



## CSE 311L(Database Management System)

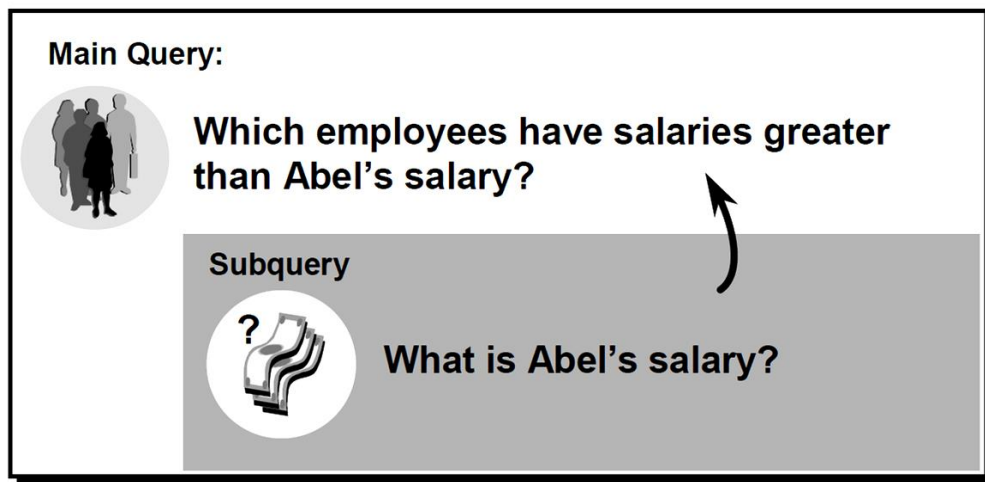
### LAB-Week 06 (Part A)

## Subqueries

### Topics:

- ▶ Using a Subquery to Solve a Problem
- ▶ Subquery Syntax
- ▶ Single-Row Subqueries
- ▶ Executing Single-Row Subqueries
- ▶ Using Group Functions in a Subquery

Who has a salary greater than Abel's?



### Using a Subquery

```
SELECT last_name
FROM employees
WHERE salary > (SELECT salary
                FROM employees
                WHERE last_name = 'Abel');
```

LAST_NAME
King
Kochhar
De Haan
Hartstein
Higgins

### Single-Row Subqueries

- ▶ Return only one row
- ▶ Use single-row comparison operators

Operator	Meaning
=	Equal to
>	Greater than
>=	Greater than or equal to
<	Less than
<=	Less than or equal to
<>	Not equal to

### Executing Single-Row Subqueries

```
SELECT last_name, job_id, salary
FROM employees
WHERE job_id =
      (SELECT job_id
       FROM employees
       WHERE employee_id = 141)
AND salary >
      (SELECT salary
       FROM employees
       WHERE employee_id = 143);
```

LAST_NAME	JOB_ID	SALARY
Rajs	ST_CLERK	3500
Davies	ST_CLERK	3100

### Using Group Functions in a Subquery

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

LAST_NAME	JOB_ID	SALARY
Vargas	ST_CLERK	2500

### Activity 01:

Write a query to display the last name and hire date of any employee in the same department as Zlotkey. Exclude Zlotkey.

LAST_NAME	HIRE_DATE
Abel	11-MAY-96
Taylor	24-MAR-98

### Activity 02:

Create a query to display the employee numbers and last names of all employees who earn more than the average salary. Sort the results in ascending order of salary.

EMPLOYEE_ID	LAST_NAME	SALARY
103	Hunold	9000
149	Zlotkey	10500
174	Abel	11000
205	Higgins	12000
201	Hartstein	13000
101	Kochhar	17000
102	De Haan	17000
100	King	24000



## CSE 311L(Database Management System)

### LAB-Week 06 (Part B)

## Subqueries

### Topics:

- ▶ Single-row operator with multiple-row subquery
- ▶ Multiple-Row Subqueries
- ▶ Using the ANY Operator
- ▶ Using the ALL Operator

### What is Wrong with this Statement?

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

### Multiple-Row Subqueries

- ▶ Return more than one row
- ▶ Use multiple-row comparison operators

Operator	Meaning
IN	Equal to any member in the list
ANY	Compare value to each value returned by the subquery
ALL	Compare value to every value returned by the subquery

### Using the ANY Operator

```
SELECT employee_id, last_name, job_id, salary
FROM employees
WHERE salary < ANY
        (SELECT salary
         FROM employees
         WHERE job_id = 'IT_PROG')
AND job_id <> 'IT_PROG';
```

EMPLOYEE_ID	LAST_NAME	JOB_ID	SALARY
124	Mourgos	ST_MAN	5800
141	Rajs	ST_CLERK	3500
142	Davies	ST_CLERK	3100
143	Matos	ST_CLERK	2600
144	Vargas	ST_CLERK	2500

### Using the ALL Operator

```

SELECT employee_id, last_name, job_id, salary
FROM employees
WHERE salary < ALL
      (SELECT salary
       FROM employees
       WHERE job_id = 'IT_PROG')
AND job_id <> 'IT_PROG';

```

EMPLOYEE_ID	LAST_NAME	JOB_ID	SALARY
141	Rajs	ST_CLERK	3500
142	Davies	ST_CLERK	3100
143	Matos	ST_CLERK	2600
144	Vargas	ST_CLERK	2500

### Activity 01:

Display the last name and salary of every employee who reports to King.

LAST_NAME	SALARY
Kochhar	17000
De Haan	17000
Mourgos	5800
Zlotkey	10500
Hartstein	13000

### Activity 02:

Write a query to display the employee numbers, last names, and salaries of all employees who earn more than the average salary and who work in a department with any employee with a *u* in their name.

EMPLOYEE_ID	LAST_NAME	SALARY
103	Hunold	9000