

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

```
SELECT mdn.emp_no, t.title, e.first_name, e.last_name
FROM
    (SELECT dm.emp_no, dm.dept_no, d.dept_name FROM dept_manager dm
     JOIN departments d ON dm.dept_no = d.dept_no) AS mdn
LEFT JOIN employees e ON mdn.emp_no = e.emp_no
LEFT JOIN titles t ON e.emp_no = t.emp_no ;
```

I first wrote the subquery to get all the department managers and their employee numbers, as well as the name of the department that they belong to. Then I join the table (mdn) from the subquery onto the employees and titles tables so that I can SELECT the managers' names and job titles.

emp_no	title	first_name	last_name
10001	Senior Engineer	Georgi	Facello
10002	Staff	Bezalel	Simmel
10003	Senior Engineer	Parto	Bamford
10008	Assistant Engineer	Saniya	Kalloufi
10011	NULL	Mary	Sluis
10012	NULL	Patricio	Bridgland
10013	NULL	Eberhardt	Terkki
10014	NULL	Berni	Genin

8 rows in set (0.001 sec)

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

```
CREATE TEMPORARY TABLE emp_dept_sal (
WITH cte AS
    (SELECT dm.emp_no, dm.dept_no, d.dept_name, dm.from_date, dm.to_date FROM
     dept_manager dm
    LEFT JOIN departments d ON dm.dept_no = d.dept_no
    UNION
    SELECT de.emp_no, de.dept_no, d.dept_name, de.from_date, de.to_date FROM
     dept_emp de
    LEFT JOIN departments d ON de.dept_no = d.dept_no)

SELECT cte.dept_name, e.emp_no, e.first_name, e.last_name, s.salary, s.from_date
AS sal_from, s.to_date AS sal_to,
    ROW_NUMBER() OVER(PARTITION BY e.emp_no, cte.dept_name ORDER BY s.salary
DESC) AS row_num
FROM cte
RIGHT JOIN employees e ON cte.emp_no = e.emp_no
LEFT JOIN salaries s ON e.emp_no = s.emp_no
AND s.from_date >= cte.from_date
)
```

For this question I needed employees that are both in the managers table and the emp_dept table in order to find their department. To put that combined information into one table (cte) I'm using a UNION. I'm then using a right join to join the cte to the employees table as I was the information about all the employees (some are missing from the dept_man and emp_dept tables) and joining that onto the salaries table. Within my SELECT statement I'm using a window function to give all employees a ROW_NUMBER, partitioned by

emp_no and dept_name so that if the employee has two different salaries within the same department, the second instance will have a ROW_NUMBER of 2. I'm then joining the employees and salaries tables, using `AND s.from_date >= cte.from_date` salaries to make sure that I only get the most recent salaries as some employees have had several different salaries. All of this is then put into a table so that I can select from that table and filter out any redundant rows.

```
MariaDB [employees]> SELECT * FROM emp_dept_sal;
```

dept_name	emp_no	first_name	last_name	salary	sal_from	sal_to	row_num
Development	10001	Georgi	Facello	62102	1987-06-26	1988-06-25	1
Development	10001	Georgi	Facello	60117	1986-06-26	1987-06-26	2
Marketing	10001	Georgi	Facello	NULL	NULL	NULL	1
Finance	10002	Bezalel	Simmel	66074	1988-06-25	1989-06-25	1
Sales	10002	Bezalel	Simmel	NULL	NULL	NULL	1
Production	10003	Parto	Bamford	66596	1989-06-25	1990-06-25	1
Production	10003	Parto	Bamford	NULL	NULL	NULL	2
Production	10004	Chirstian	Koblick	66961	1990-06-25	1991-06-25	1
Human Resources	10005	Kyoichi	Maliniak	71046	1991-06-25	1992-06-24	1
Development	10006	Anneke	Preusig	74333	1992-06-24	1993-06-24	1
NULL	10007	Tzvetan	Zielinski	NULL	NULL	NULL	1
Finance	10008	Saniya	Kalloufi	75994	1994-06-24	1995-06-24	1
NULL	10009	Sumant	Peac	NULL	NULL	NULL	1
NULL	10010	Duangkaew	Piveteau	NULL	NULL	NULL	1
Human Resources	10011	Mary	Sluis	NULL	NULL	NULL	1
Human Resources	10012	Patricio	Bridgland	NULL	NULL	NULL	1
Marketing	10013	Eberhardt	Terkki	NULL	NULL	NULL	1
Development	10014	Berni	Genin	NULL	NULL	NULL	1
Production	10014	Berni	Genin	NULL	NULL	NULL	1

19 rows in set (0.000 sec)

```
SELECT * FROM emp_dept_sal
EXCEPT
SELECT * FROM emp_dept_sal
WHERE row_num != 1 AND salary IS NULL
```

Here I am selecting from the new table and filtering out the row where an employee has a second entry in the same department but without a salary.

```
MariaDB [employees]> SELECT * FROM emp_dept_sal
-> EXCEPT
-> SELECT * FROM emp_dept_sal
-> WHERE row_num != 1 AND salary IS NULL;
```

dept_name	emp_no	first_name	last_name	salary	sal_from	sal_to	row_num
Development	10001	Georgi	Facello	62102	1987-06-26	1988-06-25	1
Development	10001	Georgi	Facello	60117	1986-06-26	1987-06-26	2
Marketing	10001	Georgi	Facello	NULL	NULL	NULL	1
Finance	10002	Bezalel	Simmel	66074	1988-06-25	1989-06-25	1
Sales	10002	Bezalel	Simmel	NULL	NULL	NULL	1
Production	10003	Parto	Bamford	66596	1989-06-25	1990-06-25	1
Production	10004	Chirstian	Koblick	66961	1990-06-25	1991-06-25	1
Human Resources	10005	Kyoichi	Maliniak	71046	1991-06-25	1992-06-24	1
Development	10006	Anneke	Preusig	74333	1992-06-24	1993-06-24	1
NULL	10007	Tzvetan	Zielinski	NULL	NULL	NULL	1
Finance	10008	Saniya	Kalloufi	75994	1994-06-24	1995-06-24	1
NULL	10009	Sumant	Peac	NULL	NULL	NULL	1
NULL	10010	Duangkaew	Piveteau	NULL	NULL	NULL	1
Human Resources	10011	Mary	Sluis	NULL	NULL	NULL	1
Human Resources	10012	Patricio	Bridgland	NULL	NULL	NULL	1
Marketing	10013	Eberhardt	Terkki	NULL	NULL	NULL	1
Development	10014	Berni	Genin	NULL	NULL	NULL	1
Production	10014	Berni	Genin	NULL	NULL	NULL	1

18 rows in set (0.001 sec)

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

```
SELECT e.first_name, e.last_name, e.hire_date, e.birth_date FROM employees e
LEFT JOIN dept_emp de ON e.emp_no = de.emp_no
LEFT JOIN departments d ON de.dept_no = d.dept_no
WHERE d.dept_name = 'Human Resources'
UNION
SELECT e.first_name, e.last_name, e.hire_date, e.birth_date FROM employees e
LEFT JOIN dept_manager dm ON e.emp_no = dm.emp_no
LEFT JOIN departments d ON dm.dept_no = d.dept_no
WHERE d.dept_name = 'Human Resources'
```

As some employees appear only in dept_emp and some in dept_manager, I am using a union to combine the two queries joinin those tables onto dept_name and filtering to select only Human Resources employees.

```
+-----+
| hire_date | birth_date |
+-----+
| 1989-09-12 | 1955-01-21 |
| 1990-01-22 | 1953-11-07 |
| 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

```
SELECT d.dept_no, d.dept_name, e.first_name, e.last_name, dm.emp_no
FROM departments d
LEFT JOIN dept_manager dm ON d.dept_no = dm.dept_no
LEFT JOIN employees e ON dm.emp_no = e.emp_no;
```

I am selecting from the departments table and joinin on the dept_manager and left joining employees tables to retrieve information only about the managers.

```
+-----+-----+-----+-----+-----+
| dept_no | dept_name | first_name | last_name | emp_no |
+-----+-----+-----+-----+-----+
| d009 | Customer Service | NULL | NULL | NULL |
| d005 | Development | NULL | NULL | NULL |
| d002 | Finance | Bezalel | Simmel | 10002 |
| d002 | Finance | Saniya | Kalloufi | 10008 |
| d003 | Human Resources | Mary | Sluis | 10011 |
| d003 | Human Resources | Patricio | Bridgland | 10012 |
| d001 | Marketing | Georgi | Facello | 10001 |
| d001 | Marketing | Eberhardt | Terkki | 10013 |
| d004 | Production | Parto | Bamford | 10003 |
| d004 | Production | Berni | Genin | 10014 |
| d006 | Quality Management | NULL | NULL | NULL |
| d008 | Research | NULL | NULL | NULL |
| d007 | Sales | NULL | NULL | NULL |
+-----+-----+-----+-----+-----+
13 rows in set (0.000 sec)
```

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

```
SELECT e.emp_no, e.first_name, e.last_name, e.hire_date FROM employees e
LEFT JOIN dept_emp de ON e.emp_no = de.emp_no
LEFT JOIN departments d ON de.dept_no = d.dept_no
WHERE d.dept_name = 'Human Resources' AND YEAR(e.hire_date) >= 1986
UNION
SELECT e.emp_no, e.first_name, e.last_name, e.hire_date FROM employees e
LEFT JOIN dept_manager dm ON e.emp_no = dm.emp_no
LEFT JOIN departments d ON dm.dept_no = d.dept_no
WHERE d.dept_name = 'Human Resources' AND YEAR(e.hire_date) >= 1986;
```

I am using the same query from question 3, and filtering the employees on the hire date to make sure that they were hired after 1986.

emp_no	first_name	last_name	hire_date
10005	Kyoichi	Maliniak	1989-09-12
10011	Mary	Sluis	1990-01-22
10012	Patricio	Bridgland	1992-12-18

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.

```
CREATE TEMPORARY TABLE emp_sal AS
SELECT e.*, s.salary, s.from_date, s.to_date FROM employees e
LEFT JOIN salaries s ON e.emp_no = s.emp_no;
```

As an analyst I cannot UPDATE data on the original tables, so I created a Temp table containing all employees and their salaries.

MariaDB [employees]> SELECT * FROM emp_sal;

emp_no	birth_date	first_name	last_name	gender	hire_date	salary	from_date	to_date
10001	1953-09-02	Georgi	Facello	M	1986-06-26	60117	1986-06-26	1987-06-26
10001	1953-09-02	Georgi	Facello	M	1986-06-26	62102	1987-06-26	1988-06-25
10002	1964-06-02	Bezalel	Simmel	F	1985-11-21	66074	1988-06-25	1989-06-25
10003	1959-12-03	Parto	Bamford	M	1986-08-28	66596	1989-06-25	1990-06-25
10004	1954-05-01	Chirstian	Koblick	M	1986-12-01	66961	1990-06-25	1991-06-25
10005	1955-01-21	Kyoichi	Maliniak	M	1989-09-12	71046	1991-06-25	1992-06-24
10006	1953-04-20	Anneke	Preusig	F	1989-06-02	74333	1992-06-24	1993-06-24
10007	1957-05-23	Tzvetan	Zielinski	F	1989-02-10	75286	1993-06-24	1994-06-24
10008	1958-02-19	Saniya	Kalloufi	M	1994-09-15	75994	1994-06-24	1995-06-24
10009	1952-04-19	Sumant	Peac	F	1985-02-18	NULL	NULL	NULL
10010	1963-06-01	Duangkaew	Piveteau	F	1989-08-24	NULL	NULL	NULL
10011	1953-11-07	Mary	Sluis	F	1990-01-22	NULL	NULL	NULL
10012	1960-10-04	Patricio	Bridgland	M	1992-12-18	NULL	NULL	NULL
10013	1963-06-07	Eberhardt	Terkki	M	1985-10-20	NULL	NULL	NULL
10014	1956-02-12	Berni	Genin	M	1987-03-11	NULL	NULL	NULL

15 rows in set (0.000 sec)

```
UPDATE emp_sal
SET salary =
CASE last_name WHEN ~insert last name~ THEN salary * 1.02
```

END

Using an UPDATE statement on the Temporary table, using the relevant employees last name in the CASE clause to increase their salary by 2%.

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

```
CREATE TEMPORARY TABLE emp_dept_full AS
SELECT e.emp_no, e.first_name, e.last_name, d.dept_name FROM employees e
LEFT JOIN dept_emp de ON e.emp_no = de.emp_no
LEFT JOIN departments d ON de.dept_no = d.dept_no
WHERE dept_name IS NOT NULL
UNION
SELECT e.emp_no, e.first_name, e.last_name, d.dept_name FROM employees e
LEFT JOIN dept_manager dm ON e.emp_no = dm.emp_no
LEFT JOIN departments d ON dm.dept_no = d.dept_no
WHERE dept_name IS NOT NULL;
```

As I cannot DELETE from the original table I created a Temp Table, using the same query from question 3 to get department information about employees from both the dept_emp and dept_manager tables using a UNION.

```
MariaDB [employees]> SELECT * FROM emp_dept_full;
+-----+-----+-----+-----+
| emp_no | first_name | last_name | dept_name |
+-----+-----+-----+-----+
| 10001 | Georgi | Facello | Development |
| 10002 | Bezalel | Simmel | Sales |
| 10003 | Parto | Bamford | Production |
| 10004 | Chirstian | Koblick | Production |
| 10005 | Kyoichi | Maliniak | Human Resources |
| 10006 | Anneke | Preusig | Development |
| 10014 | Berni | Genin | Development |
| 10001 | Georgi | Facello | Marketing |
| 10002 | Bezalel | Simmel | Finance |
| 10008 | Saniya | Kalloufi | Finance |
| 10011 | Mary | Sluis | Human Resources |
| 10012 | Patricio | Bridgland | Human Resources |
| 10013 | Eberhardt | Terkki | Marketing |
| 10014 | Berni | Genin | Production |
+-----+-----+-----+-----+
14 rows in set (0.009 sec)
```

```
INSERT INTO emp_dept_full VALUES
(99999, 'Andrew', 'Anderson', 'Marketing');
```

I've then inserted into the Temp Table a row to satisfy the conditions of the question as there originally is no employee with first name starts with A and works in the Marketing department.

```
DELETE FROM emp_dept_full
WHERE
dept_name = 'marketing' AND first_name LIKE 'a%';
```

And then I DELETE that record from the temporary table using a WHERE clause to eliminate that specific employee.

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

```
CREATE VIEW full_dept_man_sal AS
SELECT dm.emp_no, e.first_name, e.last_name, d.dept_name, d.dept_no, s.salary
FROM employees e
LEFT JOIN dept_manager dm ON e.emp_no = dm.emp_no
RIGHT JOIN departments d ON dm.dept_no = d.dept_no
LEFT JOIN salaries s ON e.emp_no = s.emp_no;
```

I create a VIEW by LEFT joining the dept_manger table so that I have all the employees, RIGHT joining departments so that I have all the departments and LEFT joinin the salaries.

NOTE: There was some disagreement in the classroom about this question – to me, the question implies that I need the information about the managers of all the departments, rather than the information about the department managers, which is why I use a RIGHT join on departments, to make sure that all the departments are included as not all of them are mentioned in the dept_manager table.

```
MariaDB [employees]> SELECT * FROM full_dept_man_sal;
```

emp_no	first_name	last_name	dept_name	dept_no	salary
NULL	NULL	NULL	Customer Service	d009	NULL
NULL	NULL	NULL	Development	d005	NULL
10002	Bezael	Simmel	Finance	d002	66074
10008	Saniya	Kalloufi	Finance	d002	75994
10011	Mary	Sluis	Human Resources	d003	NULL
10012	Patricio	Bridgland	Human Resources	d003	NULL
10001	Georgi	Facello	Marketing	d001	60117
10001	Georgi	Facello	Marketing	d001	62102
10013	Eberhardt	Terkki	Marketing	d001	NULL
10003	Parto	Bamford	Production	d004	66596
10014	Berni	Genin	Production	d004	NULL
NULL	NULL	NULL	Quality Management	d006	NULL
NULL	NULL	NULL	Research	d008	NULL
NULL	NULL	NULL	Sales	d007	NULL

```
14 rows in set (0.006 sec)
```

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

```
CREATE VIEW dept_man_hired_between_1980_1990 AS
SELECT dm.emp_no, e.first_name, e.last_name, d.dept_name, d.dept_no, e.hire_date
FROM employees e
LEFT JOIN dept_manager dm ON e.emp_no = dm.emp_no
RIGHT JOIN departments d ON dm.dept_no = d.dept_no
WHERE YEAR(e.hire_date) BETWEEN 1980 AND 1990;
```

Here I am RIGHT joining the departments table to employees and dept_manager tables to make sure that all departments are mentioned, and filtering by hire date using BETWEEN.

```
MariaDB [employees]> SELECT * FROM dept_man_hired_between_1980_1990;
```

emp_no	first_name	last_name	dept_name	dept_no	hire_date
10001	Georgi	Facello	Marketing	d001	1986-06-26
10002	Bezael	Simmel	Finance	d002	1985-11-21
10003	Parto	Bamford	Production	d004	1986-08-28
10011	Mary	Sluis	Human Resources	d003	1990-01-22
10013	Eberhardt	Terkki	Marketing	d001	1985-10-20
10014	Berni	Genin	Production	d004	1987-03-11

```
6 rows in set (0.001 sec)
```

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

```
CREATE TEMPORARY TABLE dept_man_sal AS
```

```
SELECT dm.emp_no, e.first_name, e.last_name, d.dept_name, d.dept_no, s.salary,  
e.hire_date FROM employees e  
LEFT JOIN dept_manager dm ON e.emp_no = dm.emp_no  
RIGHT JOIN departments d ON dm.dept_no = d.dept_no  
LEFT JOIN salaries s ON e.emp_no = s.emp_no;
```

The question asks for **all** department's managers so I'm RIGHT joining the departments table to include all departments, and then joining salaries. I created a Temp Table so that I can UPDATE the salaries.

emp_no	first_name	last_name	dept_name	dept_no	salary	hire_date
NULL	NULL	NULL	Customer Service	d009	NULL	NULL
NULL	NULL	NULL	Development	d005	NULL	NULL
10002	Bezalel	Simmel	Finance	d002	66074	1985-11-21
10008	Saniya	Kalloufi	Finance	d002	75994	1994-09-15
10011	Mary	Sluis	Human Resources	d003	NULL	1990-01-22
10012	Patricio	Bridgland	Human Resources	d003	NULL	1992-12-18
10001	Georgi	Facello	Marketing	d001	60117	1986-06-26
10001	Georgi	Facello	Marketing	d001	62102	1986-06-26
10013	Eberhardt	Terkki	Marketing	d001	NULL	1985-10-20
10003	Parto	Bamford	Production	d004	66596	1986-08-28
10014	Berni	Genin	Production	d004	NULL	1987-03-11
NULL	NULL	NULL	Quality Management	d006	NULL	NULL
NULL	NULL	NULL	Research	d008	NULL	NULL
NULL	NULL	NULL	Sales	d007	NULL	NULL

14 rows in set (0.001 sec)

```
UPDATE dept_man_sal  
SET salary =  
CASE YEAR(hire_date) WHEN <=1990 THEN salary * 1.10  
END
```

I'm using an UPDATE statement on the temporary table, and using CASE to increase the salary by 10% for employees who have a hire_date earlier or equal to 1990.

Appendix

SQL Question 1

8 Feb – 8 Feb (4 issues)

0 0 0

Complete sprint

...

AASA-1	Create a SQL statement to list all managers and their titles.	DONE	-	
AASA-2	Insert code into word document	DONE	-	
AASA-3	Insert output screenshot into word document	DONE	-	
AASA-4	Upload solution to Confluence page	DONE	-	

SQL Question 3

8 Feb – 8 Feb (4 issues)

0 0 0

Complete sprint

...

AASA-10	Create a SQL statement to show the hire date and birth date of employees who belong to HR department.	DONE	-	
AASA-11	Insert code into word document	DONE	-	
AASA-12	Insert output screenshot into word document	DONE	-	
AASA-13	Upload solution to Confluence page	DONE	-	

SQL Question 4

8 Feb – 8 Feb (4 issues)

0 0 0

Complete sprint

...

AASA-17	Upload solution to Confluence page	DONE	-	
AASA-16	Insert output screenshot into word document	DONE	-	
AASA-15	Insert code into word document	DONE	-	
AASA-14	Create a SQL statement to show all departments and their department's managers	DONE	-	

SQL Question 2

8 Feb – 8 Feb (4 issues)

0 0 0

Complete sprint

...

AASA-6	Create a SQL statement to show the salary of all employees and their departm...	DONE	-	
AASA-7	Insert code into word document	DONE	-	
AASA-8	Insert output screenshot into word document	DONE	-	
AASA-9	upload solution to Confluence page	DONE	-	