1. **Which employees have salaries greater than 'Pat' salary**
   SELECT first_name, salary FROM employees WHERE salary >
   (SELECT salary FROM employees WHERE first_name ='Fay')

2. **Display the employee name whose dept id is the same as that of employee 141**
   SELECT first_name, department_id FROM employees
   WHERE department_id= (select department_id from employees where employee_id=141)

3. **Displays employees whose d id is the same as that of employee 141 and whose salary is greater than that of employee 143**

   SELECT first_name, department_id,salary FROM employees
   WHERE department_id=(select department_id from employees where employee_id=141
)
   and
   salary > (SELECT salary FROM employees WHERE employee_id = 143)

4. **Display the employee last name, d id, and salary of all employees whose salary is a minimum among all employees**

   SELECT last_name, department_id, salary FROM employees WHERE salary =(SELECT MIN(salary) FROM employees)

5. **Display all the departments that have a minimum salary greater than department 20.**
   Select department_id, MIN(salary) FROM employees
   GROUP BY department_id
   HAVING MIN(salary) >(SELECT MIN(salary) FROM employees
   WHERE department_id = 20)

   Multi row subquery

6. **Display the employee details of each department who is earning the minimum salary**

```
SELECT employee_id, last_name, salary,department_id FROM employees
WHERE salary in  (SELECT MIN(salary) FROM employees
GROUP BY department_id)
```

EMPLOYEE_ID	LAST_NAME	SALARY	DEPARTMENT_ID
101	**Kochhar**	**17000**	**90**
102	**De Haan**	**17000**	**90**
104	Ernst	6000	60
107	**Lorentz**	**4200**	**60**
144	**Vargas**	**2500**	**50**
176	Taylor	8600	80
178	**Grant**	**7000**	**-**
200	**Whalen**	**4400**	**10**
202	**Fay**	**6000**	**20**
206	**Gietz**	**8300**	**110**

```
SELECT MIN(salary),department_id FROM employees
GROUP BY department_id
```

MIN(SALARY)	DEPARTMENT_ID
2500	50
8300	110
17000	90
7000	-
4400	10
6000	20
4200	60
8600	80

7. **Find the employees whose salary is greater than or equal to maximum salary of any of the dept**

```
SELECT max(salary) FROM employees
```

```
        gROUP BY department_id)
```

MAX(SALARY)
5800
12000
24000
7000
4400
13000
9000
11000

```
        select last_name, department_id ,salary from employees
           where salary >= any  (SELECT max(salary) FROM employees
        gROUP BY department_id)
```

LAST_NAME	DEPARTMENT_ID	SALARY
King	90	24000
Kochhar	90	17000
De Haan	90	17000
Hunold	60	9000
Ernst	60	6000
Austin	60	4800
Pataballa	60	4800
Mourgos	50	5800
Zlotkey	80	10500
Abel	80	11000
Taylor	80	8600
Grant	-	7000
Whalen	10	4400
Hartstein	20	13000
Fay	20	6000
Higgins	110	12000
Gietz	110	8300

8. **Find the employees whose salary is greater than maximum salary any of the depts**

select last_name, department_id ,salary from employees where salary > any (SELECT max(salary) FROM employees gROUP BY department_id)

9. **Find the employees whose salary is greater than or equal to the maximum salary of all the deptartments**

select last_name, department_id ,salary from employees where salary >= all (SELECT max(salary) FROM employees gROUP BY department_id)

10. **Find the employees whose salary is greater than the maximum salary of each dept**

    select last_name, department_id ,salary from employees
    where salary > all (SELECT max(salary) FROM employees
    gROUP BY department_id)

    NO ROWS SELECTED

    Cor-related Subqueries:

11. Find all employees who earn more than the average salary in their department

    select last_name, department_id ,salary from employees outer
    where salary > (SELECT avg(salary) FROM employees
    group by department_id
    where department_id= outer.department_id)

LAST_NAME	DEPARTMENT_ID	SALARY
King	90	24000
Hunold	60	9000
Ernst	60	6000
Mourgos	50	5800
Zlotkey	80	10500
Abel	80	11000
Hartstein	20	13000
Higgins	110	12000

LAST_NAME	DEPARTMENT_ID	SALARY
King	90	24000
Hunold	60	9000
Ernst	60	6000
Mourgos	50	5800
Zlotkey	80	10500
Abel	80	11000
Hartstein	20	13000
Higgins	110	12000

12. Find Employees Who Earn the Second-Highest Salary in Their Department

```
SELECT department_id, MAX(salary) AS second_highest_salary
FROM employees
WHERE salary < (
    SELECT MAX(salary)
    FROM employees e2
    WHERE e2.department_id = employees.department_id
)
GROUP BY department_id;
```

SQL is declarative, so execution order is:

FROM
WHERE
GROUP BY
SELECT
ORDER BY

Row #	emp_id	dept_id	salary
1	E1	10	10000
2	E2	10	8000

Row #	emp_id	dept_id	salary
3	E3	10	6000
4	E4	20	9000
5	E5	20	7000

From:
First 5 rows of the table is selected

Inner query executes: (Applies where)
For each row, the subquery runs once.

```
SELECT MAX(salary)
FROM employees
WHERE department_id = 10; 10,000
```

Row 1 removed
Row 2: (dept=10, salary=8000) row2 kept
Row 3: (dept=10, salary=6000) row3 kept
Row 5 is kept

GROUP BY department_id
Now SQL groups remaining rows:

- **Dept 10 → {8000, 6000}**
- **Dept 20 → {7000}**

Now select runs per row and retrieves the next maximum

13. Find Employees Who Have the Same Job as an Employee with the Highest Salary

```
SELECT first_name, last_name, job_id, salary
FROM employees e1
WHERE job_id = (
   SELECT *
   FROM employees e2
```

WHERE e2.salary = (SELECT MAX(salary) FROM employees) and e2.job_id = e1.job_id
);

Non-correleated subquery:

```
SELECT first_name, last_name, job_id, salary
FROM employees
WHERE job_id = (
   SELECT job_id
   FROM employees
   WHERE salary = (SELECT MAX(salary) FROM employees)
);
```

14. **List the department names which have atleast one employee**
    SELECT department_id, department_name FROM deptartments d WHERE exists(SELECT * FROM employees WHERE e.department_id=d.department_id) ;

15. **List the department names which do not have any employees**
    SELECT department_id, department_name FROM departments d WHERE not exists(SELECT * FROM employees e WHERE e.department_id=d.department_id)

16. **check whether an employee exists in a department where at least one person earns over $100,000:;**

```
SELECT employee_id, department_id,salary
FROM employees e1
WHERE EXISTS (
   SELECT *
   FROM employees e2
   WHERE e1.department_id = e2.department_id
   AND salary > 10000
);
```