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Section:	BCE – 4A
Subject:	Database Systems
Instructor:	Sir. Asad Ali Malik
Lab Report:	9

Activity 2:

1. Write SQL queries for the following information needs. You should execute your attempt and make necessary corrections if needed. You are expected to provide two versions of the queries: one that uses sub-queries constructs and the other that doesn't. In case the second query cannot be implemented, explain the reason.
2. Information needs:
    a. Find all the department whose average salary is greater than of the average salary of department 80.
    b. Find Employees with salary greater than all employees in department 110.
    c. Find Employees with salary greater than any of the employees in department 110.
    d. Identify the employees whose salary is exactly same as the average salary of the department.
    e. Display all the locations that are not used by departments yet.

(a)

```
use hr;
select department_id
from employees
group by department_id
having avg(salary) >
(select avg(salary)
from employees
where department_id = 80);
```

department_id
20
70
90
110

(b)

```
select employee_id, first_name,
last_name, salary from employees
where salary > all (select salary
from employees
where department_id = 110);
```

employee_id	first_name	last_name	salary
100	Steven	King	24000.00
101	Neena	Kochhar	17000.00
102	Lex	De Haan	17000.00
145	John	Russell	14000.00
146	Karen	Partners	13500.00
201	Michael	Hartstein	13000.00

(c)

```
use hr;
select employee_id,
first_name, last_name, salary
from employees where salary >
any (select salary from employees
where department_id = 110);
```

employee_id	first_name	last_name	salary
100	Steven	King	24000.00
101	Neena	Kochhar	17000.00
102	Lex	De Haan	17000.00
103	Alexander	Hunold	9000.00
108	Nancy	Greenberg	12000.00
109	Daniel	Faviet	9000.00
114	Den	Raphaely	11000.00
145	John	Russell	14000.00
146	Karen	Partners	13500.00

(d)

```
SELECT employee_id, first_name,
salary, department_id
FROM employees e
WHERE salary = (SELECT AVG(salary)
FROM employees
WHERE department_id = e.department_id);
```

employee_id	first_name	salary	department_id
200	Jennifer	4400.00	10
203	Susan	6500.00	40
204	Hermann	10000.00	70
NULL	NULL	NULL	NULL

(e)

```
use hr;
select location_id
from locations
where location_id not in
(select location_id from departments);
```

location_id
2200
2800
1900
2900
3000
2000
2100

Post Lab:

- The HR department needs a query that prompts the user for an employee last name. The query then displays the last name and hire date of any employee in the same department as the employee whose name they supply (excluding that employee). For example, if the user enters Zlotkey, find all employees who work with Zlotkey (excluding Zlotkey).
- Create a report that displays the employee number, last name, and salary of all employees who earn more than the average salary. Sort the results in order of ascending salary.
- Create a report for HR that displays the department number, last name, and job ID for every employee in the Executive department.
- Create a report for HR that displays the last name and salary of every employee who reports to King.

(a)

```
use hr;
select last_name, hire_date
from employees
where department_id =
( SELECT department_id FROM employees
WHERE last_name = 'Zlotkey')
AND last_name <> 'Zlotkey';
```

last_name	hire_date
Russell	1996-10-01
Partners	1997-01-05
Errazuriz	1997-03-10
Cambrault	1999-10-15
Tucker	1997-01-30
Bernstein	1997-03-24
Hall	1997-08-20
Olsen	1998-03-30
Cambrault	1998-12-09

(b)

```
use hr;
select phone_number, last_name, salary
from employees
where salary >
( select avg(salary)
from employees)
order by salary asc;
```

phone_number	last_name	salary
515.123.7777	Mavris	6500.00
650.123.4234	Vollman	6500.00
011.44.1346.529268	Lee	6800.00
515.124.4567	Popp	6900.00
011.44.1344.486508	Tuvault	7000.00
011.44.1345.529268	Sewall	7000.00
011.44.1644.429263	Grant	7000.00
011.44.1346.329268	Marvins	7200.00
011.44.1343.529268	Bates	7300.00

(c)

```
use hr;
select department_id, last_name, job_id
from employees
where department_id =
(select department_id
from departments
where department_name = 'Executive');
```

department_id	last_name	job_id
90	King	AD_PRES
90	Kochhar	AD_VP
90	De Haan	AD_VP

(d)

```
SELECT last_name, salary
FROM employees
WHERE manager_id IN
(SELECT employee_id FROM employees
WHERE last_name = 'King');
```

last_name	salary
Kaufling	7900.00
Vollman	6500.00
Mourgos	5800.00
Russell	14000.00
Partners	13500.00
Errazuriz	12000.00
Cambrault	11000.00
Zlotkey	10500.00
Hartstein	13000.00

Critical Analysis

Using subqueries in MySQL provides several benefits, making data retrieval more efficient and structured. Subqueries also help in breaking down complex queries, making them easier to understand and execute. Using subqueries with ALL and ANY in MySQL allows for powerful comparisons within database. The ALL operator ensures a condition is met for all values in a subquery. On the other hand, ANY checks if a condition is true for at least one value.

Lab Assessment		
Lab Task Evaluation	**/6**	**/10**
Lab Report	**/4**	
Instructor Signature and Comments		