Experiment No. : 2

Title: Write a program to use DDL statements to create, alter and drop tables.

Objectives:

1. To learn the basics of Structured Query Language (SQL).
2. To learn SQL Data Definition Language (DDL) statements.
3. To learn to create database application with java as front end and oracle as back end.

Key Concepts: Data Definition Language (DDL), Java Database Connectivity (JDBC), SQL.

Theory:

Structured Query Language (SQL) is a common query language through which we can interact with the database. SQL Statements can be divided into four main categories

1. **Data definition Language (DDL) Statements -** used to define the database structure or schema.
2. **Data manipulation Language (DML) Statements -** used for managing data within schema objects
3. **Data Control Language (DCL) statements –** used for Security and authorization
4. **Transaction Control (TCL) statements** - used to manage the changes made by DML statements. It allows statements to be grouped together into logical transactions.

Data definition Language (DDL) Statements:

- **CREATE -** to create objects in the database
- **ALTER** - alters the structure of the database
- **DROP** - delete objects from the database
- **TRUNCATE -** remove all records from a table, including all spaces allocated for the records are removed
- **RENAME** - rename an object

Constraints:

1. **Not Null Constraint**

   If a column in a table is specified as Not Null, then it's not possible to insert a null in such column. It can be implemented with create and alter commands. When we implement the Not Null constraint with alter command there should not be any null values in the existing table.

2. **Unique Key Constraint**

   The unique constraint doesn't allow duplicate values in a column. If unique constraint encompasses two or more columns, no two equal combinations are allowed

3. **Check Constraint**

   Check constraint is used to restrict the values before inserting into a table

4. **Primary Key Constraint**

   The candidate key selected by database designer to uniquely identify the records in the table in called primary key. A primary key is combination of unique and Not Null constraint. A table can have only one primary key. A primary key can be declared on two or more columns as a composite primary key.

5. **Foreign Key**

   Columns defined as foreign key refer the primary key of other tables. The foreign key points to a primary key of another table, guaranteeing that, you can't enter data into a table unless the referenced table has the data already present. It enforces the referential integrity.

Syntax:

1. **CREATE:**

   Syntax:

   CREATE TABLE <table name> (

   <column1_name> <data type> [(<width>)]

   [constraint <constraint name> <constraint type>],

   <column2_name> <data type> [(<width>)],

   .

<column3_name> <data type> [(<width>)]);

Example

CREATE TABLE Employee(
Empno number(4) primary key,
Ename varchar2(50),
Salary number(10,2));

2. **ALTER**

Syntax:

ALTER TABLE <table name> ADD CONSTRAINT <constraint name> <constraint type> <column name>;

ALTER TABLE <table name> ADD CONSTRAINT <constraint name> FOREIGN KEY (<foreign key column>) REFERENCES <parent table name> (<primary key column>);

Example:

ALTER TABLE Employee ADD CONSTRAINT c_name NOT NULL Ename;
ALTER TABLE Employee ADD CONSTRAINT Ref_dept FOREIGN KEY(deptno) REFERENCES Department(deptno);

3. **DROP**

Syntax:

DROP <OBJECT> <object name>

Example:

DROP TABLE Employee;

4. **TRUNCATE**

Syntax:
TRUNCATE TABLE <table name>;

Example:
TRUNCATE TABLE Employee;

5. **RENAME**

   Syntax:

   RENAME <old object name> TO <new object name>

   Example:

   RENAME temporary to new

Algorithm:

1. Start
2. Create Java to Oracle database connectivity using JDBC and Oracle drivers.
3. Get table information from E-R Diagram.
4. Write SQL query to create table by taking into account column name, type, size and constraints.
5. Execute SQL query through java program.
6. Stop.