

# Database System

Lecture 17

SQL Sub Languages

**DRL Data Retrieval Language**

*DRL command*

*SELECT Statement*

**ORDER BY Clause**

Prepared By

**Dhafer Sabah Yaseen**

# SQL Components Or SQL Sub Languages

**DCL:** Data Control Language

Example: Grant, Revoke.

**DDL:** Data Definition Language.

Example: Create, Alter, Drop, Rename and Truncate.

**DML:** Data Manipulation Language

Example: Insert, Update, Delete

**DRL:** Data Retrieval Language

Example: Select

**TCL:** Transaction Control Language

Example : Rollback, Commit, Savepoint

# *DRL-Data Retrieval Language*

## *SELECT Statement :*

Use a SELECT statement or subquery to retrieve data from one or more tables, object tables, views, object views.

## *Prerequisites*

For you to select data from a table, view, object view, the object must be in your own schema or you must have the READ or SELECT privilege .

# *DRL-Data Retrieval Language*

## *The Full syntax:*

```
SELECT [DISTINCT]{* | {specific column}[[AS]c_alias]
        [, {specific column}[[AS] c_alias] ] ... }
FROM [schema.]{table | view }[t_alias]
     [, [schema.]{table | view }[t_alias] ] ...
[WHERE condition]
[GROUP BY expr[, expr] ...]
[HAVING condition]]
[{UNION | UNION ALL | INTERSECT | MINUS}
  SELECT command]
[ORDER BY {expr | position | c_alias } [ASC | DESC]
 [ NULLS FIRST | NULLS LAST ]
     [, {expr | position | c_alias } [ASC | DESC]
 [ NULLS FIRST | NULLS LAST ]...]
```

# *DRL-Data Retrieval Language*

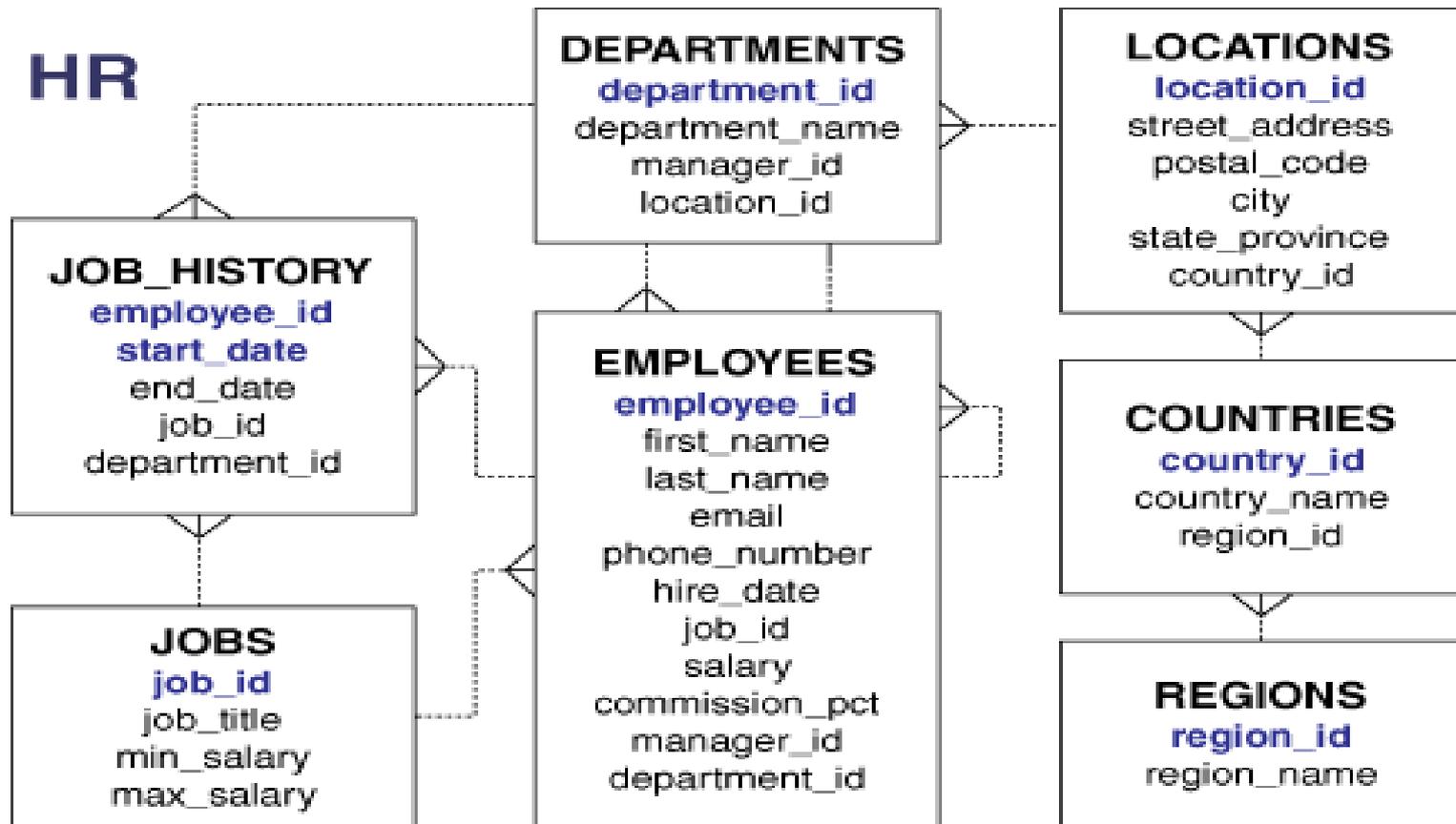
First of all will shows how to unlock the HR account and connect to Oracle Database as the user HR, who owns the HR sample schema that we use as example and tutorials in this lecture.

```
ALTER USER HR ACCOUNT UNLOCK IDENTIFIED  
BY password;
```

To display HR tables  

```
SELECT * FROM tab;
```

# *DRL-Data Retrieval Language*



*HR - Entity Relation Diagram(ERD)*

# *DRL-Data Retrieval Language*

## *Formatting Columns in SQL-Plus*

If the data in SQL-Plus displayed in multi lines and not sorted you can use Formatting Columns.

**COL[UMN] {Column | Alias } [OPTIONS]**

Examples:

```
COLUMN employee_id FORMAT 999
```

```
COLUMN last_name FORMAT A15
```

```
COLUMN salary FORMAT $999.99
```

```
COLUMN salary CLEAR
```

# *DRL-Data Retrieval Language*

## *Syntax:*

```
SELECT [DISTINCT]{*|{specific column}[[AS]
c_alias]
[, {specific column}[[AS] c_alias] ] ... }
FROM [schema.]{table|view }[t_alias]
    [, [schema.]{table|view }[t_alias] ] ...
[WHERE condition]
```

```
[ORDER BY {expr|position| c_alias }
[ASC|DESC] [ NULLS FIRST | NULLS LAST ]
```

```
    [, {expr|position| c_alias }
[ASC|DESC] [ NULLS FIRST | NULLS LAST ]...]
```

# ***DRL-Data Retrieval Language***

## ***- expr***

expr orders rows based on their value for expr. The expression is based on columns in the select list or columns in the tables, views in the FROM clause.

## ***- position***

Specify position to order rows based on their value for the expression in this position of the select list.

The position value must be an integer.

You can specify multiple expressions in the `order_by_clause`. Oracle Database first sorts rows based on their values for the first expression. Rows with the same value for the first expression are then sorted based on their values for the second expression, and so on. The database sorts nulls following all others in ascending order and preceding all others in descending order.

# ***DRL-Data Retrieval Language***

## ***- ASC / DESC***

Specify whether the ordering sequence is ascending or descending. ASC is the default.

## ***- NULLS FIRST / NULLS LAST***

Specify whether returned rows containing null values should appear first or last in the ordering sequence.

NULLS LAST is the default for ascending order, and NULLS FIRST is the default for descending order.

# ***DRL-Data Retrieval Language***

## ***Restrictions on the ORDER BY Clause***

The following restrictions apply to the ORDER BY clause:

- If you have specified the DISTINCT operator in this statement, then this clause cannot refer to columns unless they appear in the select list.
- An order\_by\_clause can contain no more than 255 expressions.
- You cannot order by a LOB, LONG, or LONG RAW column, nested table, or varray.

# *DRL-Data Retrieval Language*

## *Example:*

### *Sorting Selected Data by LAST\_NAME*

```
SELECT FIRST_NAME, LAST_NAME, HIRE_DATE  
FROM EMPLOYEES  
ORDER BY LAST_NAME;
```

## *Another example:*

### *Sorting Selected Data by an Unselected Column*

```
SELECT FIRST_NAME, HIRE_DATE  
FROM EMPLOYEES  
ORDER BY LAST_NAME;
```

# *DRL-Data Retrieval Language*

## *Another example:*

To select all purchasing clerk records from employees and order the results by salary in descending order, issue the following statement:

```
SELECT *  
  FROM employees  
 WHERE job_id = 'PU_CLERK'  
 ORDER BY salary DESC;
```

# *DRL-Data Retrieval Language*

## *Another example:*

To select information from employees ordered first by ascending department number and then by descending salary, issue the following statement:

```
SELECT last_name, department_id, salary  
FROM employees  
ORDER BY department_id ASC, salary DESC,  
last_name;
```

# *DRL-Data Retrieval Language*

## *Another example:*

To select the same information as the previous SELECT and use the positional ORDER BY notation, issue the following statement, which orders by ascending department\_id, then descending salary, and finally alphabetically by last\_name:

```
SELECT last_name, department_id, salary  
FROM employees  
ORDER BY 2 ASC, 3 DESC, 1;
```



A close-up photograph of a right hand holding a silver pen, writing the words "Thank you" in a fluid, cursive script on a white surface. The pen is positioned at the end of the word "you".

Thank you

*Dhafar Sabah Yaseen*