

## Practical - I

\* Aim: Perform quizzes for DCL Commands and Locks

→ The DCL commands are GRANT and REVOKE

⇒ GRANT:

Granting privileges means to give permission to some user to access database object or a part of a database object.

⇒ Syntax:

GRANT object privileges  
ON object name  
TO user name  
[with GRANT Option];

⇒ Example:

As a user1, grant Alice all the data manipulation permissions on the table Customer, with allowing him to pass privileges to other users

- GRANT ALL  
ON Customer  
TO Alice  
with GRANT option;

OUTPUT: GRANT Succeeded.

=> REVOKE :

Revoking privileges means to deny permission to user given previously.

=> Syntax:

```
REVOKE object privileges  
ON Object name  
FROM User name;
```

=> Example :

As a Alice, revoke the select and insert privileges from user2.

```
- REVOKE Select, insert  
ON users1.Customers  
FROM user2
```

OUTPUT : REVOKE Succeeded

## ⇒ LOCKS :

Lock can be defined as a mechanism used to ensure data integrity while allowing maximum concurrent access to data

### 1) Implicit Locks :

→ In Oracle, data in a table are locked automatically while executing SQL statements. This does not require any user intervention. Such types of locks are called 'Implicit Locks'

→ There are two types :

- i) Type of Lock
- ii) Level of lock.

#### i) Types of locks:

Oracle uses two different types of locks depending upon the operation being performed;

- Shared locks:

- Shared locks are applied while performing Read operations involve only viewing of data, mostly using Select statement.

## • Exclusive Locks :

- Exclusive locks are applied while performing write operations. Write operations involve modifying data using insert, update or delete statements.

### ii) Level of Locks :

→ There are three types of level locks

#### a) Row level lock:

- This lock is used when a condition given in where clause evaluates to single row.
- For example, ..... where ano = 'A01';

#### b) Page level lock:

- This lock is used when a condition given in where clause evaluates to a set of rows
- For example, ..... where bname = 'vvn';

#### c) Table Level lock:

- This lock is used when a SQL statement does not contain where clause.

## 2) Explicit Locks:

- In Oracle, user can lock data in a table on its own instead of automatic locking provided by Oracle. Such type of locks are called 'Explicit lock'.
- An entire table or records of the table can be explicitly locked by using one of these two commands.

- i) Select.... For Update
- ii) Lock Table

- Select,... For Update :

⇒ Syntax :

Select \* From tablename For Update [No wait];

- This statement is used to acquire exclusive locks for performing updates on records.

- Lock Table

⇒ Syntax :

Lock table tablename

IN lockmode Mode [No wait];

## Practical 3

\* Aim: Perform queries to Create Synonyms, Sequence and index.

⇒ Synonyms:

→ A synonym is an Alias or alternative name for database objects such as tables, views, indexes, sequences.

⇒ Syntax:

Create Synonym      Synonym name  
For Object;

⇒ Example:

As a user, Create a Synonym for Customer table owned by user1.

- Create Synonym Cust For user1.Customer;

OUTPUT: Synonym created.

⇒ Destroying a Synonym:

⇒ Syntax:

Drop Synonym      Synonym name;

=> Sequence :

→ A sequence is simply an automatic counter, which generates sequential numbers whenever required.

=> Syntax :

Create Sequence Sequencename  
[ start with n  
  increment by n  
  min value n | Nomin value  
  Max value n | Nomax value  
  cycle / no cycle  
  cache n | No cache  
  order | No order];

→ Options are described below:

- Start With : Specifies the first sequence number. Default for the ascending sequence is the minimum value. Default for the descending sequence is maximum value -1.
- Increment By : Specifies the interval between sequence numbers. It can be any positive or negative number, but not zero. Default value is 1.
- MINVALUE : Specifies the sequence minimum value

- **Nominvalue**: Specifies a minimum value 1 for ascending sequence, and  $10^{-26}$  for descending sequence.
- **Maxvalue**: Specifies the sequence maximum value.
- **Nomaxvalue**: Specifies a maximum value  $10^{27}$  for ascending sequence, and -1 for descending sequence.
- **Cycle**: Specifies to repeat cycle of generating values after reaching maximum value.
- **Nocycle**: Specifies that no more numbers can be generated after reaching maximum value.
- **Cache**: Specifies how many values to generate in advance and to keep in memory for faster access. Minimum value is two for this option.
- **Nocache**: Specifies that no any values will be generated in advance.
- **Order**: Guarantees that Sequence numbers are generated in order.
- **Noorder**: Does not guarantee that Sequence numbers are generated in order.

=> Example:

Create a Sequence which generates number from 1 to 99 in ascending order and stops after generating number 99.

create sequence myseq  
start with 1  
increment by 1  
minval 1  
maxval 99  
no cycle;

OUTPUT: Sequence created.

=> Destroying a Sequence:

→ A sequence can be destroy as described below.

=> Syntax:

Drop Sequence myseq;

OUTPUT: Sequence dropped.

## => Index:

- > An index is an ordered list of contents of the column (or a group of columns) of a table.
- > An index is similar to a table. It contains at least two columns:
  - i) A column having sorted data on which an index is created.
  - ii) A column representing RowID for each row in a table.

## => RowID:

- > A RowID is a unique identifier for each record inserted in any table.
- > There are two types of format:
  - i) Extended
  - ii) Restricted

## => Example:

Display RowID along with other columns for a customer table.

→ This statement is used to acquire lock in one of several specified modes on a given table.

MODE	Specifies...
Exclusive	Allows query on a table, but prohibits any other operation; Other user only can view data of a table.
Shared	Allows Concurrent queries, but no update operation is allowed
Row Shared	Specifies row level lock; no user can lock the whole table; allowing concurrent access for all users of the table.
Share Update	Same as above; exists for Compatibility with older versions.
Row Exclusive	Similar to Row Share, but prohibit shared locking; So only one user can access the table at a time.

Select RowID, name, CID from Customer;

OUTPUT:

RowID	Name	CID
AAAGHNMMAABAAAIIWMAAA	Riya	C01
AAACGHNMAABAAAIIWMAAB	Diya	C04
AAACGHNMAABAAAIIWMAAC	Piya	C03
AAACGHNMAABAAAIIWMAAD	Jiya	C02
AAACGHNMAABAAAIIWMAAE	Tiya	C05