothy Wilson
	Patrick Voltz
	Emily Grove
	Karene Nowak
	Nian Zhen
	Roy Collins
	Steve Hoffman
	Pete Allen
	David Smith
	Chad Wilson
	Claire Brennan
	Janet Hale
	Tracy Norris
	Katrina Allen
	Jenifer Jhones

```

SELECT *

from emp_record_table WHERE (DEPT = 'healthcare')

UNION

SELECT *

from emp_record_table

WHERE (DEPT = 'finance');

```

EMP_ID	FIRST_NAME	LAST_NAME	GENDER	ROLE	DEPT	EXP	COUNTRY	CONTINENT	SALARY	EMP_RATING	MANAGER_ID	PROJ_ID
E052	Dianna	Wilson	F	SENIOR DATA SCIENTIST	HEALTHCARE	6	CANADA	NORTH AMERICA	5500	5	E083	P103
E057	Dorothy	Wilson	F	SENIOR DATA SCIENTIST	HEALTHCARE	9	USA	NORTH AMERICA	7700	1	E083	P302
E083	Patrick	Voltz	M	MANAGER	HEALTHCARE	15	USA	NORTH AMERICA	9500	5	E001	NULL
E505	Chad	Wilson	M	ASSOCIATE DATA SCIENTIST	HEALTHCARE	5	CANADA	NORTH AMERICA	5000	2	E083	P103
E005	Eric	Hoffman	M	LEAD DATA SCIENTIST	FINANCE	11	USA	NORTH AMERICA	8500	3	E103	P105
E103	Emily	Grove	F	MANAGER	FINANCE	14	CANADA	NORTH AMERICA	10500	4	E001	NULL
E403	Steve	Hoffman	M	ASSOCIATE DATA SCIENTIST	FINANCE	4	USA	NORTH AMERICA	5000	3	E103	P105

```

SELECT EMP_ID, FIRST_NAME, LAST_NAME, ROLE, DEPT, EMP_RATING,
MAX(EMP_RATING) OVER (PARTITION BY DEPT) AS MAX_RATING
FROM emp_record_table;

```

EMP_ID	FIRST_NAME	LAST_NAME	ROLE	DEPT	EMP_RATING	MAX_RATING
E001	Arthur	Black	PRESIDENT	ALL	5	5
E010	William	Butler	LEAD DATA SCIENTIST	AUTOMOTIVE	2	5
E204	Karene	Nowak	SENIOR DATA SCIENTIST	AUTOMOTIVE	5	5
E428	Pete	Allen	MANAGER	AUTOMOTIVE	4	5
E532	Claire	Brennan	ASSOCIATE DATA SCIENTIST	AUTOMOTIVE	1	5
E005	Eric	Hoffman	LEAD DATA SCIENTIST	FINANCE	3	4
E103	Emily	Grove	MANAGER	FINANCE	4	4
E403	Steve	Hoffman	ASSOCIATE DATA SCIENTIST	FINANCE	3	4
E052	Dianna	Wilson	SENIOR DATA SCIENTIST	HEALTHCARE	5	5
E057	Dorothy	Wilson	SENIOR DATA SCIENTIST	HEALTHCARE	1	5
E083	Patrick	Voltz	MANAGER	HEALTHCARE	5	5
E505	Chad	Wilson	ASSOCIATE DATA SCIENTIST	HEALTHCARE	2	5
E245	Nian	Zhen	SENIOR DATA SCIENTIST	RETAIL	2	4
E260	Roy	Collins	SENIOR DATA SCIENTIST	RETAIL	3	4
E478	David	Smith	ASSOCIATE DATA SCIENTIST	RETAIL	4	4
E583	Janet	Hale	MANAGER	RETAIL	2	4
E612	Tracy	Norris	MANAGER	RETAIL	4	4
E620	Katrina	Allen	JUNIOR DATA SCIENTIST	RETAIL	1	4
E640	Jenifer	Jhones	JUNIOR DATA SCIENTIST	RETAIL	4	4

```

SELECT role, MIN(salary) AS min_salary, MAX(salary) AS max_salary
FROM emp_record_table GROUP BY role;

```

role	min_salary	max_salary
PRESIDENT	16500	16500
LEAD DATA SCIENTIST	8500	9000
SENIOR DATA SCIENTIST	5500	7700
MANAGER	8500	11000
ASSOCIATE DATA SCIENTIST	4000	5000
JUNIOR DATA SCIENTIST	2800	3000

```

SELECT *,
DENSE_RANK() OVER (ORDER BY EXP DESC) AS rank_Exp
FROM emp_record_table;

```

EMP_ID	FIRST_NAME	LAST_NAME	GENDER	ROLE	DEPT	EXP	COUNTRY	CONTINENT	SALARY	EMP_RATING	MANAGER_ID	PROJ_ID	rank_Exp
E001	Arthur	Black	M	PRESIDENT	ALL	20	USA	NORTH AMERICA	16500	5	NULL	NULL	1
E083	Patrick	Voltz	M	MANAGER	HEALTHCARE	15	USA	NORTH AMERICA	9500	5	E001	NULL	2
E103	Emily	Grove	F	MANAGER	FINANCE	14	CANADA	NORTH AMERICA	10500	4	E001	NULL	3
E428	Pete	Allen	M	MANAGER	AUTOMOTIVE	14	GERMANY	EUROPE	11000	4	E001	NULL	3
E583	Janet	Hale	F	MANAGER	RETAIL	14	COLOMBIA	SOUTH AMERICA	10000	2	E001	NULL	3
E612	Tracy	Norris	F	MANAGER	RETAIL	13	INDIA	ASIA	8500	4	E001	NULL	4
E010	William	Butler	M	LEAD DATA SCIENTIST	AUTOMOTIVE	12	FRANCE	EUROPE	9000	2	E428	P204	5
E005	Eric	Hoffman	M	LEAD DATA SCIENTIST	FINANCE	11	USA	NORTH AMERICA	8500	3	E103	P105	6
E057	Dorothy	Wilson	F	SENIOR DATA SCIENTIST	HEALTHCARE	9	USA	NORTH AMERICA	7700	1	E083	P302	7
E204	Karene	Nowak	F	SENIOR DATA SCIENTIST	AUTOMOTIVE	8	GERMANY	EUROPE	7500	5	E428	P204	8
E260	Roy	Collins	M	SENIOR DATA SCIENTIST	RETAIL	7	INDIA	ASIA	7000	3	E583	NA	9
E052	Dianna	Wilson	F	SENIOR DATA SCIENTIST	HEALTHCARE	6	CANADA	NORTH AMERICA	5500	5	E083	P103	10
E245	Nian	Zhen	M	SENIOR DATA SCIENTIST	RETAIL	6	CHINA	ASIA	6500	2	E583	P109	10
E505	Chad	Wilson	M	ASSOCIATE DATA SCIENTIST	HEALTHCARE	5	CANADA	NORTH AMERICA	5000	2	E083	P103	11
E403	Steve	Hoffman	M	ASSOCIATE DATA SCIENTIST	FINANCE	4	USA	NORTH AMERICA	5000	3	E103	P105	12
E478	David	Smith	M	ASSOCIATE DATA SCIENTIST	RETAIL	3	COLOMBIA	SOUTH AMERICA	4000	4	E583	P109	13
E532	Claire	Brennan	F	ASSOCIATE DATA SCIENTIST	AUTOMOTIVE	3	GERMANY	EUROPE	4300	1	E428	P204	13
E620	Katrina	Allen	F	JUNIOR DATA SCIENTIST	RETAIL	2	INDIA	ASIA	3000	1	E612	P406	14
E640	Jenifer	Jhones	F	JUNIOR DATA SCIENTIST	RETAIL	1	COLOMBIA	SOUTH AMERICA	2800	4	E612	P406	15

```

DROP VIEW empl_salary;

CREATE VIEW empl_salary AS SELECT EMP_ID, FIRST_NAME, LAST_NAME, SALARY, COUNTRY
FROM emp_record_table
WHERE SALARY > 6000;

```

```

SELECT EMP_ID, FIRST_NAME, LAST_NAME, EXP
FROM emp_record_table
WHERE (SELECT EXP > 10) ;

```

EMP_ID	FIRST_NAME	LAST_NAME	EXP
E001	Arthur	Black	20
E005	Eric	Hoffman	11
E010	William	Butler	12
E083	Patrick	Voltz	15
E103	Emily	Grove	14
E428	Pete	Allen	14
E583	Janet	Hale	14
E612	Tracy	Norris	13

```

DROP PROCEDURE emp_exp_Three;

DELIMITER &&

CREATE PROCEDURE emp_exp_Three ()

BEGIN

SELECT * FROM emp_record_table WHERE EXP > 3 ;

END &&

CALL emp_exp_Three ();

```

EMP_ID	FIRST_NAME	LAST_NAME	GENDER	ROLE	DEPT	EXP	COUNTRY	CONTINENT	SALARY	EMP_RATING	MANAGER_ID	PROJ_ID
E001	Arthur	Black	M	PRESIDENT	ALL	20	USA	NORTH AMERICA	16500	5	NULL	NULL
E005	Eric	Hoffman	M	LEAD DATA SCIENTIST	FINANCE	11	USA	NORTH AMERICA	8500	3	E103	P105
E010	William	Butler	M	LEAD DATA SCIENTIST	AUTOMOTIVE	12	FRANCE	EUROPE	9000	2	E428	P204
E052	Dianna	Wilson	F	SENIOR DATA SCIENTIST	HEALTHCARE	6	CANADA	NORTH AMERICA	5500	5	E083	P103
E057	Dorothy	Wilson	F	SENIOR DATA SCIENTIST	HEALTHCARE	9	USA	NORTH AMERICA	7700	1	E083	P302
E083	Patrick	Voltz	M	MANAGER	HEALTHCARE	15	USA	NORTH AMERICA	9500	5	E001	NULL
E103	Emily	Grove	F	MANAGER	FINANCE	14	CANADA	NORTH AMERICA	10500	4	E001	NULL
E204	Karene	Nowak	F	SENIOR DATA SCIENTIST	AUTOMOTIVE	8	GERMANY	EUROPE	7500	5	E428	P204
E245	Nian	Zhen	M	SENIOR DATA SCIENTIST	RETAIL	6	CHINA	ASIA	6500	2	E583	P109
E260	Roy	Collins	M	SENIOR DATA SCIENTIST	RETAIL	7	INDIA	ASIA	7000	3	E583	NA
E403	Steve	Hoffman	M	ASSOCIATE DATA SCIENTIST	FINANCE	4	USA	NORTH AMERICA	5000	3	E103	P105
E428	Pete	Allen	M	MANAGER	AUTOMOTIVE	14	GERMANY	EUROPE	11000	4	E001	NULL
E505	Chad	Wilson	M	ASSOCIATE DATA SCIENTIST	HEALTHCARE	5	CANADA	NORTH AMERICA	5000	2	E083	P103
E583	Janet	Hale	F	MANAGER	RETAIL	14	COLOMBIA	SOUTH AMERICA	10000	2	E001	NULL
E612	Tracy	Norris	F	MANAGER	RETAIL	13	INDIA	ASIA	8500	4	E001	NULL

```

DROP FUNCTION emrol ;

DELIMITER //

CREATE FUNCTION LAST emrol(EXP INT)

RETURNS VARCHAR(40)

DETERMINISTIC

BEGIN

DECLARE emp_role VARCHAR(40) ;

IF EXP BETWEEN 12 AND 16 THEN

SET emp_role = 'MANAGER' ;

ELSEIF EXP BETWEEN 10 AND 12 THEN

SET emp_role = 'LEAD_DATA_SCIENTIST';

ELSEIF EXP BETWEEN 5 AND 10 THEN

SET emp_role ='SENIOR_DATA_SCIENTIST';

ELSEIF EXP BETWEEN 2 AND 5 THEN

SET emp_role ='ASSOCIATE_DATA_SCIENTIST' ;

ELSEIF EXP<= 2 THEN

SET emp_role ='JUNOR_DATA_SCIENTIST';

```

END IF ;



RETURN (emp_role);


END //


SELECT EXP, emrol(EXP)

FROM data_science_team;

Result Grid



Filter Rows:

Export:


Wrap Cell Content:


	EXP	emrol(EXP)
▶	11	LEAD_DATA_SCIENTIST
	12	MANAGER
	6	SENIOR_DATA_SCIENTIST
	9	SENIOR_DATA_SCIENTIST
	8	SENIOR_DATA_SCIENTIST
	6	SENIOR_DATA_SCIENTIST
	7	SENIOR_DATA_SCIENTIST
	4	ASSOCIATE_DATA_SCIENTIST
	3	ASSOCIATE_DATA_SCIENTIST
	5	SENIOR_DATA_SCIENTIST
	3	ASSOCIATE_DATA_SCIENTIST
	2	ASSOCIATE_DATA_SCIENTIST
	1	JUNOR_DATA_SCIENTIST

DROP INDEX indx ON emp_record_table;

CREATE INDEX indx ON emp_record_table (FIRST_NAME(40));

EXPLAIN SELECT EMP_ID, FIRST_NAME, LAST_NAME FROM emp_record_table WHERE

FIRST_NAME = 'ERIC';

Result Grid

Filter Rows:

Export:

Wrap Cell Content:

	id	select_type	table	partitions	type	possible_keys	key	key_len	ref	rows	filtered	Extra
▶	1	SIMPLE	emp record table	NULL	ref	indx	indx	163	const	1	100.00	Using where

SELECT EMP_ID, FIRST_NAME, LAST_NAME, SALARY, EMP_RATING ,

(SALARY + SALARY*0.05* EMP_RATING) AS BONUS_SAL

FROM emp_record_table;

Result Grid						
	Filter Rows:		Export:		Wrap Cell Content:	
EMP_ID	FIRST_NAME	LAST_NAME	SALARY	EMP_RATING	BONUS_SAL	
E001	Arthur	Black	16500	5	20625.00	
E005	Eric	Hoffman	8500	3	9775.00	
E010	William	Butler	9000	2	9900.00	
E052	Dianna	Wilson	5500	5	6875.00	
E057	Dorothy	Wilson	7700	1	8085.00	
E083	Patrick	Voltz	9500	5	11875.00	
E103	Emily	Grove	10500	4	12600.00	
E204	Karene	Nowak	7500	5	9375.00	
E245	Nian	Zhen	6500	2	7150.00	
E260	Roy	Collins	7000	3	8050.00	
E403	Steve	Hoffman	5000	3	5750.00	
E428	Pete	Allen	11000	4	13200.00	
E478	David	Smith	4000	4	4800.00	
E505	Chad	Wilson	5000	2	5500.00	
E532	Claire	Brennan	4300	1	4515.00	
E583	Janet	Hale	10000	2	11000.00	
E612	Tracy	Norris	8500	4	10200.00	
E620	Katrina	Allen	3000	1	3150.00	
E640	Jenifer	Jhones	2800	4	3360.00	

```

SELECT EMP_ID,FIRST_NAME,LAST_NAME,COUNTRY,CONTINENT,
AVG(SALARY) OVER (PARTITION BY COUNTRY) AS avg_sal_cntry ,
AVG(SALARY) OVER (PARTITION BY CONTINENT) AS avg_sal_cont,
COUNT(*) OVER (PARTITION BY COUNTRY) AS count_in_country ,
COUNT(*) OVER (PARTITION BY CONTINENT) AS count_in_continent
FROM emp_record_table;

```

Result Grid									
	Filter Rows:		Export:		Wrap Cell Content:				
EMP_ID	FIRST_NAME	LAST_NAME	COUNTRY	CONTINENT	avg_sal_cntry	avg_sal_cont	count_in_country	count_in_continent	
E245	Nian	Zhen	CHINA	ASIA	6500.0000	6250.0000	1	4	
E260	Roy	Collins	INDIA	ASIA	6166.6667	6250.0000	3	4	
E612	Tracy	Norris	INDIA	ASIA	6166.6667	6250.0000	3	4	
E620	Katrina	Allen	INDIA	ASIA	6166.6667	6250.0000	3	4	
E010	William	Butler	FRANCE	EUROPE	9000.0000	7950.0000	1	4	
E204	Karene	Nowak	GERMANY	EUROPE	7600.0000	7950.0000	3	4	
E428	Pete	Allen	GERMANY	EUROPE	7600.0000	7950.0000	3	4	
E532	Claire	Brennan	GERMANY	EUROPE	7600.0000	7950.0000	3	4	
E052	Dianna	Wilson	CANADA	NORTH AMERICA	7000.0000	8525.0000	3	8	
E103	Emily	Grove	CANADA	NORTH AMERICA	7000.0000	8525.0000	3	8	
E505	Chad	Wilson	CANADA	NORTH AMERICA	7000.0000	8525.0000	3	8	
E001	Arthur	Black	USA	NORTH AMERICA	9440.0000	8525.0000	5	8	
E005	Eric	Hoffman	USA	NORTH AMERICA	9440.0000	8525.0000	5	8	
E057	Dorothy	Wilson	USA	NORTH AMERICA	9440.0000	8525.0000	5	8	
E083	Patrick	Voltz	USA	NORTH AMERICA	9440.0000	8525.0000	5	8	
E403	Steve	Hoffman	USA	NORTH AMERICA	9440.0000	8525.0000	5	8	
E478	David	Smith	COLOMBIA	SOUTH AMERICA	5600.0000	5600.0000	3	3	
E583	Janet	Hale	COLOMBIA	SOUTH AMERICA	5600.0000	5600.0000	3	3	
E640	Jenifer	Jhones	COLOMBIA	SOUTH AMERICA	5600.0000	5600.0000	3	3	