Database Objects – Tables and Views

Database Objects

Object	Description
Table	Basic unit of storage; composed of rows
View	Logically represents subsets of data from one or more tables

Table

- A Table in an Oracle database is a database object.
- Tables are the basic unit of data storage in an Oracle Database.
- A table is an organized set of data which has vertical columns and horizontal rows
- After a table is created, rows of data can be inserted using SQL statements. Table data can then be queried, deleted, or updated using SQL.

Syntax:-

```
CREATE TABLE  Table ( attribute1  Data type, attribute2  Data type,….);
```

View

- A **view** is a logical representation of another table or combination of tables.
- A **view** is a predefined, named query stored in the database.
- Once created, views can be queried in much the same way that tables can be queried .
- Views are not tables but representations of data stored in, or calculated from, one or more other tables (business tables) or views .
- The columns of the view are the items from the select list of the query that defines the view.
- Only the view query is saved in the database, but it is not actually run until it(view) is called in another SQL statement.

Creating a View

Syntax:-

```
CREATE [OR REPLACE] [FORCE|NOFORCE] VIEW view
  [(alias[, alias]...)]
 AS subquery
[WITH CHECK OPTION [CONSTRAINT constraint]]
[WITH READ ONLY [CONSTRAINT constraint]];
```

Example:-

```
CREATE VIEW v_dept_HR  AS
   SELECT ename,sal*12  annual_sal FROM employee
   WHERE  dep_name= 'HR';

CREATE VIEW v_department AS
   SELECT emp.empno, emp.ename, emp.job, emp.deptno, dept.dname
   FROM emp, dept
   WHERE emp.deptno = dept.deptno;
```

Types Of Views

Simple View

Simple views are the views defined on single table. One can perform DML operations directly against simple views. These DML changes are then applied to the view's base table

Complex View

Complex views can be constructed on more than one base table.
In particular, complex views can contain:

- join conditions
- a group by clause
- a order by clause

One cannot perform DML operations against complex views directly.

Materialized View

A materialized view is a replica or snapshot of a target master(table/view) from a single point in time. Materialized views are updated from one or more masters (tables/views) either through individual batch updates, known as a refreshes or through internal triggers

Advantages of Views

A **view** is a logical representation of another table or combination of tables.

Why do we use views?

- To restrict data access
- To make complex queries easy
- To provide data independence
- To present different views of the same data

Feature	Simple Views	Complex Views
Number of tables	One	One or more
Contain functions	No	Yes
Contain groups of data	No	Yes
DML operations through a view	Yes	Not always

Rules for Performing DML Operations on a View

- You can usually perform DML operations on simple views.

- You cannot remove a row if the view contains the following:
  - Group functions
  - A `GROUP BY` clause
  - The `DISTINCT` keyword
  - The pseudo column `ROWNUM` keyword

- You can ensure that no DML operations occur by adding the WITH READ ONLY option to your view definition. Any attempt to perform a DML operation on any row in the view results in an Oracle server error