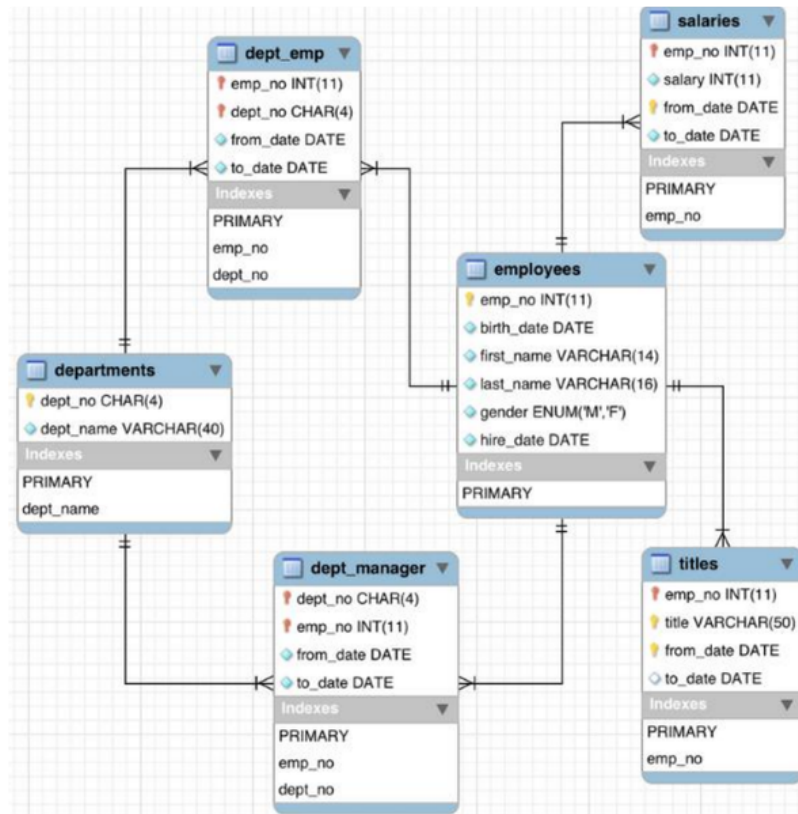


SQL HR data exploration!



Questions 1 to 10:

1. Create an SQL statement to list all managers and their titles.

```
1 SELECT e.emp_no, e.first_name, e.last_name, t.title
2 FROM titles t
3 RIGHT JOIN employees e ON e.emp_no = t.emp_no
4 INNER JOIN dept_manager dm ON e.emp_no = dm.emp_no;
5
```

```

MariaDB [employees]> select e.emp_no, e.first_name, e.last_name, t.title
-> FROM titles t
-> RIGHT JOIN employees e ON e.emp_no = t.emp_no
-> INNER JOIN dept_manager dm ON e.emp_no = dm.emp_no;
+-----+-----+-----+-----+
| emp_no | first_name | last_name | title |
+-----+-----+-----+-----+
| 10001 | Georgi | Facello | Senior Engineer |
| 10002 | Bezalel | Simmel | Staff |
| 10003 | Parto | Bamford | Senior Engineer |
| 10008 | Saniya | Kalloufi | Assistant Engineer |
| 10011 | Mary | Sluis | NULL |
| 10012 | Patricio | Bridgland | NULL |
| 10013 | Eberhardt | Terkki | NULL |
| 10014 | Berni | Genin | NULL |
+-----+-----+-----+-----+
8 rows in set (0.000 sec)

```

In my first attempt, I used inner joins and these were my results

```

MariaDB [employees]>
MariaDB [employees]> SELECT e.emp_no, e.first_name, e.last_name, t.title
-> FROM titles t
-> INNER JOIN employees e ON e.emp_no = t.emp_no
-> INNER JOIN dept_manager dm ON e.emp_no = dm.emp_no;
+-----+-----+-----+-----+
| emp_no | first_name | last_name | title |
+-----+-----+-----+-----+
| 10001 | Georgi | Facello | Senior Engineer |
| 10002 | Bezalel | Simmel | Staff |
| 10003 | Parto | Bamford | Senior Engineer |
| 10008 | Saniya | Kalloufi | Assistant Engineer |
+-----+-----+-----+-----+
4 rows in set (0.031 sec)

```

Here you can see that using the inner joins does not show any null values (it only includes what both tables have in common)

2. Create a SQL statement to show the salary of all employees and their department name.

First attempt

```

1 SELECT e.first_name, e.last_name, s.salary, d.dept_name
2 FROM employees e
3 LEFT JOIN salaries s ON (e.emp_no = s.emp_no AND e.emp_no NOT IN (SELECT emp_no FROM dept_manager))
4 LEFT JOIN dept_emp de ON e.emp_no = de.emp_no
5 LEFT JOIN departments d ON de.dept_no = d.dept_no
6 LEFT JOIN dept_manager dm ON d.dept_no = dm.dept_no;
7

```

```

-> LEFT JOIN dept_manager dm ON d.dept_no = dm.dept_no;
+-----+-----+-----+-----+
| first_name | last_name | salary | dept_name |
+-----+-----+-----+-----+
| Georgi | Facello | NULL | Development |
| Bezalel | Simmel | NULL | Sales |
| Parto | Bamford | NULL | Production |
| Parto | Bamford | NULL | Production |
| Chirstian | Koblick | 66961 | Production |
| Chirstian | Koblick | 66961 | Production |
| Kyoichi | Maliniak | 71046 | Human Resources |
| Kyoichi | Maliniak | 71046 | Human Resources |
| Anneke | Preusig | 74333 | Development |
| Tzvetan | Zielinski | 75286 | NULL |
| Saniya | Kalloufi | NULL | NULL |
| Sumant | Peac | NULL | NULL |
| Duangkaew | Piveteau | NULL | NULL |
| Mary | Sluis | NULL | NULL |
| Patricio | Bridgland | NULL | NULL |
| Eberhardt | Terkki | NULL | NULL |
| Berni | Genin | NULL | Development |
+-----+-----+-----+-----+
17 rows in set (0.039 sec)

```

Improved code

```

1 SELECT e.first_name, e.last_name,
2 GROUP_CONCAT(DISTINCT s.salary),
3 GROUP_CONCAT(DISTINCT d.dept_name)
4 FROM employees e
5 LEFT JOIN dept_emp de ON e.emp_no = de.emp_no

```

```

6 LEFT JOIN dept_manager dm ON dm.emp_no = e.emp_no
7 LEFT JOIN salaries s ON e.emp_no = s.emp_no
8 LEFT JOIN departments d ON de.dept_no = d.dept_no OR dm.dept_no = d.dept_no
9 GROUP BY e.emp_no;
10

```

```

MariaDB [employees]> SELECT e.first_name, e.last_name,
-> GROUP_CONCAT(DISTINCT s.salary),
-> GROUP_CONCAT(DISTINCT d.dept_name)
-> FROM employees e
-> LEFT JOIN dept_emp de ON e.emp_no = de.emp_no
-> LEFT JOIN dept_manager dm ON dm.emp_no = e.emp_no
-> LEFT JOIN salaries s ON e.emp_no = s.emp_no
-> LEFT JOIN departments d ON de.dept_no = d.dept_no OR dm.dept_no = d.dept_no
-> GROUP BY e.emp_no;

```

first_name	last_name	GROUP_CONCAT(DISTINCT s.salary)	GROUP_CONCAT(DISTINCT d.dept_name)
Georgi	Facello	60117,62102	Development,Marketing
Bezalel	Simmel	66674	Finance,Sales
Parto	Bamford	66596	Production
Christian	Koblick	66961	Production
Kyoichi	Maliniak	72846	Human Resources
Anneke	Preusig	74333	Development
Trvetan	Zielinski	75286	NULL
Saniya	Kalloufi	75994	Finance
Sumant	Peac	NULL	NULL
Duangkaew	Piveteau	NULL	NULL
Mary	Sluis	NULL	Human Resources
Patricio	Bridgland	NULL	Human Resources
Eberhardt	Terkki	NULL	Marketing
Berni	Genin	NULL	Development,Production

```

14 rows in set (0.031 sec)
MariaDB [employees]>

```

I used a group concat function to combine salary and dept name

I used DISTINCT to take out any duplicates within the salary and dept_name columns

3. Create a SQL statement to show the hire date and birth date of who belongs to HR department.

```

1 SELECT e.emp_no, e.first_name, e.last_name, d.dept_name, d.dept_no, e.hire_date, e.birth_date
2 FROM employees e
3 LEFT JOIN dept_manager dm ON dm.emp_no = e.emp_no
4 LEFT JOIN dept_emp de ON de.emp_no = e.emp_no
5 LEFT JOIN departments d ON d.dept_no = de.dept_no OR d.dept_no = dm.dept_no
6 WHERE dept_name = 'Human Resources' OR d.dept_no = 'd003';
7

```

```

-> WHERE dept_name = 'Human Resources' OR d.dept_no = 'd003';

```

emp_no	first_name	last_name	dept_name	dept_no	hire_date	birth_date
10005	Kyoichi	Maliniak	Human Resources	d003	1989-09-12	1955-01-21
10011	Mary	Sluis	Human Resources	d003	1990-01-22	1953-11-07
10012	Patricio	Bridgland	Human Resources	d003	1992-12-18	1960-10-04

```

3 rows in set (0.001 sec)

```

4. Create a SQL statement to show all departments and their department's managers.

```

1 SELECT e.emp_no, first_name, last_name, dm.dept_no, d.dept_name
2 FROM employees e
3 INNER JOIN dept_manager dm ON e.emp_no = dm.emp_no
4 INNER JOIN departments d ON dm.dept_no = d.dept_no;
5

```

```

-> INNER JOIN departments d ON dm.dept_no = d.dept_no;

```

emp_no	first_name	last_name	dept_no	dept_name
10001	Georgi	Facello	d001	Marketing
10002	Bezalel	Simmel	d002	Finance
10003	Parto	Bamford	d004	Production
10008	Saniya	Kalloufi	d002	Finance
10011	Mary	Sluis	d003	Human Resources
10012	Patricio	Bridgland	d003	Human Resources
10013	Eberhardt	Terkki	d001	Marketing
10014	Berni	Genin	d004	Production

```

8 rows in set (0.002 sec)

```

5. Create a SQL statement to show a list of HR's employees who were hired after 1986.

```

1 WITH cte1 AS (
2 SELECT e.emp_no, e.first_name, e.last_name, d.dept_name, d.dept_no, e.hire_date, e.birth_date
3 FROM employees e
4 LEFT JOIN dept_manager dm ON dm.emp_no = e.emp_no
5 LEFT JOIN dept_emp de ON de.emp_no = e.emp_no
6 LEFT JOIN departments d ON d.dept_no = de.dept_no OR d.dept_no = dm.dept_no)
7 SELECT * FROM cte1 WHERE dept_name = 'Human Resources' AND hire_date > '1986-00-00';
8

```

emp_no	first_name	last_name	dept_name	dept_no	hire_date	birth_date
10005	Kyoichi	Maliniak	Human Resources	d003	1989-09-12	1955-01-21
10011	Mary	Sluis	Human Resources	d003	1990-01-22	1953-11-07
10012	Patricio	Bridgland	Human Resources	d003	1992-12-18	1960-10-04

3 rows in set (0.001 sec)

6. Create a SQL statement to increase any employee's salary up to 2%. Assume the employee has just phoned in with his/her last name.

```

1 # using a temp table
2
3 CREATE OR REPLACE TEMPORARY TABLE empsal_increase AS
4 SELECT e.emp_no, e.first_name, e.last_name, s.salary
5 FROM employees e
6 INNER JOIN salaries s ON e.emp_no = s.emp_no;
7
8 # creating my stored procedure
9 DELIMITER $$
10 CREATE OR REPLACE PROCEDURE salary_increase_two (IN name VARCHAR (16))
11 BEGIN
12     UPDATE empsal_increase
13     SET salary = salary * 1.02
14     WHERE last_name = name;
15 SELECT last_name, salary
16 FROM empsal_increase
17 WHERE last_name = name;
18
19 END $$
20
21 # calling the procedure
22 CALL salary_increase_two('Maliniak');

```

```

MariaDB [employees]> call salary_increase_two('Maliniak');
+-----+-----+
| last_name | salary |
+-----+-----+
| Maliniak | 72467 |
+-----+-----+
1 row in set (0.029 sec)

```

Salary with 2% increase

```

10005 | 71046 | 1991-06-25 | 1992-06-24 |

```

The employee's original salary without the 2% increase

7. Create a SQL statement to delete an employee's record who belongs to the marketing department and whose name starts with 'A'

```

1 CREATE OR REPLACE TEMPORARY TABLE marketing_dept (
2     SELECT e.emp_no, e.first_name, e.last_name

```

```

3      FROM employees e
4      LEFT JOIN dept_manager de ON e.emp_no = de.emp_no
5      LEFT JOIN dept_emp d ON e.emp_no = d.emp_no);
6
7  DELETE FROM marketing_dept
8  WHERE first_name LIKE 'A%' AND emp_no IN (
9      SELECT emp_no
10     FROM dept_emp de
11     INNER JOIN departments d ON de.dept_no = d.dept_no
12     WHERE d.dept_name = 'Marketing'
13 );
14

```

```

MariaDB [employees]> DELETE FROM marketing_dept
-> WHERE first_name LIKE 'A%' AND emp_no IN (
->     SELECT emp_no
->     FROM dept_emp de
->     INNER JOIN departments d ON de.dept_no = d.dept_no
->     WHERE d.dept_name = 'Marketing'
-> );
Query OK, 0 rows affected (0.029 sec)

```

The result is an empty set/0 rows affected! - because no one in the marketing department has a first name that starts with an 'A'

8. Create a database view to list the full names of all departments' managers and their salaries..

First attempt

```

1  CREATE OR REPLACE VIEW Department_managers AS
2  SELECT d.dept_name AS department_name,
3         CONCAT(first_name, ' ', last_name) AS manager_name,
4         MAX(s.salary) AS manager_salary
5  FROM departments d
6  INNER JOIN dept_manager dm ON d.dept_no = dm.dept_no
7  RIGHT JOIN employees e ON dm.emp_no = e.emp_no
8  RIGHT JOIN salaries s ON e.emp_no = s.emp_no;
9

```

```

MariaDB [employees]> SELECT * FROM department_managers;
+-----+-----+-----+
| department_name | manager_name | manager_salary |
+-----+-----+-----+
| Marketing      | Georgi Facello | 60117 |
| Marketing      | Georgi Facello | 62102 |
| Finance        | Bezalel Simmel | 66074 |
| Production     | Parto Bamford | 66596 |
| Finance        | Saniya Kalloufi | 75994 |
+-----+-----+-----+
5 rows in set (0.031 sec)

```

Improved code

```

1  CREATE OR REPLACE VIEW Department_managers AS
2  (
3      SELECT
4          d.dept_name AS department_name,
5          CONCAT(e.first_name, ' ', e.last_name) AS manager_name,
6          MAX(s.salary) AS manager_salary
7      FROM
8          employees e
9          INNER JOIN dept_manager dm ON e.emp_no = dm.emp_no
10         INNER JOIN departments d ON dm.dept_no = d.dept_no
11         INNER JOIN salaries s ON e.emp_no = s.emp_no

```

```

12     GROUP BY d.dept_name, manager_name
13 );
14 SELECT * FROM Department_managers;
15

```

```

MariaDB [employees]> SELECT * FROM Department_managers;
+-----+-----+-----+
| department_name | manager_name | manager_salary |
+-----+-----+-----+
| Finance        | Bezalel Simmel | 66074 |
| Finance        | Saniya Kalloufi | 75994 |
| Marketing      | Georgi Facello | 62102 |
| Production     | Parto Bamford | 66596 |
+-----+-----+-----+
4 rows in set (0.030 sec)

```

result - does not include any null values bc i used inner joins so it will only show the values that are common/there.

9. . Create a database view to list all departments and their department managers, who were hired between 1980 and 1990.

```

1 CREATE VIEW department_managers_hire AS
2 SELECT d.dept_name AS department_name,
3        CONCAT(e.first_name, ' ', e.last_name) AS manager_name,
4        e.hire_date AS manager_hire_date
5 FROM departments d
6 INNER JOIN dept_manager dm ON d.dept_no = dm.dept_no
7 INNER JOIN employees e ON dm.emp_no = e.emp_no
8 WHERE e.hire_date >= '1980-00-00' AND e.hire_date <= '1990-12-31';
9

```

```

MariaDB [employees]> select * from department_managers_hire;
+-----+-----+-----+
| department_name | manager_name | manager_hire_date |
+-----+-----+-----+
| Marketing      | Georgi Facello | 1986-06-26 |
| Finance        | Bezalel Simmel | 1985-11-21 |
| Production     | Parto Bamford | 1986-08-28 |
| Human Resources | Mary Sluis    | 1990-01-22 |
| Marketing      | Eberhardt Terkki | 1985-10-20 |
| Production     | Berni Genin    | 1987-03-11 |
+-----+-----+-----+
6 rows in set (0.002 sec)

```

10. Create a SQL statement to increase salaries of all department's managers up to 10% who are working since 1990

First attempt

```

1 CREATE OR REPLACE TEMPORARY TABLE empsal_increase3 AS (
2     SELECT e.emp_no, e.first_name, e.last_name, e.hire_date, d.dept_no, s.salary
3     FROM dept_manager d
4     INNER JOIN employees e ON d.emp_no = e.emp_no
5     INNER JOIN salaries s ON e.emp_no = s.emp_no
6     WHERE e.hire_date >= '1990-01-01'
7 );
8
9
10
11
12 UPDATE empsal_increase3
13 SET salary = salary * 1.10;
14
15 SELECT * FROM empsal_increase3;
16

```

```

MariaDB [employees]> select * from empsal_increase3;
+-----+-----+-----+-----+-----+-----+
| emp_no | first_name | last_name | hire_date | dept_no | salary |
+-----+-----+-----+-----+-----+-----+
| 10008 | Saniya     | Kalloufi  | 1994-09-15 | d002    | 75994   |
+-----+-----+-----+-----+-----+-----+
1 row in set (0.001 sec)

```

Improved code

```

1 CREATE OR REPLACE TEMPORARY TABLE empsal_increase3 AS (
2     SELECT
3         e.emp_no,
4         e.first_name,
5         e.last_name,
6         e.hire_date,
7         d.dept_no,
8         s.salary
9     FROM employees e
10    INNER JOIN dept_manager dm ON e.emp_no = dm.emp_no
11    INNER JOIN departments d ON dm.dept_no = d.dept_no
12    LEFT JOIN salaries s ON e.emp_no = s.emp_no
13    WHERE YEAR(e.hire_date) >= 1990
14    GROUP BY e.emp_no, e.first_name, e.last_name, d.dept_no, s.salary
15 );
16
17
18 UPDATE empsal_increase3
19 SET salary = salary * 1.10;
20
21 SELECT * FROM empsal_increase3;
22

```

```

MariaDB [employees]> SELECT * FROM empsal_increase3;
+-----+-----+-----+-----+-----+-----+
| emp_no | first_name | last_name | hire_date | dept_no | salary |
+-----+-----+-----+-----+-----+-----+
| 10008 | Saniya     | Kalloufi  | 1994-09-15 | d002    | 83593   |
| 10011 | Mary       | Sluis     | 1990-01-22 | d003    | NULL    |
| 10012 | Patricio   | Bridgland | 1992-12-18 | d003    | NULL    |
+-----+-----+-----+-----+-----+-----+
3 rows in set (0.001 sec)

```