Lab5: Creating and Managing Tables

Objectives:

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

- Use DDL: create table, alter table, drop table, truncate table.
- Creating and using Views.

Database Objects

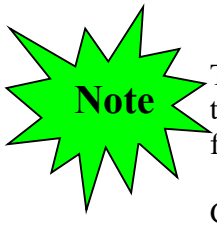
- **Table:** Stores data
- **View:** Subset of data from one or more tables
- **Sequence:** Generates primary key values
- **Index:** Improves the performance of some queries
- **Synonym:** Gives alternative names to objects

Creating Tables

```
CREATE TABLE dept2     (deptno          NUMBER(2), dname VARCHAR2(14),
loc    VARCHAR2(13));
```

Creating a Table by Using a Subquery

```
CREATE TABLE   dept30 AS
        SELECT          empno, ename, sal*12 ANNSAL, hiredate
        FROM    emp  WHERE          deptno = 30;
```



To create a table with the same structure as an existing table, but without the data from the existing table, use a subquery with a WHERE clause, that will always evaluate as false. For example:

```
CREATE TABLE TEST AS
 (SELECT * FROM emp      WHERE 1 = 2);
```

Copying Rows from another Table

Create a new table called managers that has the same structure as EMP

Copy data of managers to the new table as following:

```
INSERT INTO managers(id, name, salary, hiredate)
SELECT        empno, ename, sal, hiredate  FROM   emp
WHERE         job = 'MANAGER';
```

Exercise: Create table Tax which has the following structure

Tax	
Empno	Number(5)
Tax	Number(10,2)

Fill the table with employees' data and the tax of their salaries, where tax is 5%.

Solution:

```
CREATE TABLE TAX ( EMPNO NUMBER(5),
TAX NUMBER (10,2));

INSERT INTO TAX SELECT EMPNO, SAL*0.05 FROM EMP;
```

It can be done in one command as follows :

```
CREATE TABLE TAX AS SELECT EMPNO, SAL *0.05
AS TAX FROM EMP ;
```

RENAME A TABLE:

-You can rename any database object using the command rename:

Example :

```
RENAME DEPT2 TO DEPARTMENT2.
```

The ALTER TABLE Statement

1) Adding a Column

```
ALTER TABLE dept30
ADD             (PHONE NUMBER (6));
```

You can add more than one column in a single ALTER command:

```
ALTER TABLE DEPT30 ADD (ADDRESS VARCHAR2(20), EMAIL VARCHAR2(10));
```

2) Modifying a Column

```
ALTER TABLE     dept30
MODIFY          (ename VARCHAR2(15));
```

Try to modify the size of column DNAME in DEPT30 table to 5 characters.

To change the name of a specific field (column):
ALTER TABLE DEPT30 RENAME COLUMN PHONE TO MOBILE;

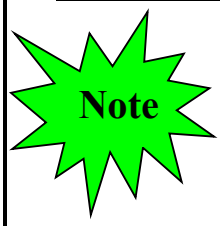
3) Dropping a Column

ALTER TABLE dept30
DROP COLUMN hiredate ;

Try to drop the field *deptno* in table dept.

To drop more than one column :
ALTER TABLE dept30
DROP (address, email);

Dropping a Table



- **All data and structure in the table is deleted.**
- **You *cannot* roll back this statement.**

```
SQL> DROP TABLE dept30;
```

Try to drop the table dept.

TRUNCATE a TABLE

TRUNCATE TABLE command is used to delete complete data from an existing table.

- It removes the data in the table
- It is considered a DDL command.
- It cannot be rolled back

Example:

```
Truncate Table Tax;
```

Difference between TRUNCATE, DELETE:

- Truncate will delete all data, while delete will delete records based on a condition.
- Delete is DML, truncate is DDL.
- Delete needs comment, truncate does not.
- Delete can be rolled back and restore the data, while truncate cannot.

Practice:

1. Create the EMPLOYEE2 table based on the structure of the EMP table. Include only the EMPNO, ENAME, and DEPTNO columns. Name the columns in your new table ID,LAST_NAME, and DEPT_ID, respectively.

2. Modify the EMPLOYEE2 table to allow for longer employee last names. Confirm your modification.

3. Drop the LAST_NAME column from the EMPLOYEE2 table. Confirm your modification by checking the description of the table.

4. Drop the EMPLOYEE2 table.

Views

A view is a logical table based on a table or another view. A view contains no data of its own but is like a window through which data from tables can be viewed or changed.

Simple Views

Example

```
CREATE VIEW     v1
        AS SELECT   empno, ename, job
        FROM        emp
        WHERE       deptno = 10;

SQL> DESCRIBE v1
SQL>  SELECT *
        FROM v1;
```

Exercise:

1. Insert a new employee to emp table :
   Empno: 456, name : Khaled, deptno: 20.
2. Query the view v1
3. Create a view contains empno, ename, dname based on the tables emp and dept.

Complex View

Example

```
SQL> CREATE VIEW        dept_sum (name, minsal, maxsal, avgsal)
   AS SELECT        d.dname, MIN(e.sal), MAX(e.sal), AVG(e.sal)
   FROM             emp e, dept d
   WHERE            e.deptno = d.deptno
   GROUP BY         d.dname;
```

Exercise:

1. Increase the salaries of employees in dept 10 by 1000.
2. Display the data in dept_sum.

Dropping a VIEW

To remove a view

```
DROP VIEW V1
```

Practice

1. Create a view v.
2. Create a view called EMP_VU based on the employee number, employee name, and department number from the EMP table. Change the heading for the employee name to EMPLOYEE
3. Using your view EMP_VU, enter a query to display all employee names and department numbers.