```
use 10kcoders;
CREATE TABLE Emp (
    EmpID INT PRIMARY KEY,
    Name VARCHAR(50),
    Department VARCHAR(50),
    Salary DECIMAL(10,2),
    Age INT,
    City VARCHAR(50)
);

INSERT INTO Emp (EmpID, Name, Department, Salary, Age, City) VALUES
(1, 'Amit', 'HR', 35000, 29, 'Delhi'),
(2, 'Sneha', 'Finance', 48000, 32, 'Mumbai'),
(3, 'Ravi', 'IT', 55000, 28, 'Bangalore'),
(4, 'Priya', 'Sales', 40000, 30, 'Chennai'),
(5, 'Karan', 'Finance', 60000, 35, 'Delhi'),
(6, 'Meena', 'HR', 30000, 26, 'Pune'),
(7, 'Suresh', 'IT', 70000, 40, 'Hyderabad'),
(8, 'Divya', 'Sales', 42000, 27, 'Mumbai'),
(9, 'Vikram', 'Finance', 65000, 36, 'Bangalore'),
(10, 'Nisha', 'IT', 72000, 31, 'Delhi'),
(11, 'Rohit', 'HR', 31000, 25, 'Chennai'),
(12, 'Pooja', 'Sales', 38000, 29, 'Pune'),
(13, 'Anil', 'Finance', 58000, 34, 'Hyderabad'),
(14, 'Neha', 'IT', 64000, 33, 'Mumbai'),
(15, 'Rajesh', 'Sales', 45000, 37, 'Delhi'),
(16, 'Komal', 'HR', 33000, 28, 'Bangalore'),
(17, 'Deepak', 'Finance', 52000, 30, 'Chennai'),
(18, 'Swati', 'IT', 76000, 38, 'Pune'),
(19, 'Arjun', 'Sales', 47000, 29, 'Hyderabad'),
(20, 'Lakshmi', 'Finance', 61000, 32, 'Delhi'),
(21, 'Manoj', 'IT', 69000, 36, 'Bangalore'),
(22, 'Sakshi', 'Sales', 39000, 26, 'Mumbai'),
(23, 'Harish', 'HR', 29500, 24, 'Chennai'),
(24, 'Kavita', 'Finance', 57000, 35, 'Hyderabad'),
(25, 'Sunil', 'IT', 73000, 39, 'Delhi'),
(26, 'Ramesh', 'Sales', 46000, 33, 'Pune'),
(27, 'Jyoti', 'Finance', 59000, 31, 'Bangalore'),
(28, 'Ashok', 'IT', 71000, 34, 'Mumbai'),
(29, 'Tanvi', 'Sales', 41000, 27, 'Delhi'),
(30, 'Gaurav', 'HR', 34000, 29, 'Hyderabad');

-- BASIC SUB QUERIES
-- 1. Find employees whose salary is greater than the average salary of all employees.
select * from emp where Salary >(select avg(Salary) from emp);
-- 2. Find employees whose age is less than the youngest employee in the HR department.
select *from emp where age <(select min(age) from emp where department = "HR" );
-- 3. Find employees living in the same city as Ravi
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select * from emp where city = (select city from emp where name = 'Ravi');
-- 4. Find employees with the same salary as Karan
select * from emp where salary = (select salary from emp where name = "Karan");
-- 5. Find employees earning more than Sneha
select * from emp where salary > (select salary from emp where name = "Sneha");
-- 6. Find employees working in the same department as Nisha
select * from emp where department = (select department from emp where name = "Nisha");
-- 7. Find employees who live in the same cities as Finance department employees.
select * from emp where city in (select city from emp where department = "Finance");
-- 8. Find employees older than any employee in the Sales department.
select * from emp where age > (select max(age) from emp where Department="sales");
-- 9. Find employees earning more than all employees in HR.
select* from emp where salary >(select max(salary) from emp where Department= "HR");
-- 10. Find employees working in a department where at least one employee earns more
than 70,000.
select * from emp where Department in (select department from emp where salary > 70000);
-- CORRELATED SUB QUERIES
####################
-- 11. Find employees whose salary is greater than the average salary of their department.
 select * from emp as e1 where salary >(select avg(salary) from emp as e2 where
e2.Department=e1.Department );
-- 12. Find employees earning the maximum salary in their department.
select * from emp as e1 where salary =(select max(salary) from emp as e2 where
e2.department = e1.Department);
-- 13. Find employees earning the minimum salary in their department.
select * from emp as e1 where salary =(select min(salary) from emp as e2 where
e2.department = e1.Department);
-- 14. Find employees older than the average age of their department.
select * from emp as e1 where age >(select avg(age) from emp as e2 where
e2.Department=e1.department);
-- 15. Find employees who have the same city as at least one of their department
colleagues.
select city,department from emp;
select distinct city,department from emp ;
select city,count(city) from emp group by city;
select department,city from emp group by department,city having count(city)>1;
select * from emp where (Department,city) in( select department,city from emp group by
department,city having count(city)>1);
#########################################################################
-- 16. Find the city with the maximum number of employees.                    #
SELECT city
                          #
FROM emp
                          #
GROUP BY city
HAVING COUNT(*) = (
   SELECT MAX(city_count)
   FROM (
```

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        SELECT COUNT(*) AS city_count
        FROM emp
        GROUP BY city
    ) AS t
);
select city from emp group by city having count(*)= (select max(mx)from(select count(city) as
mx from emp as e1 group by city) as e2);
#########################################################################
-- NESTED SUBQUERIES
-- 17. Find employees whose salary equals the second-highest salary in the company.
select * from emp where salary = (select salary from emp order by salary desc limit 1 offset
1) ;
#other way
select * from emp where salary = (select max(salary) from emp where salary<(select
max(salary)from emp ) );
-- 18. Find employees whose salary equals the third-highest salary in the company.
select * from emp where salary = (select salary from emp order by salary desc limit 1 offset
2) ;
#otherway
select * from emp where salary = (select max(salary) from emp where salary<(select
max(salary)from emp where salary <(select max(salary) from emp)) );
-- 19. Find employees whose salary is greater than the average salary of employees in
Delhi.
select * from emp where salary >(select avg(salary) from emp group by city having city
="Delhi");
-- 20. Find employees who earn more than the average salary of employees who are older
than 30.
select * from emp where salary>( select avg(salary) from emp where age>30);
-- 21. Find employees who are younger than the oldest employee in Sales department.
select * from emp where age <(select max(age) from emp group by department having
department ="sales");
-- 22. Find employees whose salary is greater than the average salary of Finance employees
but
-- less than the maximum salary of IT employees.
select * from emp where salary >(
select avg(salary) from emp group by department having department = "Finance") and salary
<(
select max(salary) from emp group by department having department ="IT");
#########################################################
-- 23. Find employees who belong to the department that has the least number of
employees.
select * from emp where department in (select department from emp group by department
having count(*)=(select min(e) from (select count(*) as e from emp group by department)as
e2));
-- 24. Find employees whose city has more employees than the city of Priya.
select * from emp where city in (
select city from emp group by city having count(city)>(
select count(city) from emp where city =(
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select city from emp where name = "Priya")));
select city,count(city) from emp group by city;
-- 25. Find employees who belong to the department where the average salary is greater
than
-- 55,000.
select * from emp where department in(
select department from emp group by department having avg(salary)>55000);
#########################
-- 26. Find employees who earn more than the average salary of all employees but less than
the
-- maximum salary of their department.
select * from emp as e where salary in(
select salary from emp where salary >(select avg(salary) from emp)) and salary in(
select salary from emp where salary<(select max(salary)from emp group by department
having department = e.department));
select * from emp as e where salary > (select avg(salary) from emp)and salary<(select
max(salary) from emp where department =e.department);
####################3
-- 27. Find employees whose salary is above the company average and age is below the
company
-- average.
select * from emp where salary in(
select salary from emp where salary>(select avg(Salary) from emp) )and age in(
select age from emp where age<(select avg(age) from emp));
```