Database System

Lecture 4

Theoretical

SQL Sub Languages

DDL - Data Definition Language

Oracle Data Types

Prepared By

Dhafer Sabah Yaseen

SQL Components Or SQL Sub Languages

DCL: Data Control Language
Example: Grant, Revoke.

DDL: Data Definition Language.
Example: Create, Alter, Drop, Rename and Truncate.

DML: Data Manipulation Language
Example: Insert, Update, Delete

DRL: Data Retrieval Language
Example: Select

TCL: Transaction Control Language
Example : Rollback, Commit, Savepoint

DDL - Data Definition Language

DDL Commands:

- CREATE
- ALTER
- DROP
- RENAME
- TRUNCATE.

DDL - Data Definition Language

DDL Commands:

CREATE:

Start with create command, it's used to create any object for example, User, Table , Views and etc.
We will start understanding the primary object (**Table**) and after that how to create table.

Note:

For other object we will study how to create in next stage.

DDL - Data Definition Language

Table:

A table is an entity which contains information in the form of rows and columns. The rows are called tuples and the columns are called attributes.

EMPNO	ENAME	JOB	HIREDATE	MGR	SAL	COMM	DEPTNO
7369	SMITH	CLERK	17-DEC-80	7902	800		20
7499	ALLEN	SALESMAN	20-FEB-81	7698	1600	300	30
7521	WARD	SALESMAN	22-FEB-81	7698	1250	500	30
7566	JONES	MANAGER	02-APR-81	7839	2975		20
7654	MARTIN	SALESMAN	28-SEP-81	7698	1250	1400	30
7698	BLAKE	MANAGER	01-MAY-81	7839	2850		30

To create any object you must follows naming rules.

Naming rules of objects:

1. First letter must be alphabet
2. No special symbol except underscore.
3. Name of objects must be unique.

DDL - Data Definition Language

Data Types:

When creating tables, each column must be assigned a data type, which determines the nature of the values that can be inserted into the column. These data types are also used to specify the nature of the arguments for PL/SQL procedures and functions. When selecting a data type, you must consider the data that you need to store and the operations you will want to perform upon it. Space is also a consideration: some data types are fixed length, taking up the same number of bytes no matter what data is actually in it; others are variable. If a column is not populated, then Oracle will not give it any space at all.

DDL - Data Definition Language

ALPHANUMERIC DATA:

- VARCHAR2

Variable-length character data, from 1 byte to 4KB. The data is stored in the database character set.

Example : Ename varchar2(15)

- NVARCHAR2

Like VARCHAR2, but the data is stored in the alternative national language character set, one of the permitted Unicode character sets.

- CHAR

Fixed-length character data, from 1 byte to 2KB, in the database character set. If the data is not the length of the column, then it will be padded with spaces.

Example : Ename char(15)

DDL - Data Definition Language

NUMERIC DATA (all variable length)

- NUMBER

Numeric data, for which you can specify precision and scale. The precision can range from to 1 to 38 digits, the scale can range from −84 to 127 digits.
Example : Salary number(7,2)

- FLOAT

This is an ANSI data type (American National Standards Institute), floating-point number with precision of 126 binary (or 38 decimal). Oracle also provides BINARY_FLOAT and BINARY_DOUBLE as alternatives.

- INTEGER

Equivalent to NUMBER, with scale zero.

DDL - Data Definition Language

DATE AND TIME

- DATE

This is either length zero, if the column is empty, or 7 bytes. All DATE data includes century, year, month, day, hour, minute, and second. The valid range is from January 1, 4712 BC to December 31, 9999 AD.

- TIMESTAMP

This is length zero if the column is empty, or up to 11 bytes, depending on the precision specified. Similar to DATE, but with precision of up to 9 decimal places for the seconds, 6 places by default.

DDL - Data Definition Language

DATE AND TIME

■ TIMESTAMP WITH TIMEZONE

Like TIMESTAMP, but the data is stored with a record kept of the time zone to which it refers. The length may be up to 13 bytes, depending on precision. This data type lets Oracle determine the difference between two times by normalizing them to UTC, even if the times are for different time zones.

■ TIMESTAMP WITH LOCAL TIMEZONE

Like TIMESTAMP, but the data is normalized to the database time zone on saving. When retrieved, it is normalized to the time zone of the user process selecting it.

DDL - Data Definition Language

DATE AND TIME

- INTERVAL YEAR TO MONTH

Used for recording a period in years and months between two DATEs or TIMESTAMPs.

- INTERVAL DAY TO SECOND

Used for recording a period in days and seconds between two DATEs or TIMESTAMPs.

DDL - Data Definition Language

LARGE OBJECT DATA TYPES

- CLOB { character → 4GB(spreadsheets)}

Character data stored in the database character set, size effectively unlimited: 4GB multiplied by the database block size.

- NCLOB

Like CLOB, but the data is stored in the alternative national language character set, one of the permitted Unicode character sets.

- BLOB

Like CLOB, but binary data that will not undergo character set conversion by Oracle Net.

DDL - Data Definition Language

LARGE OBJECT DATA TYPES

- BFILE {binary → 4GB(audio, video)}

A locator pointing to a file stored on the operating system of the database server. The size of the files is limited to 4GB.

- LONG

Character data in the database character set, up to 2GB. All the functionality of LONG (and more) is provided by CLOB; LONGs should not be used in a modern database, and if your database has any columns of this type they should be converted to CLOB. There can only be one LONG column in a table.

- LONG RAW

Like LONG, but binary data that will not be converted by Oracle Net. Any LONG RAW columns should be converted to BLOBs.


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Thank you
Dhafer Sabah Yaseen