

Lab4

Objectives:

At the end of this lab, you should be able to

- Use DML: Insert, update, delete.
- Database Transactions: commit, rollback.

Data Manipulation Language (DML)

Data manipulation language (DML) is a core part of SQL. When you want to add, update, or delete data in the database, you execute a DML statement.

The INSERT Statement

```
INSERT INTO    table [(column [, column...])]  
VALUES        (value [, value...]);
```

Example

```
INSERT INTO      dept (deptno, dname, loc)  
VALUES          (50, 'DEVELOPMENT', 'DETROIT');
```

Note: the column list is not required in the INSERT clause if it contains values for each column in the table.

```
INSERT INTO      dept VALUES          (60, 'HR', 'DOHA');
```

Inserting Rows with Null Values:

Implicit method:

```
INSERT INTO      dept (deptno, dname ) VALUES(60, 'MIS');
```

Explicit method

```
INSERT INTO dept VALUES (70, 'FINANCE', NULL);
```



Practice:

- Add the following employee to EMP table
No : 200 Name: AHMED Salary: 4000 Hiredate: 1/1/2008
- Add the following department to DEPT table
No : 80 Name: IT Location: None.
- Add a new record to EMP table
No: 123 Name: Sara hiredate: today date.

Note:

- 1- Try to insert the following record to the dept table:
Deptno: 10
Dname: SUPPORT

Loc :null

What is the reason for such problem? _____

2- Add the following record to table emp

Empno: 123

Ename : Ahmed

Deptno: 99

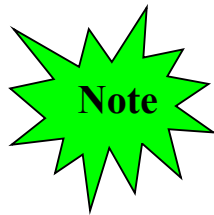
What is the reason for such problem? _____

The UPDATE Statement

```
UPDATE      table
SET         column = value [, column = value, ...]
[WHERE      condition];
```

Example

UPDATE emp SET deptno = 20 WHERE empno = 7782;



- If you do not put a condition, update will be applied to all records in the table.
- If you attempt to update a record with a value that is tied to an integrity constraint, you will experience an error, for example try to update deptno 20 into 55 in the table dept



Practice:

- Write a SQL statement to change the location column of department table with 'Doha' for department number 80.
- Write a SQL statement to change salary of the employee whose ID is 7499 to 8000, if the existing salary is less than 5000.

Note:

1- Try to update the deptno 10 to be 20 .

What is the reason for such problem? _____

2- Try to update deptno of employee 7900 to be 45.

What is the reason for such problem? _____

Using subqueries in UPDATE statement:

- Example: increase the salary of all employees who work in RESEARCH dept by 1000.

UPDATE EMP SET SAL=SAL+1000

WHERE DEPTNO=(SELECT DEPTNO FROM DEPT WHERE
DNAME='RESEARCH');

- Example: make the salary of employee whose id is 7900 as the salary of the employee whose id 7369

UPDATE EMP SET SAL=(SELECT SAL FROM EMP WHERE EMPNO=7369)
WHERE EMPNO=7900

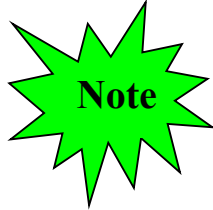
The DELETE Statement

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

Example

DELETE FROM dept WHERE dname = 'DEVELOPMENT';

DELETE FROM emp WHERE deptno =
(SELECT deptno FROM dept WHERE dname ='SALES');



Integrity Constraint Error:

SQL> DELETE FROM dept WHERE deptno = 10;



Practice:

- Write SQL statement to delete from the table EMP all employees in dept. 30.

Note:

1- Try to delete deptno 10 .

What is the reason for such problem? _____

Using subqueries in DELETE statement:

Example: Delete all employees who work in 'NEW YORK'.

DELETE FROM EMP WHERE DEPTNO=
(SELECT DEPTNO FROM DEPT WHERE
LOC='NEW YORK');

Database Transactions

Try to insert a new record to table EMP. Then open another copy of SQL Developer, now in the new one write a query to display the data in EMP table. What do you find?

When Does a Transaction Start and End?

A transaction begins when the first executable SQL statement is encountered and terminates when one of the following occurs:

- A COMMIT or ROLLBACK statement is issued
- A DDL statement, such as CREATE, is issued
- A DCL statement is issued
- The user exits SQL*Plus
- A machine fails or the system crashes

Explicit Transaction Control Statements

You can control the logic of transactions by using the COMMIT, SAVEPOINT, and ROLLBACK statements.

Statement	Description
COMMIT	Ends the current transaction by making all pending data changes permanent
ROLLBACK [TO SAVEPOINT name]	ROLLBACK ends the current transaction by discarding all pending data changes; ROLLBACK TO SAVEPOINT rolls back the current transaction to the specified savepoint, thereby discarding the savepoint and any subsequent changes. If you omit this clause, the ROLLBACK statement rolls back the entire transaction.

Examples:

```
SQL> DELETE FROM      employee;
SQL> ROLLBACK;
SQL> UPDATE emp SET deptno = 10 WHERE empno = 7782;
SQL> SELECT ename,deptno from emp where empno=7782;
SQL> Rollback;
SQL> UPDATE emp SET deptno = 10 WHERE empno = 7782;
SQL> COMMIT;
SQL> SELECT ename,deptno from emp where empno=7782;
```

Implicit Transaction Processing

Status	Circumstances
Automatic commit	DDL statement or DCL statement is issued Normal exit from SQL*Plus, without explicitly issuing COMMIT or ROLLBACK
Automatic rollback	Abnormal termination of SQL*Plus or system failure