

Data Manipulation Language (DML)

Learning Objective

After completing this lab the student should be able to:

- What is data manipulation language
- How to insert record in the table?
- How to modify the value in a table?
- How to delete the records in a table?
- Difference Between commit or rollback.
- Practical example and lab exercises.

Tools and Technologies

- Oracle Database 11g Express Edition/Enterprise Edition.

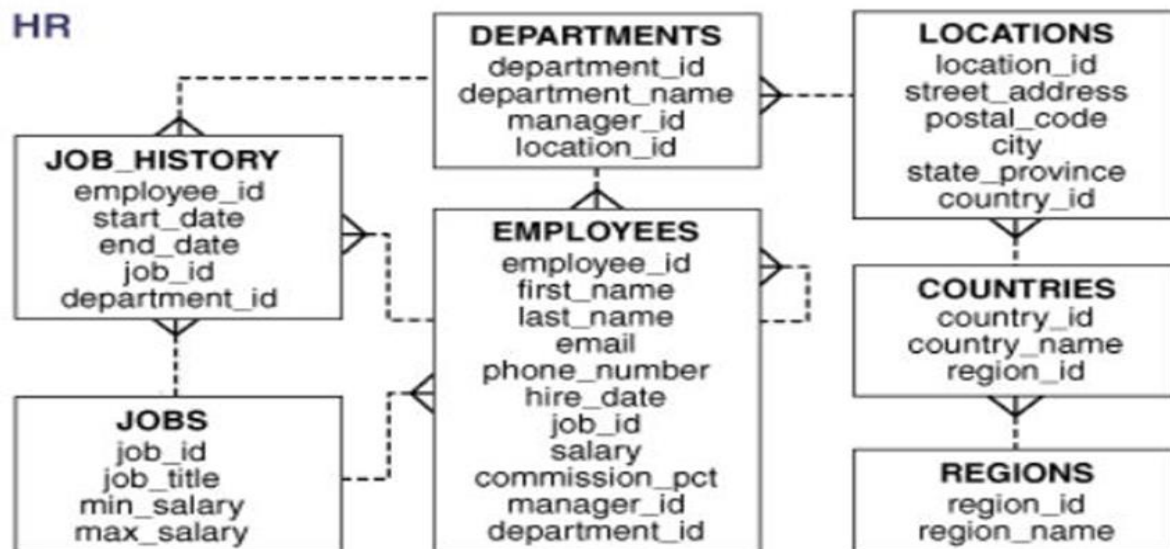
Oracle Credentials for Lab

Enter the Url in your browser <http://172.168.8.16:8080/apex>

Username **hr**

Password **hr**

HR Schema



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HR Table Descriptions

Table **COUNTRIES**

Name	Null?	Type
-----	-----	-----
COUNTRY_ID	NOT NULL	CHAR(2)
COUNTRY_NAME		VARCHAR2(40)
REGION_ID		NUMBER

Table **DEPARTMENTS**

Name	Null?	Type
-----	-----	-----
DEPARTMENT_ID	NOT NULL	NUMBER(4)
DEPARTMENT_NAME	NOT NULL	VARCHAR2(30)
MANAGER_ID		NUMBER(6)
LOCATION_ID		NUMBER(4)

Table **EMPLOYEES**

Name	Null?	Type
-----	-----	-----
EMPLOYEE_ID	NOT NULL	NUMBER(6)
FIRST_NAME		VARCHAR2(20)
LAST_NAME	NOT NULL	VARCHAR2(25)
EMAIL	NOT NULL	VARCHAR2(25)
PHONE_NUMBER		VARCHAR2(20)
HIRE_DATE		NOT NULL DATE
JOB_ID		NOT NULL
VARCHAR2(10)		
SALARY		NUMBER(8,2)
COMMISSION_PCT		NUMBER(2,2)
MANAGER_ID		NUMBER(6)
DEPARTMENT_ID		NUMBER(4)

Table **JOBS**

Name	Null?	Type
-----	-----	-----
JOB_ID	NOT NULL	VARCHAR2(10)
JOB_TITLE	NOT NULL	VARCHAR2(35)
MIN_SALARY		NUMBER(6)
MAX_SALARY		NUMBER(6)

Table **JOB_HISTORY**

Name	Null?	Type
-----	-----	-----
EMPLOYEE_ID	NOT NULL	NUMBER(6)
START_DATE	NOT NULL	DATE
END_DATE	NOT NULL	DATE
JOB_ID	NOT NULL	VARCHAR2(10)
DEPARTMENT_ID		NUMBER(4)

Table **LOCATIONS**

Name	Null?	Type
-----	-----	-----
LOCATION_ID	NOT NULL	NUMBER(4)
STREET_ADDRESS		VARCHAR2(40)
POSTAL_CODE		VARCHAR2(12)

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CITY	NOT NULL	VARCHAR2 (30)
STATE_PROVINCE		VARCHAR2 (25)
COUNTRY_ID		CHAR (2)

Table REGIONS

Name	Null?	Type
-----	-----	-----
REGION_ID	NOT NULL	NUMBER
REGION_NAME		VARCHAR2 (25)

Data manipulation language

A DML statement is executed when you:

- Add new rows to a table
- Modify existing rows in a table
- Remove existing rows from a table

A transaction consists of a collection of DML statements that form a logical unit of work.

Insert Statement

Add new rows to a table by using the INSERT statement.

Syntax

```
INSERT INTO table_name (column1, column2, column3, ...)  
VALUES (value1, value2, value3, ...);
```

Note:

With this syntax, only one row is inserted at a time.

Rules for inserting value to a table

- Insert a new row containing values for each column.
- List values in the default order of the columns in the table.
- Optionally, list the columns in the INSERT clause.
- Enclose character and date values in single quotation marks.

Example

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```
INSERT INTO departments(department_id,department_name,manager_id,location_id)
VALUES (1000,'Computer_science', 100, 1700);
```

Implicit Method

Omit the column from the column list.

Example

```
INSERT INTO departments (department_id, department_name )
VALUES (1001, 'Electrical_engineering');
```

Explicit Method

Specify the NULL keyword in the VALUES clause.

```
INSERT INTO departments
VALUES (1003, 'Civil_Engineering1',NULL,NULL);
```

Insert Special Values

SYSDATE function records the current date and time.

Example

```
INSERT INTO employees (employee_id,first_name,last_name,email, phone_number,
hire_date, job_id, salary,commission_pct, manager_id,department_id)
VALUES (1001,'Ali', 'Khan','xyz', '1234',SYSDATE, 'AC_ACCOUNT', 6900,
NULL, 205, 100);
```

Enter value from Prompt

- Use & substitution in a SQL statement to prompt for values.
- & is a placeholder for the variable value.

Example

```
INSERT INTO departments
(department_id, department_name,location_id)
VALUES (&department_id, '&department_name',&location);
```

Update Statement

The UPDATE statement is used to modify the existing records in a table

Syntax

```
UPDATE table_name  
SET column1 = value1, column2 = value2, ...  
WHERE condition;
```

Update more than one row at a time (if required).

Specific row or rows are modified if you specify the WHERE clause:

Example

```
UPDATE employees  
SET Last_name = 'Ali'  
WHERE employee_id = 113;
```

All rows in the table are modified if you omit the WHERE clause:

Example

```
UPDATE employees  
SET salary = 5000;
```

Updating two columns using sub query

```
UPDATE employees  
SET job_id = (SELECT job_id  
FROM employees  
WHERE employee_id = 205),  
salary = (SELECT salary  
FROM employees  
WHERE employee_id = 205)  
WHERE employee_id = 114;
```

Delete Statement

The DELETE statement is used to delete existing records in a table.

Syntax

```
DELETE [FROM] table  
[WHERE condition];
```

Deleting rows from a table

Specific rows are deleted if you specify the WHERE clause.

Example

All rows in the table are deleted if you omit the WHERE clause:

```
DELETE FROM employees
```

Deleting rows based on another table

Example

```
DELETE FROM employees  
WHERE last_name In(SELECT last_name  
FROM employees  
WHERE last_name like 'S%');
```

Lab Exercise

Q1 Implement All above queries in the document

Q2 Insert 10 records in each table employees, departments, Countries

Q3 Update the records in employee's table first name is equal to whose employee-id is 205.

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