E/17/407

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(Q1)

```sql
CREATE TABLE employees(

    emp_no INT ,
    birth_date DATE,
    first_name VARCHAR (14),
    last_name VARCHAR (16),
    sex ENUM('M','F'),
    hire_date DATE,

    PRIMARY KEY (emp_no)

);
```

```sql
CREATE TABLE  departments(

    dept_no CHAR(4),
    dept_name VARCHAR (40),

    PRIMARY KEY (dept_no)

);
```

```sql
CREATE TABLE dept_manager(

    emp_no INT,
    dept_no CHAR(4),
    from_date DATE,
    to_date date,

    PRIMARY KEY (emp_no,dept_no),

    FOREIGN KEY  (dept_no) REFERENCES departments(dept_no),
    FOREIGN KEY  (emp_no) REFERENCES employees(emp_no)

);
```

```sql
CREATE TABLE  dept_emp(

    emp_no INT,
    dept_no CHAR(4),
    from_date DATE,
    to_date DATE,

    PRIMARY KEY (emp_no,dept_no),

    FOREIGN KEY (dept_no) REFERENCES departments(dept_no),
    FOREIGN KEY (emp_no) REFERENCES employees(emp_no)
);
```

```sql
CREATE TABLE  salaries(
    emp_no INT,
    salary INT,
    from_date DATE,
    to_date DATE,

    PRIMARY KEY (emp_no,from_date,to_date),
    FOREIGN KEY (emp_no) REFERENCES employees(emp_no)
);
```

```sql
CREATE TABLE  titles(

    emp_no INT,
    title VARCHAR (50),
    from_date DATE,
    to_date DATE,

    PRIMARY KEY (emp_no,title,from_date,to_date),
    FOREIGN KEY(emp_no) REFERENCES employees(emp_no)
);
```

(Q2)

Find the top 10 family names(last_name) in the company

```
SELECT last_name,COUNT(last_name) AS last_name_count
FROM employees
GROUP BY last_name
ORDER BY last_name_count DESC
LIMIT 10;
```

last_name	last_name_count
Baba	226
Coorg	223
Gelosh	223
Sudbeck	222
Farris	222
Adachi	221
Osgood	220
Masada	218
Neiman	218
Mandell	218

(Q3)

List the number of Engineers each department has.

(Here I only consider the current engineers)

```
SELECT  departments.dept_no AS 'Department_Number' ,
count(employees.emp_no) AS 'Number of Engineers'
FROM departments , dept_emp ,employees ,titles
WHERE departments.dept_no=dept_emp.dept_no AND
dept_emp.emp_no=employees.emp_no AND
employees.emp_no=titles.emp_no AND
titles.title='Engineer' AND
titles.to_date > curdate()
GROUP BY Department_Number
ORDER BY Department_Number ASC;
```

	Department_Number	Number of Engineers
▶	d004	13325
	d005	15677
	d006	3744
	d008	830
	d009	627

(Q4)

List all the female employees who are department managers and have worked as a senior engineer.

```
SELECT  dept_manager.emp_no,employees.first_name,
employees.last_name,employees.sex,
dept_manager.dept_no,titles.title
FROM employees,dept_manager,titles
WHERE  employees.sex='F' AND
employees.emp_no=dept_manager.emp_no AND
dept_manager.emp_no=titles.emp_no AND
dept_manager.to_date >= curdate() AND
titles.to_date < curdate() AND
titles.title='Senior Engineer';
```

	emp_no	first_name	last_name	sex	dept_no	title

No records.

(Q5)

(5.1)

Display the departments and titles of employees who have a salary greater than 115000.

```
SELECT dept_emp.dept_no , titles.title
FROM employees,salaries,dept_emp,titles
WHERE employees.emp_no=salaries.emp_no AND
salaries.salary>115000 AND
salaries.to_date >= curdate() AND
dept_emp.to_date >=curdate() AND
employees.emp_no=titles.emp_no AND
employees.emp_no=dept_emp.emp_no
ORDER BY dept_emp.dept_no;
```

dept_no	title
d001	Staff
d001	Senior Staff
d001	Senior Staff
d001	Staff
d001	Senior Staff
d001	Senior Staff
d001	Senior Staff
d001	Staff
d001	Staff
d001	Senior Staff
d001	Senior Staff
d001	Senior Staff
d001	Staff
d001	Senior Staff
d001	Staff
d001	Senior Staff
d001	Senior Staff

got 4711 number of records

(5.2)

Display how many of such employees work for each department.

```
SELECT  dept_emp.dept_no AS 'Department_Number' ,
COUNT(dept_emp.emp_no) AS 'No of Employees'
FROM employees,salaries,dept_emp,titles,departments
WHERE employees.emp_no=salaries.emp_no AND
salaries.salary>115000 AND
salaries.to_date >= curdate() AND
dept_emp.to_date >=curdate() AND
employees.emp_no=titles.emp_no AND
employees.emp_no=dept_emp.emp_no
GROUP BY Department_Number
ORDER BY dept_emp.dept_no ASC;
```

Department_Number	No of Employees
d001	4374
d002	3222
d003	171
d004	1269
d005	1566
d006	144
d007	29430
d008	441
d009	1782

(Q6)

Assume that the company wants to reward the most senior employees who are more than 50 years of age and have contributed to the company for more than 10 years. Who is on the list? Display employee name, age, years of service in the company and joined date.

```
SELECT employees.first_name , employees.last_name ,
TIMESTAMPDIFF(YEAR,employees.birth_date,CURDATE()) AS age ,
TIMESTAMPDIFF(YEAR,employees.hire_date,dept_emp.to_date) as years_of_service ,
employees.hire_date AS joined_date
FROM employees,dept_emp
WHERE TIMESTAMPDIFF(YEAR,employees.birth_date,CURDATE()) > 50 AND
employees.emp_no=dept_emp.emp_no AND
TIMESTAMPDIFF(YEAR,employees.hire_date,dept_emp.to_date)>10;
```

first_name	last_name	age	years_of_service	joined_date
Georgi	Facello	68	8012	1986-06-26
Bezalel	Simmel	57	8013	1985-11-21
Parto	Bamford	62	8012	1986-08-28
Chirstian	Koblick	67	8012	1986-12-01
Kyoichi	Maliniak	67	8009	1989-09-12
Anneke	Preusig	68	8009	1989-06-02
Tzvetan	Zielinski	64	8009	1989-02-10
Sumant	Peac	69	8013	1985-02-18
Duangkaew	Piveteau	58	8009	1989-08-24
Patricio	Bridgland	61	8006	1992-12-18
Eberhardt	Terkki	58	8013	1985-10-20
Berni	Genin	65	8011	1987-03-11
Kazuhito	Cappelletti	60	8003	1995-01-27
Cristinel	Bouloucos	63	8005	1993-08-03
Kazuhide	Peha	67	8011	1987-04-03
Lillian	Haddadi	69	7999	1999-04-30

Got 259967 number of records

(Q7)

Find all the names (first name + last name) of employees in the database who do not work in the Human Resources department. Assume that all the people work for exactly one department.

```
SELECT employees.first_name , employees.last_name
FROM employees,departments,dept_emp
WHERE departments.dept_name!='Human Resources' AND
departments.dept_no=dept_emp.dept_no AND
dept_emp.emp_no=employees.emp_no;
```

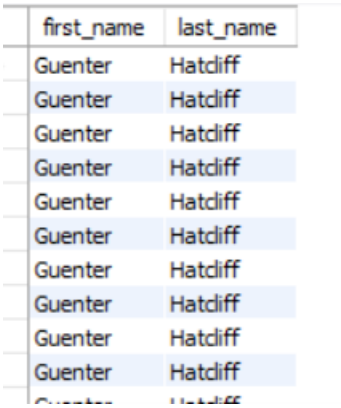
first_name	last_name
Cristinel	Bouloucos
Georgy	Dredge
Berhard	McFarlin
Lunjin	Giveon
Yucel	Auria
Aleksandar	Ananiadou
Xiping	Klerer
Karoline	Cesareni
Nikolaos	Llado
Susanna	Vesel
Djelloul	Laventhal
Phule	Hammers...
Hyuckchul	Gini

Got 313817 number of records

(Q8)

Find the names of all employees in the database who earn more than every employee in the Finance department. Assume that all people work for at most one company.

```
SELECT employees.first_name , employees.last_name
FROM employees,salaries
WHERE employees.emp_no IN
(SELECT salaries.emp_no FROM salaries )
AND salaries.salary >
(SELECT MAX(salaries.salary) FROM
salaries,departments,dept_emp,employees
WHERE departments.dept_name='Finance' AND
departments.dept_no=dept_emp.dept_no AND
dept_emp.emp_no=employees.emp_no AND
employees.emp_no=salaries.emp_no);
```



first_name	last_name
Guenter	Hatcliff
Guenter	Hatcliff
Guenter	Hatcliff
Guenter	Hatcliff
Guenter	Hatcliff
Guenter	Hatcliff
Guenter	Hatcliff
Guenter	Hatcliff
Guenter	Hatcliff
Guenter	Hatcliff

Got 17444064 number of rows.

(Q9)

Find the names of all employees who earn more than the average salary of all employees of their company.

```
SELECT DISTINCT employees.first_name , employees.last_name
FROM employees,salaries
WHERE salaries.to_date >=curdate() AND
employees.emp_no=salaries.emp_no AND
salaries.salary > (SELECT AVG(salaries.salary) FROM salaries);
```

first_name	last_name
Aamer	Azuma
Aamer	Baak
Aamer	Baaleh
Aamer	Bahl
Aamer	Bahr
Aamer	Belinskaya
Aamer	Bennis
Aamer	Bharadwaj
Aamer	Bottner
Aamer	Brandsma
Aamer	Burnard
Aamer	Calkin
Aamer	Chenoweth
Aamer	Conti
Aamer	Cromarty
Aamer	Cyre
Aamer	Danner
Aamer	Demke
Aamer	Dulli

Got 99540 number of records.

(Q10)

Compute the difference between the average salary of a Senior Engineer and the average salary of all employees (including Senior Engineers).

```
SELECT ((SELECT AVG(salaries.salary) FROM salaries) -
(SELECT AVG(salaries.salary) FROM employees,salaries,titles
WHERE titles.title='Senior Engineer' AND
titles.emp_no=employees.emp_no AND employees.emp_no=salaries.emp_no)) AS diff;
```

diff
3297.7505

(Q11)

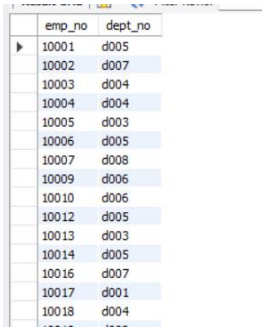
Create a view current dept emp (emp no, fromdate, todate) to show only the current department for each employee. You may have to use two views for this.

```
CREATE VIEW current_dept_emp (emp_no, current_department)
AS SELECT DISTINCT emp_no,dept_no FROM dept_emp WHERE to_date>=CURDATE();
```

(Q12)

Write a normal SQL query to do the above task in problem 11.

```
SELECT DISTINCT emp_no,dept_no FROM dept_emp WHERE to_date>=CURDATE();
```



emp_no	dept_no
10001	d005
10002	d007
10003	d004
10004	d004
10005	d003
10006	d005
10007	d008
10009	d006
10010	d006
10012	d005
10013	d003
10014	d005
10016	d007
10017	d001
10018	d004

Got 240124 number of records

(Q13)

Create a trigger to print salary changes of employees. For example, if you enter an SQL statement such as UPDATE salaries SET salary = salary + 1000 WHERE emp no = 1500, the trigger should fire once for each row that is updated and it should print the new and old salaries, and the difference.

```
DELIMITER $$
CREATE TRIGGER print_salary_change BEFORE UPDATE
ON salaries FOR EACH ROW
BEGIN

    SET new_salary = NEW.salary;
    SET old_salary = OLD.salary;
    SET difference = ABS(new_salary-old_salary);

END $$
DELIMITER ;
```

(Q14)

Create a trigger that will cause an error when an update occurs that would result in a salary increase greater than 10% of the current salary

```
DELIMITER $$
CREATE TRIGGER cause_an_error
BEFORE UPDATE
ON salaries FOR EACH ROW
BEGIN
    DECLARE error_msg VARCHAR(255);
    SET error_msg = ('The new salary cannot be grater than the 10% of the current salary' );
    IF (new.salary - old.salary ) > ((old.salary/100)*10) THEN
    SIGNAL SQLSTATE '45000'
    SET MESSAGE_TEXT = error_msg;
    END IF;
END $$
```