Comprehensive Employee Performance Mapping Using SQL at ScienceQtech

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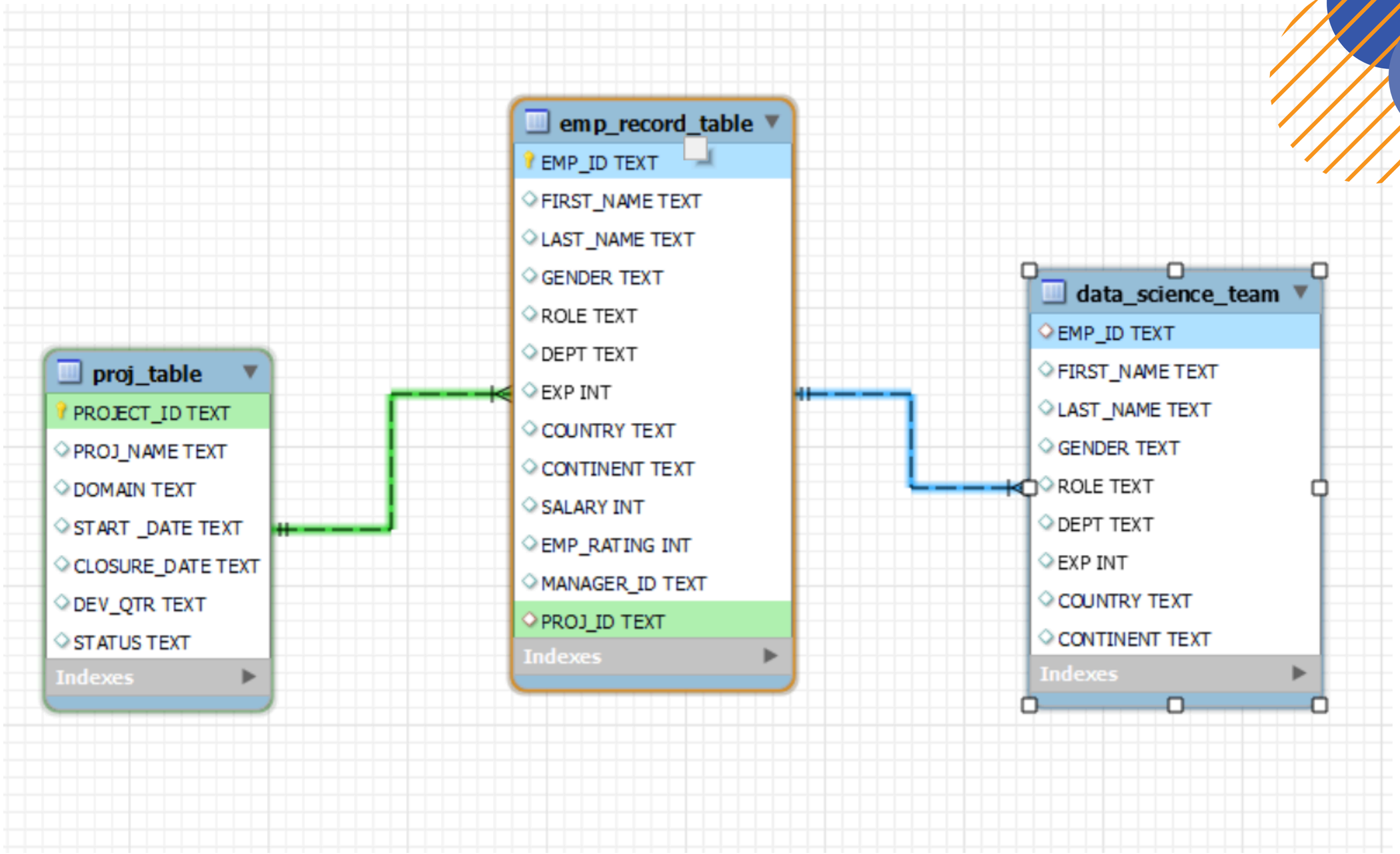
DATA ANALYST

1. Create an ER diagram for the given employee database.



2. 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.

```
select  emp_id, first_name, last_name, gender, dept as Department
from emp_record_table;
```

emp_id	first_name	last_name	gender	Department
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

3. 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

```sql
-- less than two
select emp_id, first_name, last_name, gender, dept as Department, Emp_rating
from emp_record_table
where emp_rating < 2;

-- greater than four
select emp_id, first_name, last_name, gender, dept as Department, Emp_rating
from emp_record_table
where emp_rating > 4;

-- between two and four
select emp_id, first_name, last_name, gender, dept as Department, Emp_rating
from emp_record_table
where emp_rating between 2 and 4;
```

4. 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.

```
select concat(first_name, ' ', last_name) as full_name
from emp_record_table
where dept = "finance";
```

full_name
Eric Hoffman
Emily Grove
Steve Hoffman

5. Write a query to list only those employees who have someone reporting to them. Also, show the number of reporters (including the President).

```
select e.emp_id, concat(e.first_name,' ', e.last_name) as Emp_name,
e.gender, e.role, e.dept, count(m.emp_id) as number_of_reporters
from emp_record_table as e
join emp_record_table as m on m.manager_id = e.emp_id
group by e.emp_id, Emp_name,e.gender, e.role, e.dept
order by number_of_reporters desc;
```

emp_id	Emp_name	gender	role	dept	number_of_reporters
E001	Arthur Black	M	PRESIDENT	ALL	5
E428	Pete Allen	M	MANAGER	AUTOMOTIVE	3
E083	Patrick Voltz	M	MANAGER	HEALTHCARE	3
E583	Janet Hale	F	MANAGER	RETAIL	3
E103	Emily Grove	F	MANAGER	FINANCE	2
E612	Tracy Norris	F	MANAGER	RETAIL	2

6. Write a query to list down all the employees from the healthcare and finance departments using union. Take data from the employee record table.

```
select * from emp_record_table where dept = "healthcare"
union all
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

7. 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.

```
select emp_id, first_name, last_name, role, dept, Emp_rating,
max(Emp_rating) over(partition by dept ) as Dept_max_emp_rating
from emp_record_table
order by dept, emp_rating desc;
```

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

8. Write a query to calculate the minimum and the maximum salary of the employees in each role. Take data from the employee record table.

```
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

9. Write a query to assign ranks to each employee based on their experience. Take data from the employee record table.

```
select emp_id, first_name, last_name , exp,
dense_rank() over(order by exp desc) as emp_rank
from emp_record_table;
```

emp_id	first_name	last_name	exp	emp_rank
E001	Arthur	Black	20	1
E083	Patrick	Voltz	15	2
E103	Emily	Grove	14	3
E428	Pete	Allen	14	3
E583	Janet	Hale	14	3
E612	Tracy	Norris	13	4
E010	William	Butler	12	5
E005	Eric	Hoffman	11	6
E057	Dorothy	Wilson	9	7
E204	Karene	Nowak	8	8
E260	Roy	Collins	7	9
E052	Dianna	Wilson	6	10
E245	Nian	Zhen	6	10
E505	Chad	Wilson	5	11
E403	Steve	Hoffman	4	12
E478	David	Smith	3	13
E532	Claire	Brennan	3	13
E620	Katrina	Allen	2	14
E640	Jenifer	Jhones	1	15

10. 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.

```
create view Salary_greater_than_6000 as
select * from emp_record_table
where salary > 6000;

select * from Salary_greater_than_6000;
```

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
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
E428	Pete	Allen	M	MANAGER	AUTOMOTIVE	14	GERMANY	EUROPE	11000	4	E001	NULL
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

11. Write a nested query to find employees with experience of more than ten years. Take data from the employee record table.

```
select first_name, last_name, role, exp
from emp_record_table
where exp >= (select min(exp) from emp_record_table where exp >10);
```

first_name	last_name	role	exp
Arthur	Black	PRESIDENT	20
Eric	Hoffman	LEAD DATA SCIENTIST	11
William	Butler	LEAD DATA SCIENTIST	12
Patrick	Voltz	MANAGER	15
Emily	Grove	MANAGER	14
Pete	Allen	MANAGER	14
Janet	Hale	MANAGER	14
Tracy	Norris	MANAGER	13

12. 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.

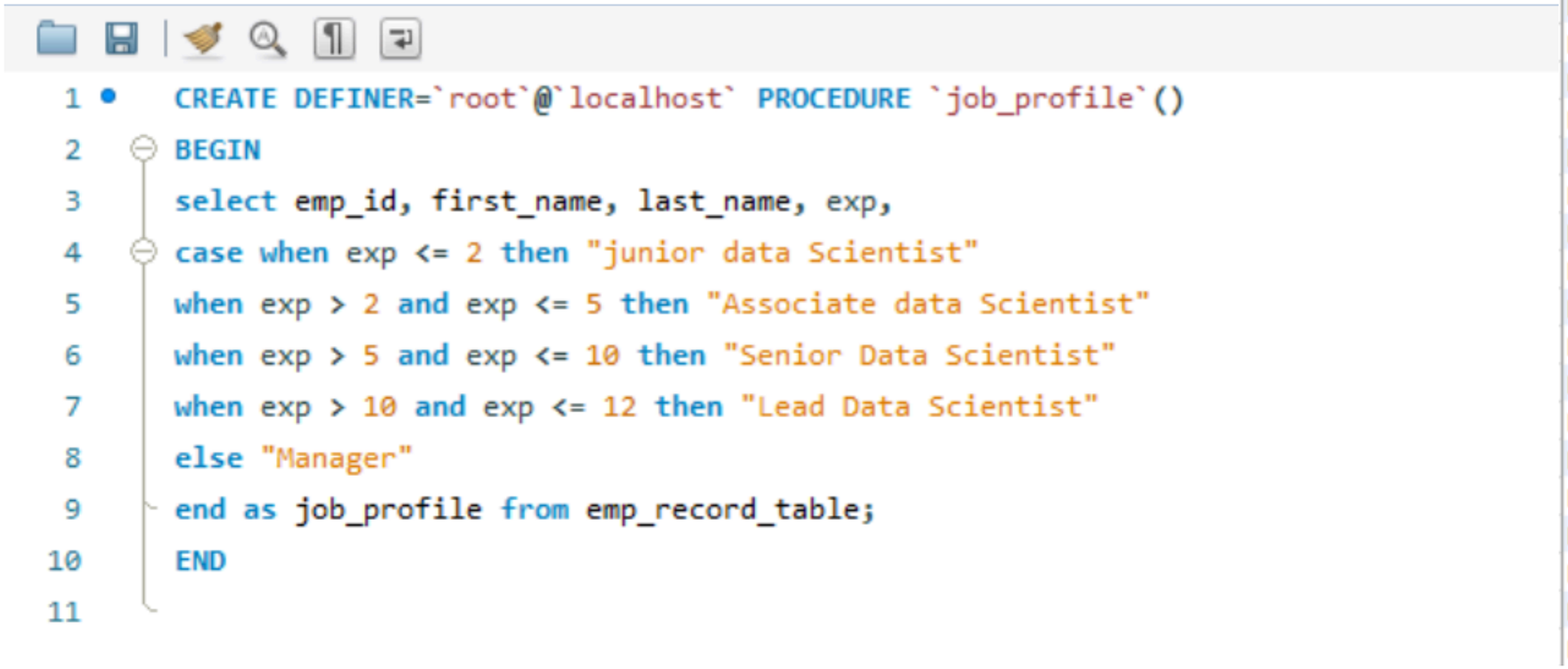
```
CREATE PROCEDURE `Exp>3`()
BEGIN
select emp_id, first_name, last_name,
role, dept, exp from emp_record_table
where exp > 3;
END

 call employee.`Exp>3`();
```

emp_id	first_name	last_name	role	dept	exp
E001	Arthur	Black	PRESIDENT	ALL	20
E005	Eric	Hoffman	LEAD DATA SCIENTIST	FINANCE	11
E010	William	Butler	LEAD DATA SCIENTIST	AUTOMOTIVE	12
E052	Dianna	Wilson	SENIOR DATA SCIENTIST	HEALTHCARE	6
E057	Dorothy	Wilson	SENIOR DATA SCIENTIST	HEALTHCARE	9
E083	Patrick	Voltz	MANAGER	HEALTHCARE	15
E103	Emily	Grove	MANAGER	FINANCE	14
E204	Karene	Nowak	SENIOR DATA SCIENTIST	AUTOMOTIVE	8
E245	Nian	Zhen	SENIOR DATA SCIENTIST	RETAIL	6
E260	Roy	Collins	SENIOR DATA SCIENTIST	RETAIL	7
E403	Steve	Hoffman	ASSOCIATE DATA SCIEN...	FINANCE	4
E428	Pete	Allen	MANAGER	AUTOMOTIVE	14
E505	Chad	Wilson	ASSOCIATE DATA SCIEN...	HEALTHCARE	5
E583	Janet	Hale	MANAGER	RETAIL	14
E612	Tracy	Norris	MANAGER	RETAIL	13

13. 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'.



```
1  CREATE DEFINER=`root`@`localhost` PROCEDURE `job_profile`()
2  BEGIN
3  select emp_id, first_name, last_name, exp,
4  case when exp <= 2 then "junior data Scientist"
5  when exp > 2 and exp <= 5 then "Associate data Scientist"
6  when exp > 5 and exp <= 10 then "Senior Data Scientist"
7  when exp > 10 and exp <= 12 then "Lead Data Scientist"
8  else "Manager"
9  end as job_profile from emp_record_table;
10 END
11
```

emp_id	first_name	last_name	exp	job_profile
E001	Arthur	Black	20	Manager
E005	Eric	Hoffman	11	Lead Data Scientist
E010	William	Butler	12	Lead Data Scientist
E052	Dianna	Wilson	6	Senior Data Scientist
E057	Dorothy	Wilson	9	Senior Data Scientist
E083	Patrick	Voltz	15	Manager
E103	Emily	Grove	14	Manager
E204	Karene	Nowak	8	Senior Data Scientist
E245	Nian	Zhen	6	Senior Data Scientist
E260	Roy	Collins	7	Senior Data Scientist
E403	Steve	Hoffman	4	Associate data Scie...
E428	Pete	Allen	14	Manager
E478	David	Smith	3	Associate data Scie...
E505	Chad	Wilson	5	Associate data Scie...
E532	Claire	Brennan	3	Associate data Scie...
E583	Janet	Hale	14	Manager
E612	Tracy	Norris	13	Manager
E620	Katrina	Allen	2	junior data Scientist
E640	Jenifer	Jhones	1	junior data Scientist

14. 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.

```
create Index idx_first_name
on emp_record_table (first_name(255));

-- Query to find first_name is Eric
select * from emp_record_table
where first_name = "Eric";

-- Checking Execution Plan:
explain select * from emp_record_table where first_name = "Eric";
```

id	select_type	table	partitions	type	possible_keys	key	key_len	ref	rows	filtered	Extra
1	SIMPLE	emp_record_table	NULL	ref	idx_first_name	idx_first_name	1023	const	1	100.00	Using where

15. 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).

```
select emp_id, first_name, last_name, role, salary, emp_rating,
(0.05*salary*emp_rating) as Bonus from emp_record_table;
```

emp_id	first_name	last_name	role	salary	emp_rating	Bonus
E001	Arthur	Black	PRESIDENT	16500	5	4125.00
E005	Eric	Hoffman	LEAD DATA SCIENTIST	8500	3	1275.00
E010	William	Butler	LEAD DATA SCIENTIST	9000	2	900.00
E052	Dianna	Wilson	SENIOR DATA SCIENTIST	5500	5	1375.00
E057	Dorothy	Wilson	SENIOR DATA SCIENTIST	7700	1	385.00
E083	Patrick	Voltz	MANAGER	9500	5	2375.00
E103	Emily	Grove	MANAGER	10500	4	2100.00
E204	Karene	Nowak	SENIOR DATA SCIENTIST	7500	5	1875.00
E245	Nian	Zhen	SENIOR DATA SCIENTIST	6500	2	650.00
E260	Roy	Collins	SENIOR DATA SCIENTIST	7000	3	1050.00
E403	Steve	Hoffman	ASSOCIATE DATA SCIEN...	5000	3	750.00
E428	Pete	Allen	MANAGER	11000	4	2200.00
E478	David	Smith	ASSOCIATE DATA SCIEN...	4000	4	800.00
E505	Chad	Wilson	ASSOCIATE DATA SCIEN...	5000	2	500.00
E532	Claire	Brennan	ASSOCIATE DATA SCIEN...	4300	1	215.00
E583	Janet	Hale	MANAGER	10000	2	1000.00
E612	Tracy	Norris	MANAGER	8500	4	1700.00
E620	Katrina	Allen	JUNIOR DATA SCIENTIST	3000	1	150.00
E640	Jenifer	Jhones	JUNIOR DATA SCIENTIST	2800	4	560.00

16. Write a query to calculate the average salary distribution based on the continent and country. Take data from the employee record table.

```
select continent, country , avg(salary) as Avg_salary
from emp_record_table
group by continent, country;
```

continent	country	Avg_salary
NORTH AMERICA	USA	9440.0000
EUROPE	FRANCE	9000.0000
NORTH AMERICA	CANADA	7000.0000
EUROPE	GERMANY	7600.0000
ASIA	CHINA	6500.0000
ASIA	INDIA	6166.6667
SOUTH AMERICA	COLOMBIA	5600.0000

THANK YOU

I appreciate your time and attention.
Feel free to connect for any queries!