Database System

Lecture 16

SQL Sub Languages

DRL Data Retrieval Language

DRL command

SELECT Statement

WHERE Clause

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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]...]

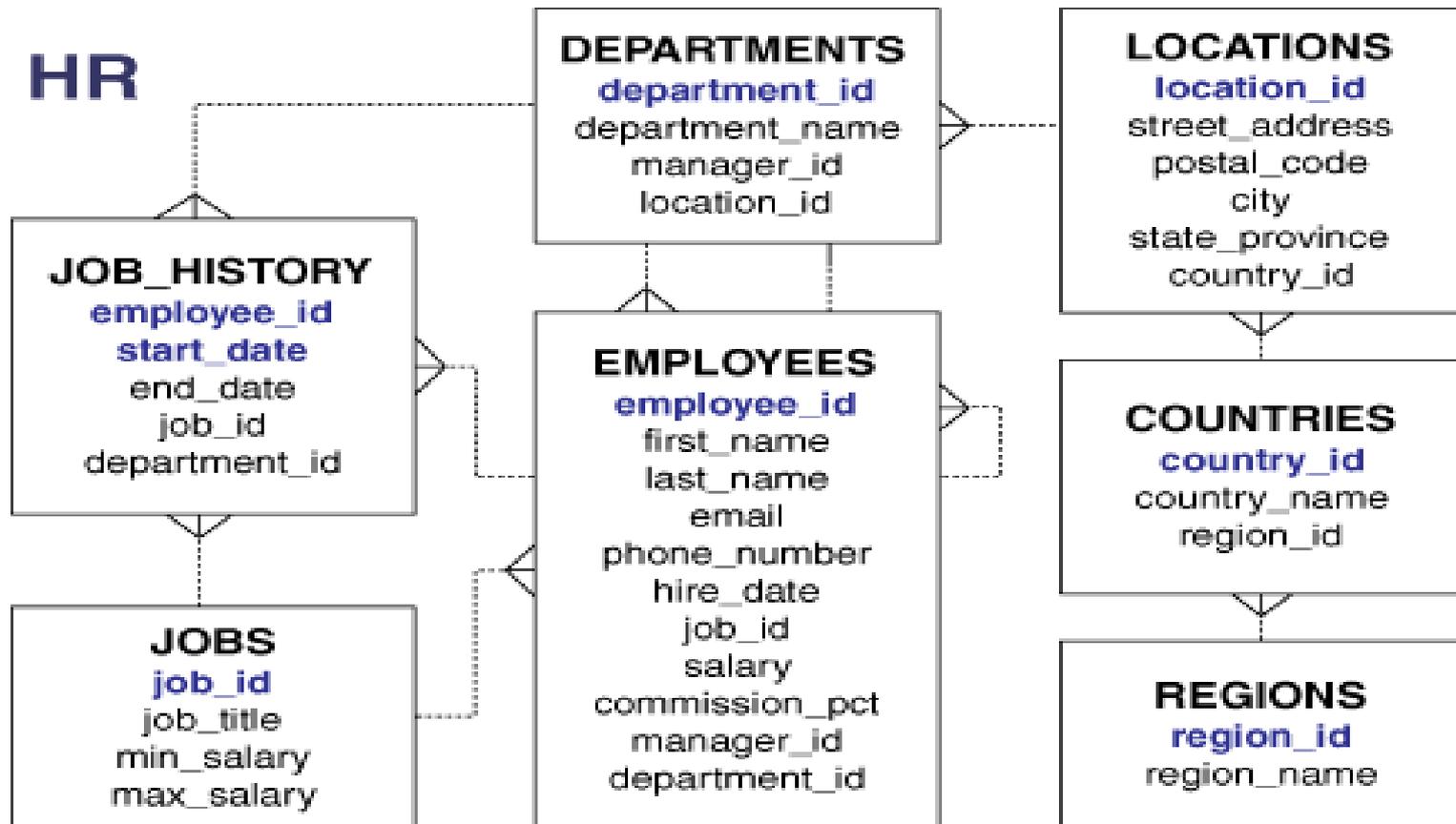# *DRL-Data Retrieval Language*

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

Selecting Data that Satisfies Specified Conditions
To select only data that matches a specified condition, include the **WHERE** clause in the **SELECT** statement. The condition in the **WHERE** clause can be any SQL condition
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]

DRL-Data Retrieval Language

Where Clause Operator

- *Basic comparison operators*
- *IN operator*
- *BETWEEN operator*
- *LIKE operator*
- *IS NULL operator*
- *AND & OR operators*

DRL-Data Retrieval Language

➤ *Basic comparison operators*
Comparison conditions in Oracle are used to compare one expression to another value or expression.
the basic Comparison Conditions (= , < , > , => , =<, <>).

Example:
 SELECT FIRST_NAME, LAST_NAME, DEPARTMENT_ID
FROM HR.EMPLOYEES
WHERE DEPARTMENT_ID = 90
Another Example:
 SELECT FIRST_NAME, LAST_NAME, SALARY
FROM EMPLOYEES
WHERE (SALARY >= 11000) ;

DRL-Data Retrieval Language

➤ IN operator

In Oracle, The IN Operator is used to test whether a value is "in" a specified list.

Example:
SELECT FIRST_NAME, LAST_NAME, DEPARTMENT_ID
FROM EMPLOYEES
WHERE DEPARTMENT_ID IN (20, 100, 110);

DRL-Data Retrieval Language

➤ *BETWEEN operator*

The Oracle BETWEEN operator is used to retrieve values based on a certain range.

Example:

SELECT FIRST_NAME, LAST_NAME, SALARY

FROM EMPLOYEES

WHERE (SALARY BETWEEN 11000 AND 13000) ;

DRL-Data Retrieval Language

➢ LIKE operator

In Oracle, You may not always know the exact value to search for, sometimes you may want to select rows that match a certain character pattern, for example:
All employees whose first name starts with 'M' (First Name column).
All employees whose mobile phone starts with 054 (Cell Phone column).
The Oracle LIKE operator is used to perform a wildcard searches and retrieve rows that match a certain character pattern.

DRL-Data Retrieval Language

Oracle Wildcards Operators

Two symbols can be used to construct the search string:

(%) The percent sign, represents any sequence of characters (0 or more).

(_) The underscore (_) sign, represents any single character.

Example:

 SELECT FIRST_NAME, LAST_NAME
FROM EMPLOYEES
WHERE LAST_NAME LIKE 'Ma%';

Another Example:

 SELECT first_name, last_name
FROM Employees
WHERE last_name LIKE 'Gr_en%';

DRL-Data Retrieval Language

IS NULL operator

In Oracle, NULL value indicates an unavailable or unassigned value. The value NULL does not equal zero (0), nor does it equal a space (' '). Because the NULL value cannot be equal or unequal to any value, you cannot perform any comparison on NULL values by using operators such as '=' or '<>'.

In Oracle, to handle comparison with NULL values, you need to use the following Oracle operators:

- IS NULL – equals the logical operation '= NULL' (records with NULL values)
- IS NOT NULL – equals the logical operation '<> NULL' (records without NULL values)

DRL-Data Retrieval Language

Example:

SELECT first_name, last_name,commission_pct
FROM Employees
WHERE commission_pct IS NULL;

Another Example:

SELECT first_name, last_name,commission_pct
FROM Employees
WHERE commission_pct IS NOT NULL;

DRL-Data Retrieval Language

AND & OR operators

The purpose of the Oracle AND & OR operators is to allow filtering based on multiple conditions. Using these operators, you can combine the result of two (or more) conditions to produce a single result based on them.

Example:
SELECT first_name, last_name, salary, commission_pct "%"
FROM Employees
WHERE (salary >= 11000) AND (commission_pct IS NOT NULL);

Thank you

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