Data Defination Language (DDL)

Learning Objective

After completing this lab the student should be able to:

- What is data definition language?
- Truncate Statement
- How to create new table in database.
- Practical implementation of constraints
- Difference between column level constraints and table level constraints
- How to alter table in database
- Drop command in DDL.
- Practical example and Lab exercises.

Tools and Technologies

- Oracle Database 11g Express Edition/Enterprise Edition.

Oracle Credentials for Lab

Enter the Url in your browser **http:\\172.168.8.16:8080\apex**

Username **hr**

Password **hr**

Data Definition Language

Data Definition Language (DDL) is a standard for commands that define the different structures in a database. DDL statements create, modify, and remove database objects such as tables, indexes, and users. Common DDL statements are CREATE, ALTER, and DROP.

Truncate Command

Removes all rows from a table, leaving the table empty and the table structure intact. Is a data definition language (DDL) statement rather than a DML statement; cannot easily be undone.

Syntax

TRUNCATE TABLE table_name;

Example

Create Command

The CREATE TABLE statement is used to create a new table in a database.

Syntax

CREATE TABLE table_name (
    column1 datatype [default expr] ,
    column2 datatype (column size),
    column3 datatype (column size),
);

Syntax Explanation

Table:	Is the name of the table
Column:	Is the name of the column
Default expression:	specifies a default value if a value is omitted in the INSERT statement
Data type:	Is the column's data type and length
Size:	Enter the size of the column

Example

CREATE TABLE dept1 (deptno NUMBER(4), dname VARCHAR2(14), loc VARCHAR (13));

Default option

Specify Literal values, expressions, or SQL functions are

- Literal values, expressions, or SQL functions are legal values.
- Another column's name or a pseudocolumn are illegal values.
- The default data type must match the column data type.

Example

CREATE TABLE hire_dates

(id NUMBER(8), hire_date DATE DEFAULT SYSDATE);

Data types

Data Type	Description
VARCHAR2(*size*)	Variable-length character data
CHAR(*size*)	Fixed-length character data
NUMBER(*p,s*)	Variable-length numeric data
DATE	Date and time values
LONG	Variable-length character data (up to 2 GB)
CLOB	Character data (up to 4 GB)
RAW and LONG	Raw binary data
RAW	
BLOB	Binary data (up to 4 GB)
BFILE	Binary data stored in an external file (up to 4 GB)
ROWID	A base-64 number system representing the unique
	address of a row in its table

Constraints

Syntax

CREATE TABLE [schema.]table

(column datatype [DEFAULT expr]

[column_constraint],

[table_constraint][,...]);

Column level constraint

column [CONSTRAINT constraint_name] constraint_type

Example

CREATE TABLE emp(employee_id NUMBER(6)

CONSTRAINT emp_id_pk PRIMARY KEY, first_name VARCHAR2(20));

Table level constraint

column,...

[CONSTRAINT constraint_name] constraint_type (column, ...),

Example

CREATE TABLE emp(

employee_id NUMBER(6),

first_name VARCHAR2(20),

job_id VARCHAR2(10) NOT NULL,

CONSTRAINT emp_id_pk

PRIMARY KEY (EMPLOYEE_ID));

Unique Key Constranit

A UNIQUE key integrity constraint requires that every value in a column or set of columns (key) be unique- that is, no two rows of a table have duplicate values in a specified column or set of columns. The column (or set of columns) included in the definition of the UNIQUE key

constraint is called the unique key. If the UNIQUE key comprises more than one column, that group of columns is said to be a composite unique key.

UNIQUE key constraints allow the input of nulls unless you also define NOT NULL constraints for the same columns. In fact, any number of rows can include nulls for column without NOT NULL constraints because nulls are not considered equal to anything. A null in a column (or in all columns of a composite UNIQUE key) always satisfies a UNIQUE key constraint.

UNIQUE key constraint can be defined at the column or table level. A composite unique key is created by using the table level definition.

Example

CREATE TABLE dept(

deptno NUMBER(2),dname VARCHAR2(14),

Loc VARCHAR2(13),

CONSTRAINT dept_dname_uk UNIQUE(dname));

Primary key Constraint

A PRIMARY KEY constraint creates a primary key for the table. Only one primary key can be created for a each table. The PRIMARY KEY constraint is a column or set of columns that uniquely identifies each row in a table. This constraint enforces uniqueness of the column or column combination and ensures that no column that is part of the primary key can contain a null value.

PRIMARY KEY constraints can be defined at the column level or table level. A composite PRIMARY KEY is created by using the table level definition.

Example

CREATE TABLE dept(

deptno NUMBER(2),dname VARCHAR2(14),

Loc VARCHAR2(13),

CONSTRAINT dept_dname_uk UNIQUE (dname),

CONSTRAINT dept_deptno_pk PRIMARY KEY (deptno));

FOREIGN KEY Constraint

The FOREIGN KEY , or referential integrity constraint , designate a column or combination of

columns as a foreign key and establishes a relationship between a primary key or a unique key in the same table or a different table. For example DEPTNO has been defined as the foreign key in the EMP table (dependent or child table), it referenced the DEPTNO column of the DEPT table (referenced or parent table).

A foreign key value must match an existing value in the parent table or be NULL.

Note: Foreign keys are based on data values and are purely logical, not physical pointers. FOREIGN KEY constraints can be defined at the column or table constraints level. A composite foreign key must be created by using the table-level definition

Example

```
CREATE TABLE emp3(

empno NUMBER(4),

ename VARCHAR2(10)      NOT NULL,

Job     VARCHAR2(9),

Mgr    NUMBER(4),

hiredate         DATE,

Sal     NUMBER(7,2),

Comm NUMBER(7,2),

deptno NUMBER(7,2)         NOT NULL,

CONSTRAINT deptno_fk FOREIGN KEY (deptno)

REFERENCES dept (deptno));
```

Alter statement

- Add a new column

- Modify an existing column

- Define a default value for the new column

- Drop a column

Syntax

ALTER TABLE table_name
MODIFY column_name datatype

Example

Modify column in dept table

Alter table dept
modify deptno Number(6);

How to add column in anay tabe

Syntax

Alter table table_name
Add Column_name data type

Example

Add new column email in the dept. table

Alter table dept
Add email varchar2(14);

Drop Statement

- All data and structure in the table are deleted.
- Any pending transactions are committed.
- All indexes are dropped.
- All constraints are dropped.
- You cannot roll back the DROP TABLE statement.

Syntax

DROP TABLE table name;

Example

Drop table dept

How to drop table using parent and child relation

Syntax

drop table table name cascade constraints;

Lab Exercise

Q1 Implement All above queries in the
document

Q2 Create a table vehicle column name (vehicle id (primary key), vehicle name (unique key ,engineer cc ,Model)

Q3 Create a table student and course and make a parent child relation in both tables identify field create table show primary and foreign key relation in respective tables

Q4 In Q3 drop parent table and child table

Q5 In Q2 Add the make field in vehicle table.

Lab Instructor:

Qazi Shuja Ud Din (Teaching Fellow) (Riphah International University)
Email: qazi.shujauddin@riphah.edu.pk