ScienceQtech Employee Performance Mapping

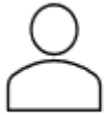
PRESENTED BY: N SURENDRA REDDY

Content

Overview of Company

Problem statement

Datasets and Model



ScienceQtech Employee Performance Mapping

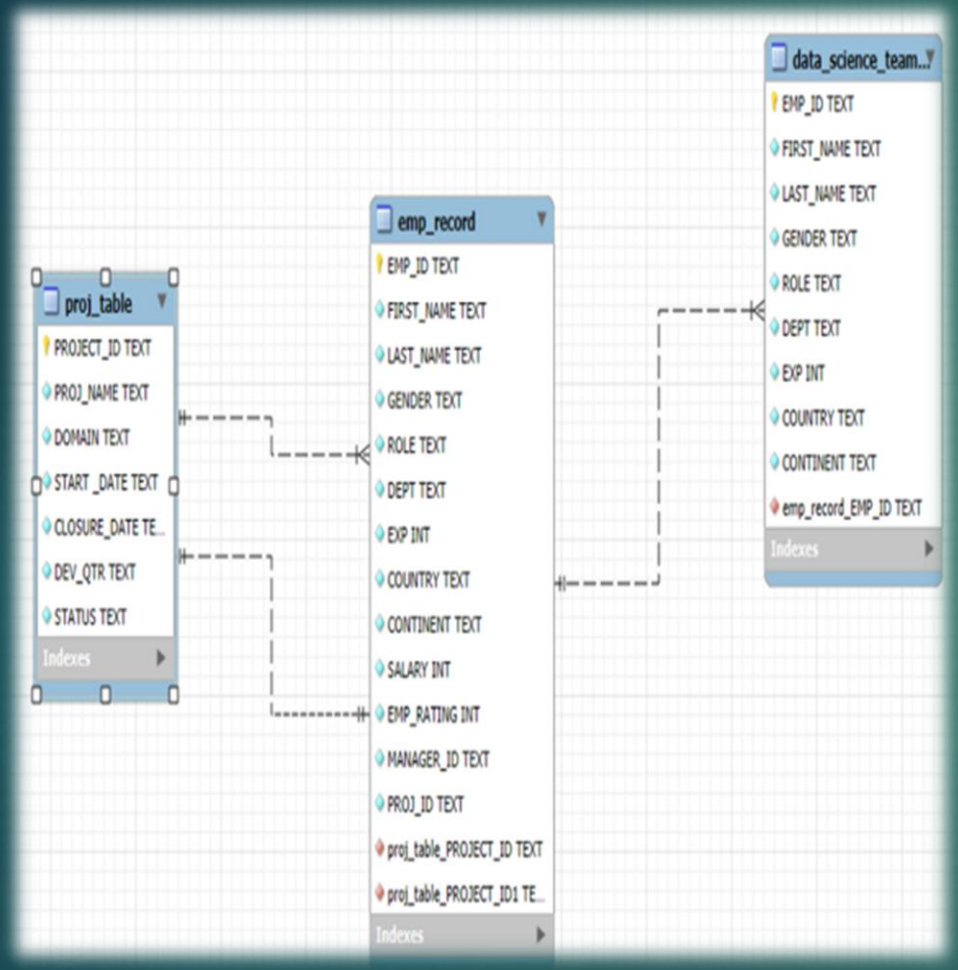
COMPANY OVERVIEW

- 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
- The annual appraisal cycle around the corner, the HR department has asked you to generate reports on employee details, their performance, and on the project that the employees have undertaken, to analyze the employee database and extract specific data based on different requirements.

PROBLEM STATEMENT

- find the maximum salary of the employees and ensure that all jobs are meeting the organization's profile standard.
- You also need to calculate bonuses to find extra cost for expenses.
- This will raise the overall performance of the organization by ensuring that all required employees receive training.

Dataset



The task 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.

LET'S SEE SCIENCEQTECH EMPLOYEE PERFORMANCE, QUERY, RESULTS AND INSIGHTS

QUESTION 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.

CODE:
```
select emp_id, first_name, last_name, gender, dept
    from emp_record;
```

OUTPUT:

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

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

QUESTION 4

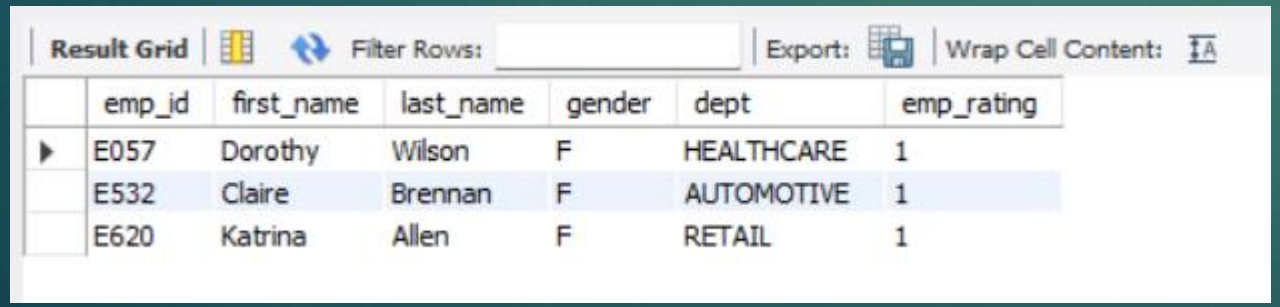
Write a query to fetch EMP_ID, FIRST_NAME, LAST_NAME, GENDER,DEPARTMENT, and EMP_RATING if the EMP_RATING is:

- less than two
- greater than four
- between two and four

CODE:

```
select emp_id, first_name, last_name, gender, dept, emp_rating
    from emp_record
    where emp_rating < 2;
```

OUTPUT:

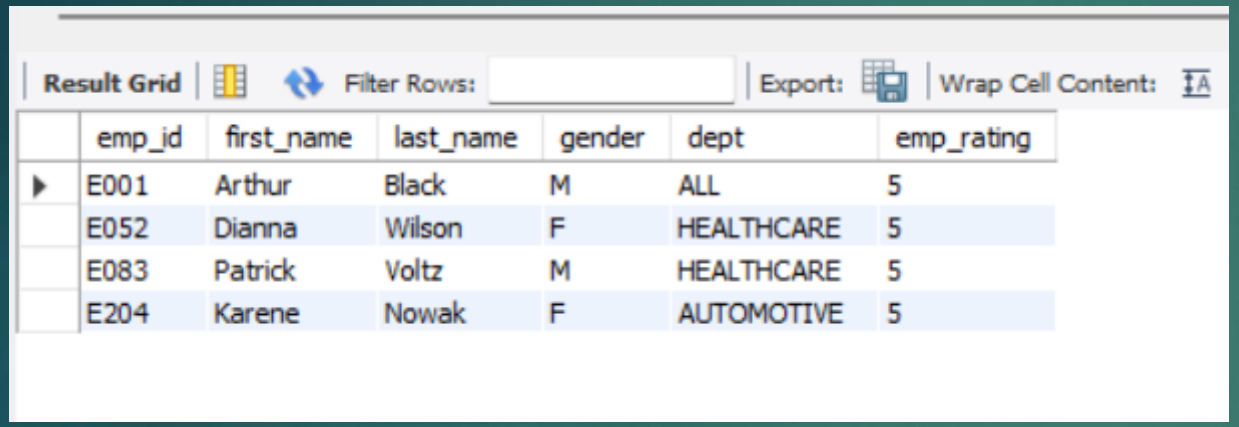


emp_id	first_name	last_name	gender	dept	emp_rating
E057	Dorothy	Wilson	F	HEALTHCARE	1
E532	Claire	Brennan	F	AUTOMOTIVE	1
E620	Katrina	Allen	F	RETAIL	1

CODE:

```
select emp_id, first_name, last_name, gender, dept, emp_rating
from emp_record
where emp_rating > 4;
```

OUTPUT:



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

CODE:

```
select emp_id, first_name, last_name, gender, dept, emp_rating
from emp_recordwhere emp_rating
between 2 and 4;
```

OUTPUT:

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		F	RETAIL	2
E612	Tracy	Norris	F	RETAIL	4
E640	Jenifer	Jhones	F	RETAIL	4

Chad

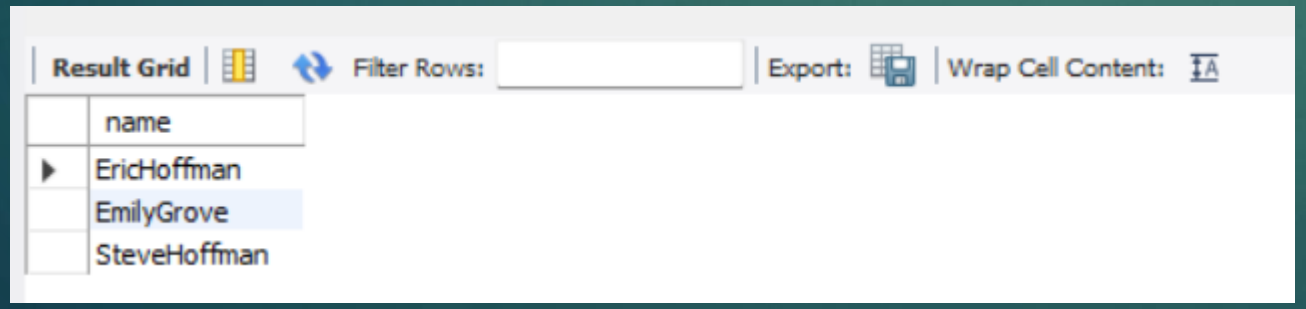
Question 5:

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.

CODE:

```
select concat(first_name, last_name) as name
from emp_record
where dept = 'finance';
```

OUTPUT:



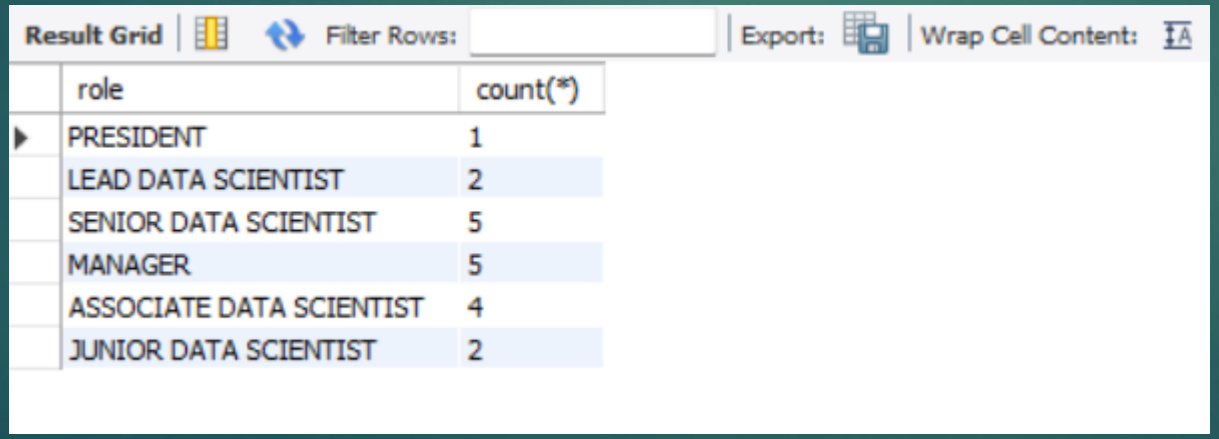
QUESTION 6:

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

CODE:

```
select role, count(*)
from emp_record
group by role;
```

OUTPUT:



role	count(*)
PRESIDENT	1
LEAD DATA SCIENTIST	2
SENIOR DATA SCIENTIST	5
MANAGER	5
ASSOCIATE DATA SCIENTIST	4
JUNIOR DATA SCIENTIST	2

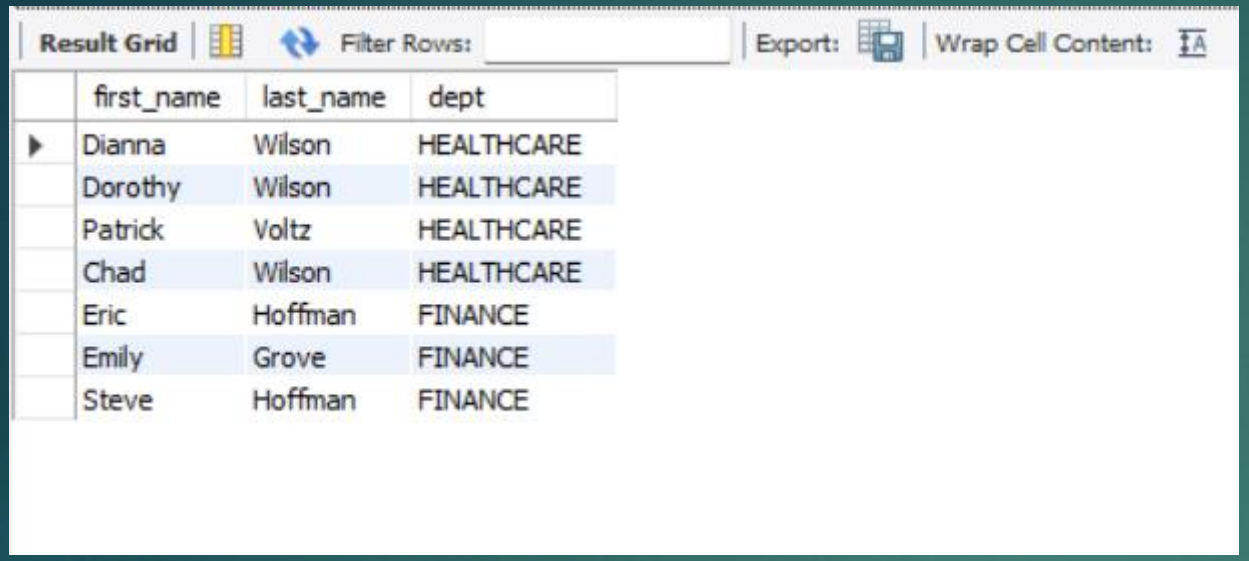
QUESTION 7:

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

CODE:

```
select first_name, last_name, dept from emp_record
where dept='healthcare'
union
select first_name, last_name, dept from emp_record
where dept='finance';
```

OUTPUT:



first_name	last_name	dept
Dianna	Wilson	HEALTHCARE
Dorothy	Wilson	HEALTHCARE
Patrick	Voltz	HEALTHCARE
Chad	Wilson	HEALTHCARE
Eric	Hoffman	FINANCE
Emily	Grove	FINANCE
Steve	Hoffman	FINANCE

QUESTION 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.

CODE:

```
select emp_id, first_name, last_name, role, dept, emp_rating,emp_rating
as max_rating
from emp_record where(dept, emp_rating)
IN (select dept, max(emp_rating)
from emp_record
group by dept);
```

OUTPUT:

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

emp_id	first_name	last_name	role	dept	emp_rating	max_rating
E001	Arthur	Black	PRESIDENT	ALL	5	5
E052	Dianna	Wilson	SENIOR DATA SCIENTIST	HEALTHCARE	5	5
E083	Patrick	Voltz	MANAGER	HEALTHCARE	5	5
E103	Emily	Grove	MANAGER	FINANCE	4	4
E204	Karene	Nowak	SENIOR DATA SCIENTIST	AUTOMOTIVE	5	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

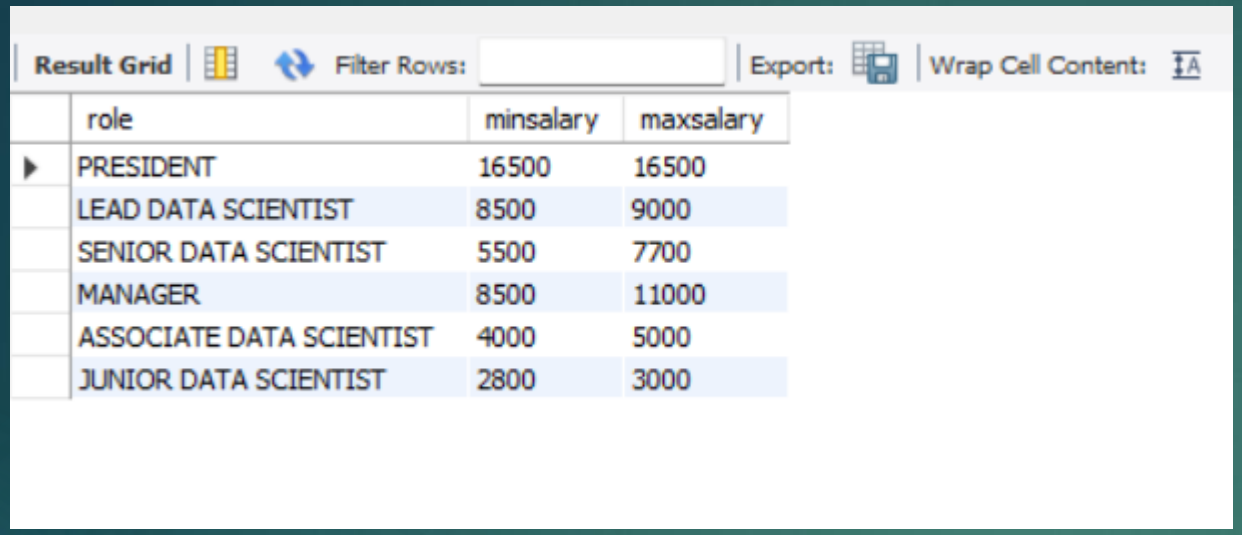
QUESTION 9:

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

CODE:

```
select role, min(salary) as minsalary, max(salary) as maxsalary
from emp_record
group by role;
```

OUTPUT:



Result Grid | Filter Rows: | Export: | Wrap Cell Content:

role	minsalary	maxsalary
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

QUESTION 10:

Write a query to assign ranks to each employee based on their experience.

CODE:

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

OUTPUT:

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

emp_id	first_name	last_name	exp	dense_rank() over(order by exp desc)
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

QUESTION 11:

Write a query to create a view that displays employees in various countrieswhose salary is more than six thousand. Take data from the employee record table.

CODE:

```
create view six_thousand_salary
        as
        select emp_id, first_name, last_name, country, salary
        from emp_record
        where salary > 6000;

        select * from six_thousand_salary;
```

OUTPUT:

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

emp_id	first_name	last_name	country	salary
E001	Arthur	Black	USA	16500
E005	Eric	Hoffman	USA	8500
E010	William	Butler	FRANCE	9000
E057	Dorothy	Wilson	USA	7700
E083	Patrick	Voltz	USA	9500
E103	Emily	Grove	CANADA	10500
E204	Karene	Nowak	GERMANY	7500
E245	Nian	Zhen	CHINA	6500
E260	Roy	Collins	INDIA	7000
E428	Pete	Allen	GERMANY	11000
E583	Janet	Hale	COLOMBIA	10000
E612	Tracy	Norris	INDIA	8500

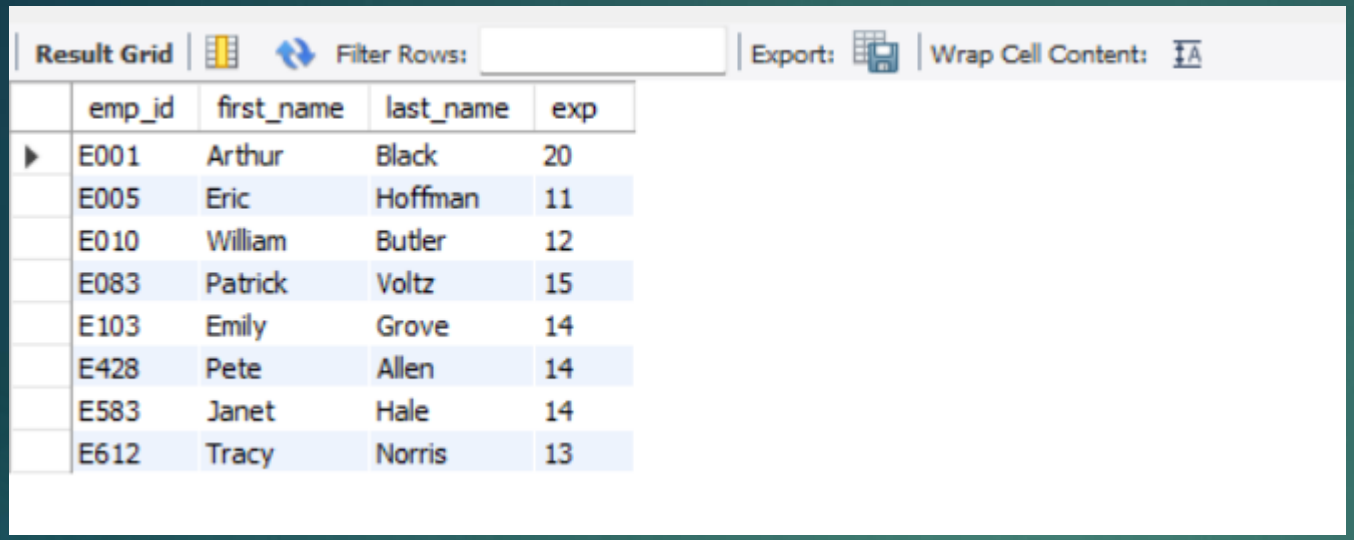
QUESTION 12:

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

CODE:

```
select emp_id, first_name, last_name, exp
    from emp_record
    where exp in(select exp from emp_record where exp > 10);
```

OUTPUT:



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

QUESTION 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.

CODE:

```
DELIMITER $$
USE `employee`$$
CREATE PROCEDURE `Employee` ()
BEGIN
select * from emp_record
where exp > 3;
END$$
DELIMITER ;

call employee;
```

OUTPUT:

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

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 SCIEN...	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 SCIEN...	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

QUESTION 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'.

CODE:

```
DELIMITER $$
USE `employee`$$
CREATE PROCEDURE `Assign_role` ()
BEGIN
select emp_id, first_name, last_name,gender, role, dept, exp,
country, continent, salary, emp_rating, manager_id, proj_id,
case
when exp <=2 then 'JUNIOR DATA SCIENTIST'
when exp between 2 and 5 then 'ASSOCIATE DATA SCIENTIST'
when exp between 5 and 10 then 'SENIOR DATA SCIENTIST'
when exp between 10 and 12 then 'LEAD DATA SCIENTIST'
when exp between 12 and 16 then 'manager'
END as Assigned_role
from emp_record;
END$$
DELIMITER ;

call assign_role;
```

OUTPUT:

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

emp_id	first_name	last_name	gender	role	dept	exp	country	continent	salary	emp_rating	manager_id	proj_id	Assigned_role
E001	Arthur	Black	M	PRESIDENT	ALL	20	USA	NORTH AMERICA	16500	5	NULL	NULL	NULL
E005	Eric	Hoffman	M	LEAD DATA SCIENTIST	FINANCE	11	USA	NORTH AMERICA	8500	3	E103	P105	LEAD DATA SCIENTIST
E010	William	Butler	M	LEAD DATA SCIENTIST	AUTOMOTIVE	12	FRANCE	EUROPE	9000	2	E428	P204	LEAD DATA SCIENTIST
E052	Dianna	Wilson	F	SENIOR DATA SCIENTIST	HEALTHCARE	6	CANADA	NORTH AMERICA	5500	5	E083	P103	SENIOR DATA SCIENTIST
E057	Dorothy	Wilson	F	SENIOR DATA SCIENTIST	HEALTHCARE	9	USA	NORTH AMERICA	7700	1	E083	P302	SENIOR DATA SCIENTIST
E083	Patrick	Voltz	M	MANAGER	HEALTHCARE	15	USA	NORTH AMERICA	9500	5	E001	NULL	manager
E103	Emily	Grove	F	MANAGER	FINANCE	14	CANADA	NORTH AMERICA	10500	4	E001	NULL	manager
E204	Karene	Nowak	F	SENIOR DATA SCIENTIST	AUTOMOTIVE	8	GERMANY	EUROPE	7500	5	E428	P204	SENIOR DATA SCIENTIST
E245	Nian	Zhen	M	SENIOR DATA SCIENTIST	RETAIL	6	CHINA	ASIA	6500	2	E583	P109	SENIOR DATA SCIENTIST
E260	Roy	Collins	M	SENIOR DATA SCIENTIST	RETAIL	7	INDIA	ASIA	7000	3	E583	NA	SENIOR DATA SCIENTIST
E403	Steve	Hoffman	M	ASSOCIATE DATA SCIEN...	FINANCE	4	USA	NORTH AMERICA	5000	3	E103	P105	ASSOCIATE DATA SCIEN...
E428	Pete	Allen	M	MANAGER	AUTOMOTIVE	14	GERMANY	EUROPE	11000	4	E001	NULL	manager
E478	David	Smith	M	ASSOCIATE DATA SCIEN...	RETAIL	3	COLOMBIA	SOUTH AMERICA	4000	4	E583	P109	ASSOCIATE DATA SCIEN...
E505	Chad	Wilson	M	ASSOCIATE DATA SCIEN...	HEALTHCARE	5	CANADA	NORTH AMERICA	5000	2	E083	P103	ASSOCIATE DATA SCIEN...
E532	Claire	Brennan	F	ASSOCIATE DATA SCIEN...	AUTOMOTIVE	3	GERMANY	EUROPE	4300	1	E428	P204	ASSOCIATE DATA SCIEN...
E583	Janet	Hale	F	MANAGER	RETAIL	14	COLOMBIA	SOUTH AMERICA	10000	2	E001	NULL	manager
E612	Tracy	Norris	F	MANAGER	RETAIL	13	INDIA	ASIA	8500	4	E001	NULL	manager
E620	Katrina	Allen	F	JUNIOR DATA SCIENTIST	RETAIL	2	INDIA	ASIA	3000	1	E612	P406	JUNIOR DATA SCIENTIST
E640	Jenifer	Jhones	F	JUNIOR DATA SCIENTIST	RETAIL	1	COLOMBIA	SOUTH AMERICA	2800	4	E612	P406	JUNIOR DATA SCIENTIST

Result Grid
Form Editor
Field Types
Query Stats
Execution Plan

QUESTION 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.

CODE:

```
create index employee1 on emp_record (first_name(20));

select * from emp_record
where first_name='Eric';
```

OUTPUT:

⚠	56	19:40:38	create index employee1 on emp_record (first_name(20))	0 row(s) affected, 1 warning(s): 1831 Duplicate index 'employee1' defined on the table 'employee.emp_record'. This ...	0.094 sec
✔	57	19:40:39	select * from emp_record where first_name='Eric' LIMIT 0, 1000	1 row(s) returned	0.000 sec / 0.000 sec

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

EMP_ID	FIRST_NAME	LAST_NAME	GENDER	ROLE	DEPT	EXP	COUNTRY	CONTINENT	SALARY	EMP_RATING	MANAGER_ID	PROJ_ID
E005	Eric	Hoffman	M	LEAD DATA SCIENTIST	FINANCE	11	USA	NORTH AMERICA	8500	3	E103	P105

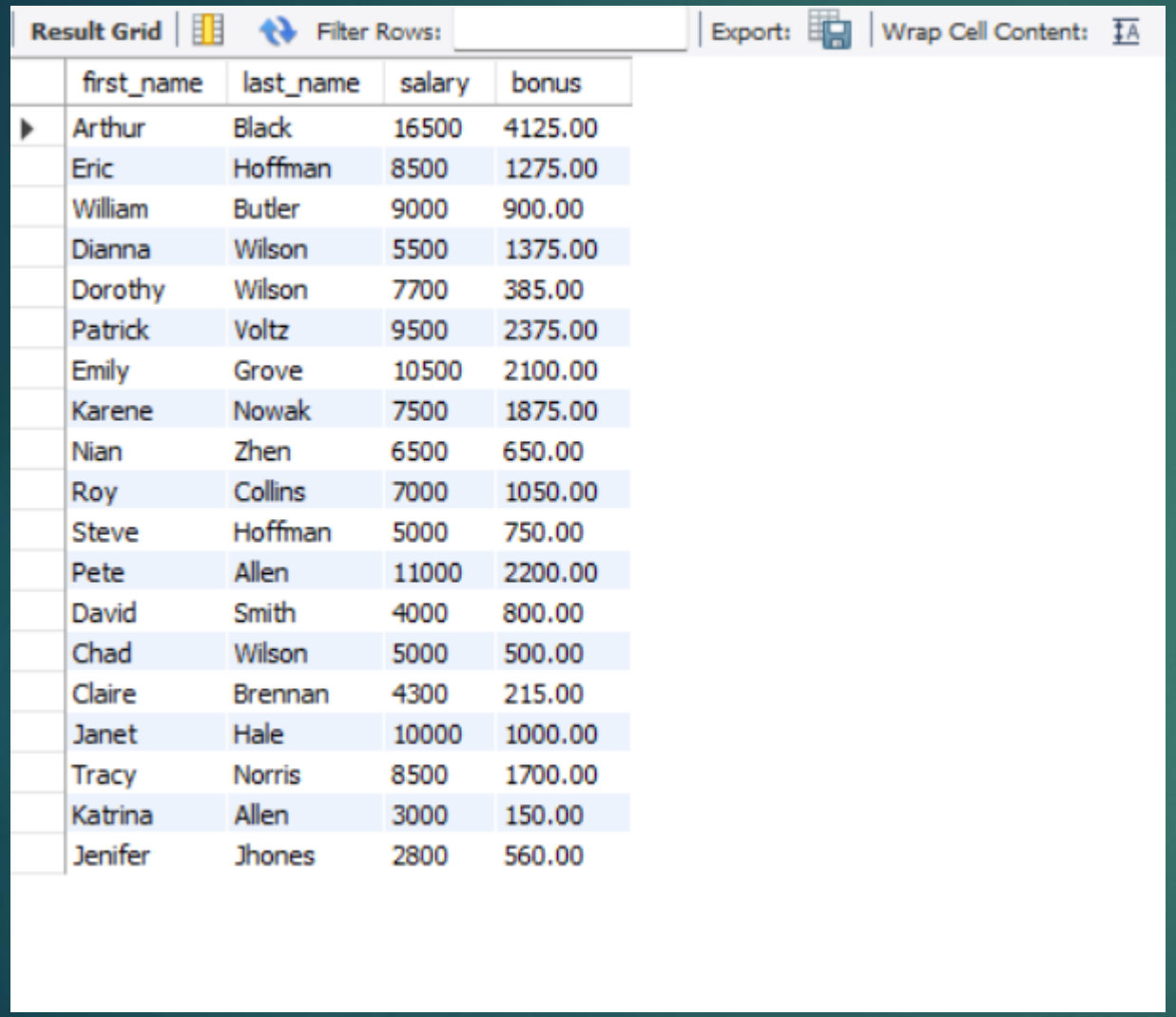
QUESTION 16:

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).

CODE:

```
select first_name, last_name, salary, ((salary * .05)*emp_rating)
as bonus
from emp_record;
```

OUTPUT:



first_name	last_name	salary	bonus
Arthur	Black	16500	4125.00
Eric	Hoffman	8500	1275.00
William	Butler	9000	900.00
Dianna	Wilson	5500	1375.00
Dorothy	Wilson	7700	385.00
Patrick	Voltz	9500	2375.00
Emily	Grove	10500	2100.00
Karene	Nowak	7500	1875.00
Nian	Zhen	6500	650.00
Roy	Collins	7000	1050.00
Steve	Hoffman	5000	750.00
Pete	Allen	11000	2200.00
David	Smith	4000	800.00
Chad	Wilson	5000	500.00
Claire	Brennan	4300	215.00
Janet	Hale	10000	1000.00
Tracy	Norris	8500	1700.00
Katrina	Allen	3000	150.00
Jenifer	Jhones	2800	560.00

QUESTION 17:

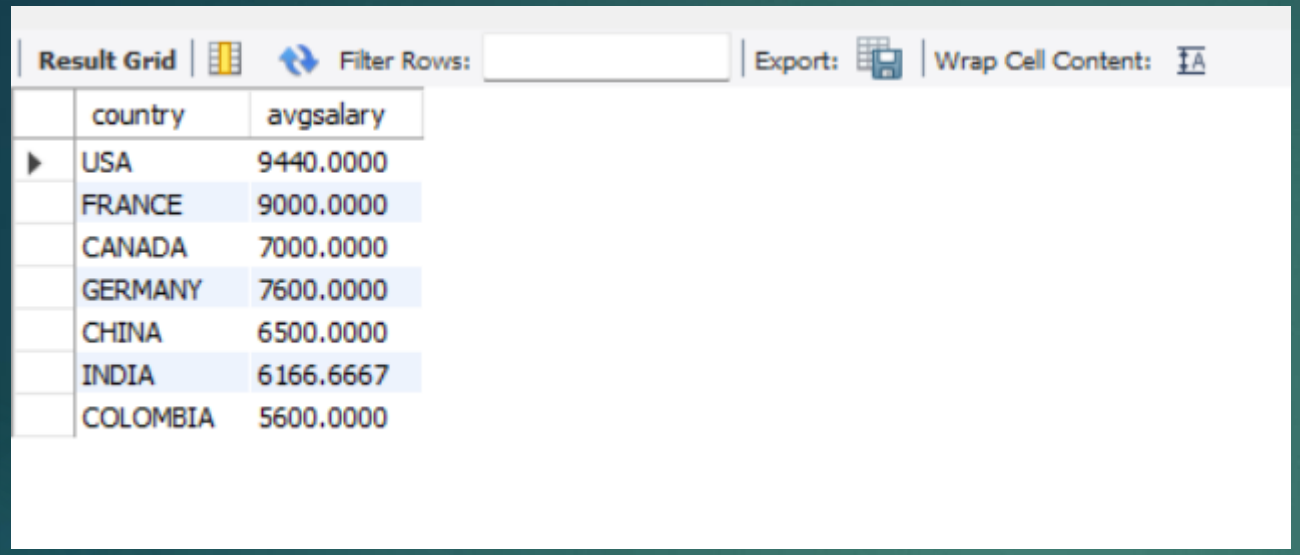
Write a query to calculate the average salary distribution based on the continent and country. Take data from the employee record table.

CODE:

```
select continent, avg(salary) as avgsalary
from emp_record
group by continent;

select country, avg(salary) as avgsalary
from emp_record
group by country;
```

OUTPUT:



Result Grid | Filter Rows: | Export: | Wrap Cell Content:

country	avgsalary
USA	9440.0000
FRANCE	9000.0000
CANADA	7000.0000
GERMANY	7600.0000
CHINA	6500.0000
INDIA	6166.6667
COLOMBIA	5600.0000