9

Creating and Managing Tables

ORACLE

Objectives

After completing this lesson, you should be able to do the following:

- **Describe the main database objects**
- **Create tables**
- **Describe the data types that can be used when specifying column definition**
- **Alter table definitions**
- **Drop, rename, and truncate tables**

ORACLE

Lesson Aim

In this lesson, you will learn about tables, the main database objects, and the relationships to each other. You will also learn how to create, alter, and drop tables.

Database Objects

Object	Description
Table	Basic unit of storage; composed of rows and columns
View	Logically represents subsets of data from one or more tables
Sequence	Numeric value generator
Index	Improves the performance of some queries
Synonym	Gives alternative names to objects

ORACLE

Database Objects

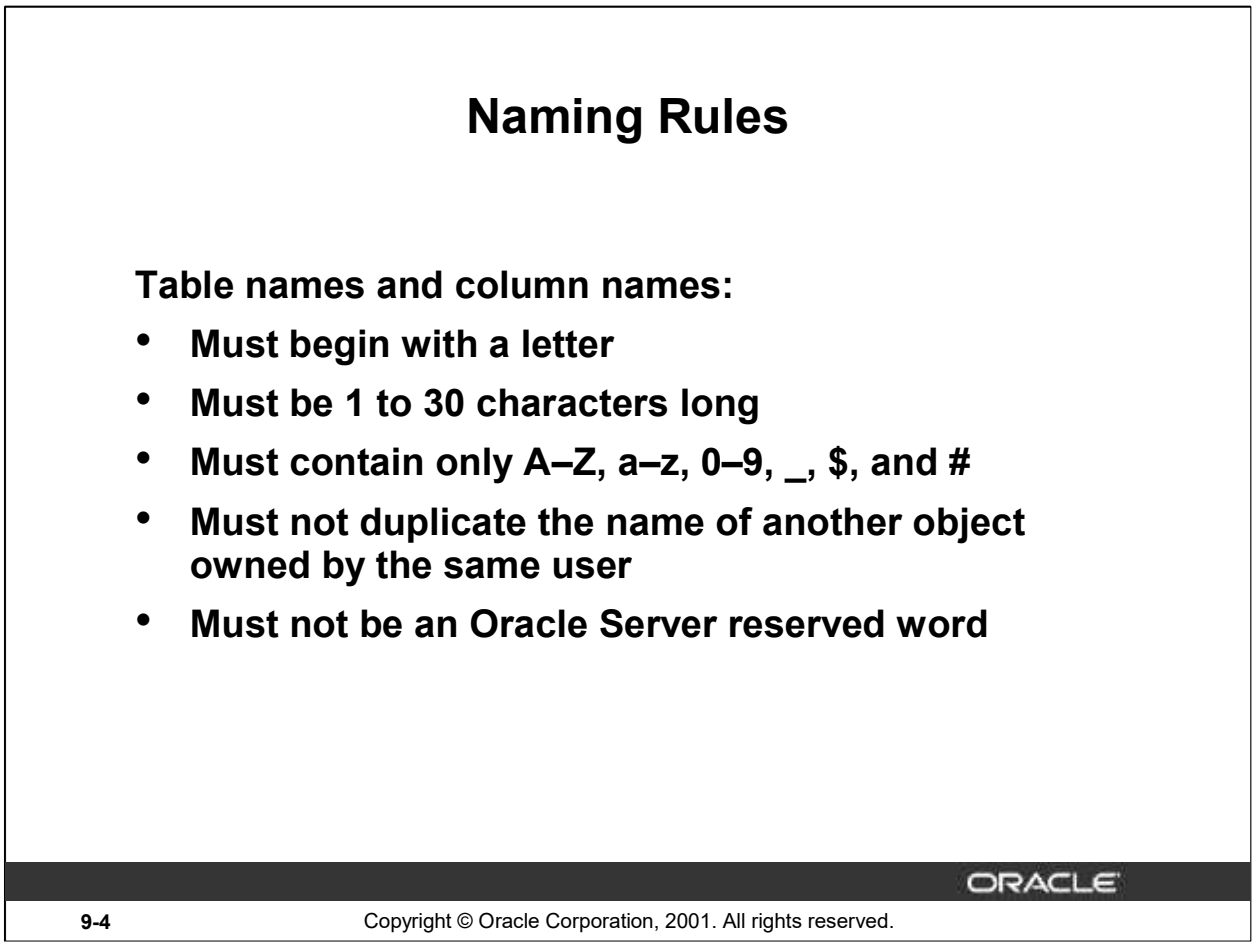
An Oracle database can contain multiple data structures. Each structure should be outlined in the database design so that it can be created during the build stage of database development.

- Table: Stores data
- View: Subset of data from one or more tables
- Sequence: Numeric value generator
- Index: Improves the performance of some queries
- Synonym: Gives alternative names to objects

Oracle9*i* Table Structures

- Tables can be created at any time, even while users are using the database.
- You do not need to specify the size of any table. The size is ultimately defined by the amount of space allocated to the database as a whole. It is important, however, to estimate how much space a table will use over time.
- Table structure can be modified online.

Note: More database objects are available but are not covered in this course.



Naming Rules

Name database tables and columns according to the standard rules for naming any Oracle database object:

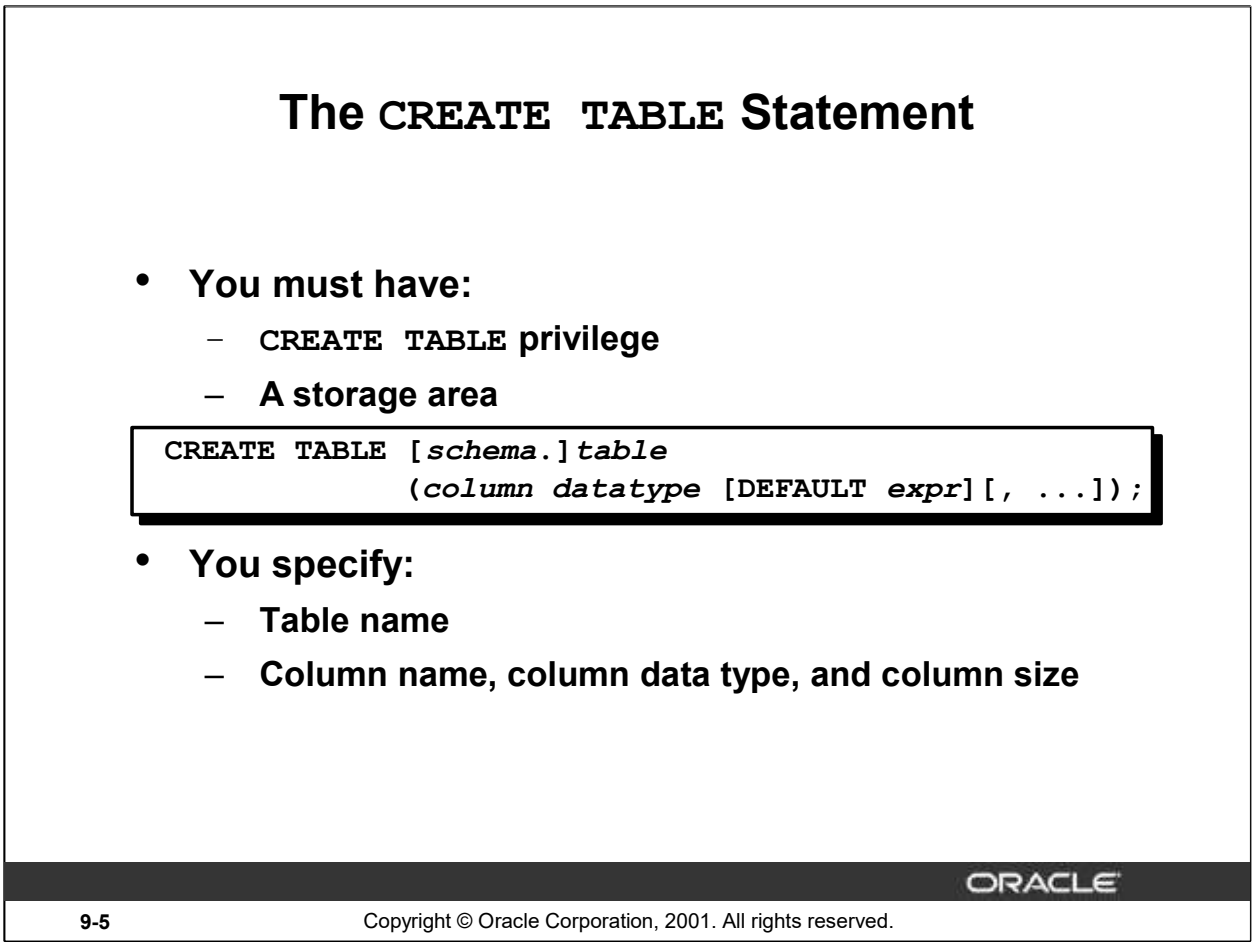
- Table names and column names must begin with a letter and be 1–30 characters long.
- Names must contain only the characters A–Z, a–z, 0–9, _ (underscore), $, and # (legal characters, but their use is discouraged).
- Names must not duplicate the name of another object owned by the same Oracle Server user.
- Names must not be an Oracle Server reserved word.

Naming Guidelines

Use descriptive names for tables and other database objects.

Note: Names are case insensitive. For example, `EMPLOYEES` is treated as the same name as `eMPloyees` or `eMpLOYEES`.

For more information, see *Oracle9i SQL Reference,* "Object Names and Qualifiers."



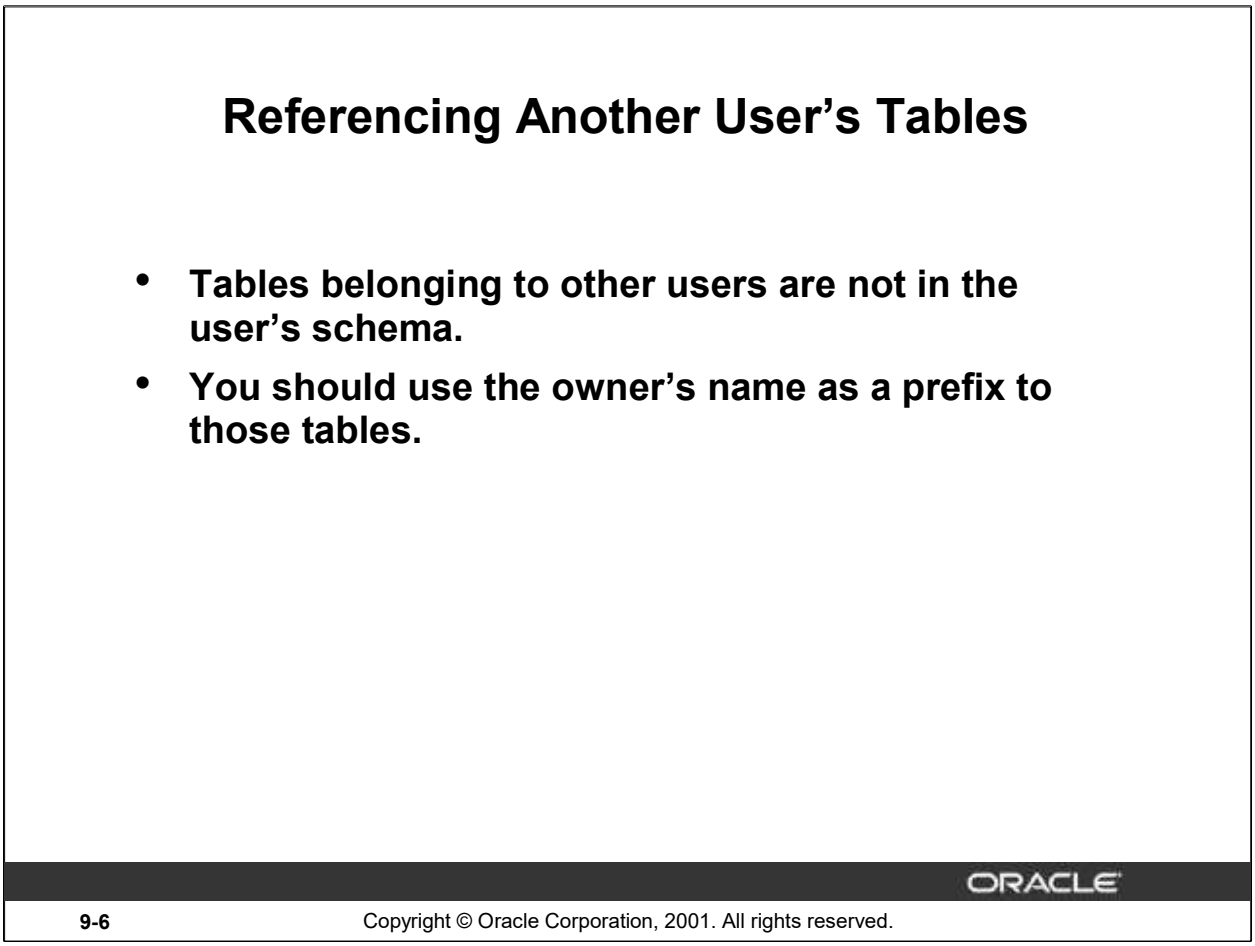
The CREATE TABLE Statement

Create tables to store data by executing the SQL CREATE TABLE statement. This statement is one of the data definition language (DDL) statements, which are covered in subsequent lessons. DDL statements are a subset of SQL statements used to create, modify, or remove Oracle9*i* database structures. These statements have an immediate effect on the database, and they also record information in the data dictionary.

To create a table, a user must have the CREATE TABLE privilege and a storage area in which to create objects. The database administrator uses data control language (DCL) statements, which are covered in a later lesson, to grant privileges to users.

In the syntax:

schema	is the same as the owner's name
table	is the name of the table
DEFAULT *expr*	specifies a default value if a value is omitted in the INSERT statement
column	is the name of the column
datatype	is the column's data type and length



Referencing Another User's Tables

A *schema* is a collection of objects. Schema objects are the logical structures that directly refer to the data in a database. Schema objects include tables, views, synonyms, sequences, stored procedures, indexes, clusters, and database links.

If a table does not belong to the user, the owner's name must be prefixed to the table. For example, if there is a schema named `USER_B`, and `USER_B` has an `EMPLOYEES` table, then specify the following to retrieve data from that table:

```
SELECT *
FROM user_b.employees;
```

The DEFAULT Option

- Specify a default value for a column during an INSERT operation.

```
... hire_date DATE DEFAULT SYSDATE, ...
```

- 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.

ORACLE

The DEFAULT Option

A column can be given a default value by using the DEFAULT option. This option prevents null values from entering the columns if a row is inserted without a value for the column. The default value can be a literal value, an expression, or a SQL function, such as SYSDATE and USER, but the value cannot be the name of another column or a pseudocolumn, such as NEXTVAL or CURRVAL. The default expression must match the data type of the column.

Note: CURRVAL and NEXTVAL are explained later.

Creating Tables

- **Create the table.**

```
CREATE TABLE dept
            (deptno  NUMBER(2),
             dname   VARCHAR2(14),
             loc     VARCHAR2(13));
Table created.
```

- **Confirm creation of the table.**

```
DESCRIBE dept
```

Name	Null?	Type
DEPTNO		NUMBER(2)
DNAME		VARCHAR2(14)
LOC		VARCHAR2(13)

ORACLE

Creating Tables

The example on the slide creates the `DEPT` table, with three columns: namely, `DEPTNO`, `DNAME`, and `LOC`. It further confirms the creation of the table by issuing the `DESCRIBE` command.

Because creating a table is a DDL statement, an automatic commit takes place when this statement is executed.

Tables in the Oracle Database

- **User tables:**
  - **Are a collection of tables created and maintained by the user**
  - **Contain user information**
- **Data dictionary:**
  - **Is a collection of tables created and maintained by the Oracle Server**
  - **Contain database information**

ORACLE

Tables in the Oracle Database

User tables are tables created by the user, such as `EMPLOYEES`. There is another collection of tables and views in the Oracle Database known as the *data dictionary*. This collection is created and maintained by the Oracle Server and contains information about the database.

All data dictionary tables are owned by the `SYS` user. The base tables are rarely accessed by the user because the information in them is not easy to understand. Therefore, users typically access data dictionary views because the information is presented in a format that is easier to understand. Information stored in the data dictionary includes names of the Oracle Server users, privileges granted to users, database object names, table constraints, and auditing information.

There are four categories of data dictionary views; each category has a distinct prefix that reflects its intended use.

Prefix	Description
`USER_`	These views contain information about objects owned by the user.
`ALL_`	These views contain information about all of the tables (object tables and relational tables) accessible to the user.
`DBA_`	These views are restricted views, which can be accessed only by people who have been assigned the DBA role.
`V$`	These views are dynamic performance views, database server performance, memory, and locking.

Querying the Data Dictionary

- See the names of tables owned by the user.

```
SELECT   table_name
FROM user_tables;
```

- View distinct object types owned by the user.

```
SELECT DISTINCT object_type
FROM user_objects;
```

- View tables, views, synonyms, and sequences owned by the user.

```
SELECT *
FROM user_catalog;
```

ORACLE

Querying the Data Dictionary

You can query the data dictionary tables to view various database objects owned by you. The data dictionary tables frequently used are these:

- USER_TABLES
- USER_OBJECTS
- USER_CATALOG

Note: USER_CATALOG has a synonym called CAT. You can use this synonym instead of USER_CATALOG in SQL statements.

```
SELECT  *
FROM    CAT;
```

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 gigabytes
CLOB	Character data up to 4 gigabytes
RAW and LONG RAW	Raw binary data
BLOB	Binary data up to 4 gigabytes
BFILE	Binary data stored in an external file; up to 4 gigabytes
ROWID	Hexadecimal string representing the unique address of a row in its table

ORACLE

Data Types

Data type	Description
VARCHAR2(*size*)	Variable-length character data (a maximum *size* must be specified: Minimum *size* is 1; maximum *size* is 4000)
CHAR [(*size*)]	Fixed-length character data of length *size* bytes (default and minimum *size* is 1; maximum *size* is 2000)
NUMBER [(*p*,*s*)]	Number having precision *p* and scale *s* (The precision is the total number of decimal digits, and the scale is the number of digits to the right of the decimal point; the precision can range from 1 to 38 and the scale can range from -84 to 127)
DATE	Date and time values to the nearest second between January 1, 4712 B.C., and A.D. December 31, 9999
LONG	Variable-length character data up to 2 gigabytes
CLOB	Character data up to 4 gigabytes

Data Types (continued)

Data type	Description
RAW(*size*)	Raw binary data of length *size* (a maximum *size* must be specified. maximum *size* is 2000)
LONG RAW	Raw binary data of variable length up to 2 gigabytes
BLOB	Binary data up to 4 gigabytes
BFILE	Binary data stored in an external file; up to 4 gigabytes
ROWID	Hexadecimal string representing the unique address of a row in its table. This datatype is primarily for values returned by the ROWID pseudocolumn.

- A LONG column is not copied when a table is created using a subquery.
- A LONG column cannot be included in a GROUP BY or an ORDER BY clause.
- Only one LONG column can be used per table.
- No constraints can be defined on a LONG column.
- You may want to use a CLOB column rather than a LONG column.

Datetime Data Types

Datetime enhancements with Oracle9*i*:

- **New datetime data types have been introduced.**
- **New data type storage is available.**
- **Enhancements have been made to time zones and local time zone.**

Data Type	Description
`TIMESTAMP`	Date with fractional seconds
`INTERVAL YEAR TO MONTH`	Stored as an interval of years and months
`INTERVAL DAY TO SECOND`	Stored as an interval of days to hours minutes and seconds

ORACLE

Other Datetime Data Types

Data Type	Description
`TIMESTAMP`	Allows the time to be stored as a date with fractional seconds. There are several variations of the data type.
`INTERVAL YEAR TO MONTH`	Allows time to stored as an interval of years and months.
`INTERVAL DAY TO SECOND`	Allows time to be stored as an interval of days to hours minutes and seconds.

Datetime Data Types

- The **TIMESTAMP** data type is an extension of the **DATE** data type.
- It stores the year, month, and day of the **DATE** data type, plus hour, minute, and second values as well as the fractional second value.
- The **TIMESTAMP** data type is specified as follows:

```
TIMESTAMP[(fractional_seconds_precision)]
```

ORACLE

Datetime Data Types

The `fractional_seconds_precision` optionally specifies the number of digits in the fractional part of the `SECOND` datetime field and can be a number in the range 0 to 9. The default is 6.

Example

```
CREATE TABLE new_employees
(employee_id NUMBER,
 first_name VARCHAR2(15),
 last_name VARCHAR2(15),
 ...
 start_date TIMESTAMP(7),
 ...);
```

In the preceding example, we created a table `NEW_EMPLOYEES` with a column `start_date` with a data type of `TIMESTAMP`. The precision of `'7'` indicates the fractional seconds precision which if not specified defaults to `'6'`.

Assume that two rows are inserted into the `NEW_EMPLOYEES` table. The output shows the differences in the display. (A `DATE` data type defaults to display the format of `DD-MON-RR`):

```
SELECT start_date FROM new_employees;

17-JUN-87 12.00.00.000000 AM
21-SEP-89 12.00.00.000000 AM
```

TIMESTAMP WITH TIME ZONE Data Type

- **TIMESTAMP WITH TIME ZONE is a variant of TIMESTAMP that includes a time zone displacement in its value.**
- **The time zone displacement is the difference, in hours and minutes, between local time and UTC.**

```
TIMESTAMP[(fractional_seconds_precision)]
WITH TIME ZONE
```

ORACLE

Datetime Data Types

UTC stand for Coordinated Universal Time: formerly Greenwich Mean Time. Two `TIMESTAMP WITH TIME ZONE` values are considered identical if they represent the same instant in UTC, regardless of the `TIME ZONE` offsets stored in the data.

For example,

```
TIMESTAMP '1999-04-15 8:00:00 -8:00'
```

is the same as

```
TIMESTAMP '1999-04-15 11:00:00 -5:00'
```

That is, 8:00 a.m. Pacific Standard Time is the same as 11:00 a.m. Eastern Standard Time.

This can also be specified as

```
TIMESTAMP '1999-04-15 8:00:00 US/Pacific'
```

Note: `fractional_seconds_precision` optionally specifies the number of digits in the fractional part of the `SECOND` datetime field and can be a number in the range 0 to 9. The default is 6.

TIMESTAMP WITH LOCAL TIME Data Type

- **TIMESTAMP WITH LOCAL TIME ZONE is another variant of TIMESTAMP that includes a time zone displacement in its value.**
- **Data stored in the database is normalized to the database time zone**
- **The time zone displacement is not stored as part of the column data; the server returns the data in the users' local session time zone.**
- **TIMESTAMP WITH LOCAL TIME ZONE data type is specified as follows:**

```
TIMESTAMP[(fractional_seconds_precision)]
WITH LOCAL TIME ZONE
```

ORACLE

Datetime Data Types

Unlike TIMESTAMP WITH TIME ZONE, you can specify columns of type TIMESTAMP WITH LOCAL TIME ZONE as part of a primary or unique key. The time zone displacement is the difference (in hours and minutes) between local time and UTC. There is no literal for TIMESTAMP WITH LOCAL TIME ZONE.

Note: fractional_seconds_precision optionally specifies the number of digits in the fractional part of the SECOND datetime field and can be a number in the range 0 to 9. The default is 6.

Example

```
CREATE TABLE time_example as (order_date TIMESTAMP
WITH LOCAL TIME ZONE);

INSERT INTO time_example VALUES('15-NOV-00 09:34:28 AM');

SELECT * FROM time_example;

order_date
---------------------
15-NOV-00 09.34.28 AM
```

INTERVAL YEAR TO MONTH Data Type

- **INTERVAL YEAR TO MONTH stores a period of time using the YEAR and MONTH datetime fields.**

```
INTERVAL YEAR [(year_precision)] TO MONTH
```

- **Example:**

```
INTERVAL '312-2' YEAR(3) TO MONTH
Indicates an interval of 312 years and 2 months

INTERVAL '312' YEAR(3)
Indicates 312 years and 0 months

INTERVAL '300' MONTH(3)
Indicates an interval of 300 months
```

ORACLE

INTERVAL YEAR TO MONTH Data Type

INTERVAL YEAR TO MONTH stores a period of time using the YEAR and MONTH datetime fields. Specify INTERVAL YEAR TO MONTH as follows:

```
INTERVAL YEAR [(year_precision)] TO MONTH
```

In the syntax:

year_precision	is the number of digits in the YEAR datetime field. The default value of year_precision is 2.

Restriction

The leading field must be more significant than the trailing field. For example, INTERVAL '0-1' MONTH TO YEAR is not valid.

Creating a Table by Using a Subquery Syntax

- Create a table and insert rows by combining the `CREATE TABLE` statement and the `AS subquery` option.

```
CREATE TABLE table
       [(column, column...)]
AS subquery;
```

- Match the number of specified columns to the number of subquery columns.
- Define columns with column names and default values.

ORACLE

Creating a Table from Rows in Another Table

A second method for creating a table is to apply the `AS subquery` clause, which both creates the table and inserts rows returned from the subquery.

In the syntax:

table	is the name of the table
column	is the name of the column, default value, and integrity constraint
subquery	is the SELECT statement that defines the set of rows to be inserted into the new table

Guidelines

- The table is created with the specified column names, and the rows retrieved by the SELECT statement are inserted into the table.
- The column definition can contain only the column name and default value.
- If column specifications are given, the number of columns must equal the number of columns in the subquery SELECT list.
- If no column specifications are given, the column names of the table are the same as the column names in the subquery.
- The integrity rules are not passed onto the new table, only the column data type definitions.

Creating a Table by Using a Subquery

```
CREATE TABLE  dept80
  AS
    SELECT  employee_id, last_name,
            salary*12 ANNSAL,
            hire_date
    FROM    employees
    WHERE   department_id = 80;
Table created.
```

```
 DESCRIBE dept80
```

Name	Null?	Type
EMPLOYEE_ID		NUMBER(6)
LAST_NAME	NOT NULL	VARCHAR2(25)
ANNSAL		NUMBER
HIRE_DATE	NOT NULL	DATE

ORACLE

Creating a Table from Rows in Another Table (continued)

The example creates a table named `DEPT80`, which contains details of all the employees working in department 80. Notice that the data for the `DEPT80` table comes from the `EMPLOYEES` table.

You can verify the existence of a database table and check column definitions by using the *i*SQL*Plus `DESCRIBE` command.

Be sure to give a column alias when selecting an expression. The expression `SALARY*12` is given the alias `ANNSAL`. Without the alias, this error is generated:

```
ERROR at line 3:
ORA-00998: must name this expression with a column alias
```

The ALTER TABLE Statement

Use the ALTER TABLE statement to:

- **Add a new column**
- **Modify an existing column**
- **Define a default value for the new column**
- **Drop a column**

ORACLE

The ALTER TABLE Statement

After you create a table, you may need to change the table structure because you omitted a column or your column definition needs to be changed or you need to remove columns. You can do this by using the `ALTER TABLE` statement.

The ALTER TABLE Statement

Use the ALTER TABLE statement to add, modify or drop columns.

```
ALTER TABLE table
ADD         (column datatype [DEFAULT expr]
            [, column datatype]...);
```

```
ALTER TABLE table
MODIFY      (column datatype [DEFAULT expr]
            [, column datatype]...);
```

```
ALTER TABLE table
DROP        (column);
```

ORACLE

The ALTER TABLE Statement (continued)

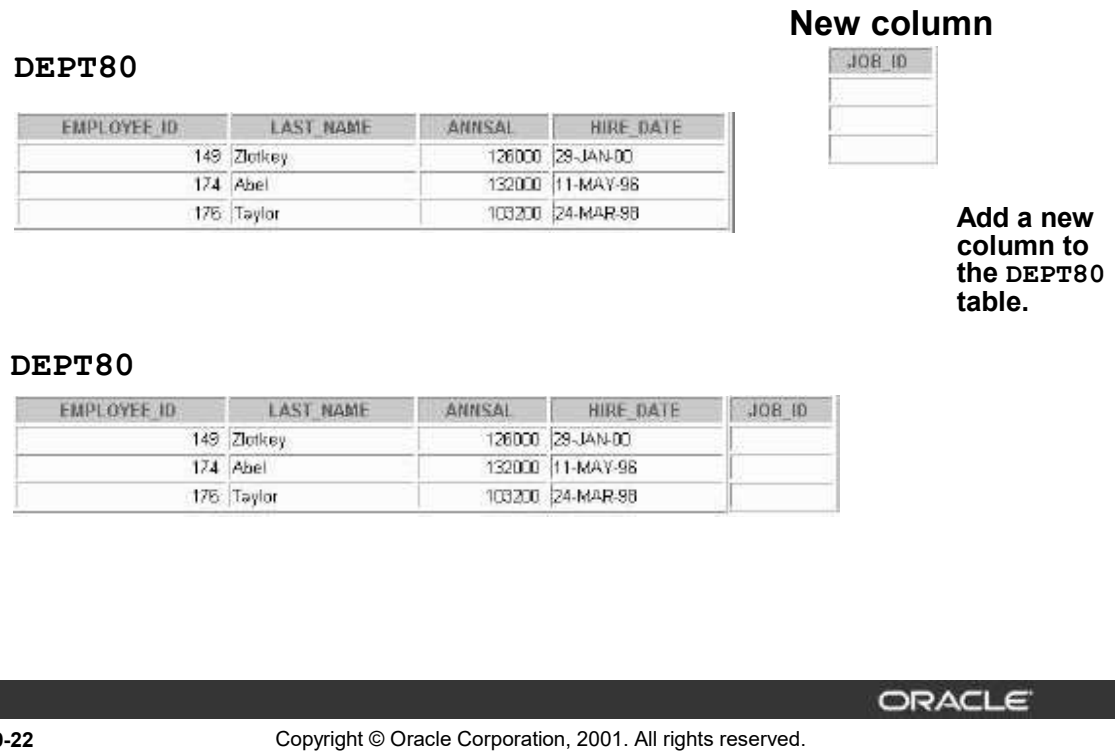
You can add, modify, and drop columns to a table by using the ALTER TABLE statement.

In the syntax:

table	is the name of the table
ADD|MODIFY|DROP	is the type of modification
column	is the name of the new column
datatype	is the data type and length of the new column
DEFAULT *expr*	specifies the default value for a new column

Note: The slide gives the abridged syntax for ALTER TABLE. More about ALTER TABLE is covered in a subsequent lesson.

Adding a Column



ORACLE

Adding a Column

The graphic in the slide adds the `JOB_ID` column to the `DEPT80` table. Notice that the new column becomes the last column in the table.

Adding a Column

- **Use the `ADD` clause to add columns.**

```
ALTER TABLE dept80
ADD         (job_id VARCHAR2(9));
Table altered.
```

- **The new column becomes the last column.**

EMPLOYEE_ID	LAST_NAME	ANNSAL	HIRE_DATE	JOB_ID
149	Zlotkey	126000	29-JAN-00	
174	Abel	132000	11-MAY-96	
176	Taylor	103200	24-MAR-98	

ORACLE

Guidelines for Adding a Column

- You can add or modify columns.
- You cannot specify where the column is to appear. The new column becomes the last column.

The example in the slide adds a column named `JOB_ID` to the `DEPT80` table. The `JOB_ID` column becomes the last column in the table.

Note: If a table already contains rows when a column is added, then the new column is initially null for all the rows.

Modifying a Column

- **You can change a column's data type, size, and default value.**

```
ALTER TABLE   dept80
MODIFY        (last_name VARCHAR2(30));
Table altered.
```

- **A change to the default value affects only subsequent insertions to the table.**

ORACLE

Modifying a Column

You can modify a column definition by using the `ALTER TABLE` statement with the `MODIFY` clause. Column modification can include changes to a column's data type, size, and default value.

Guidelines

- You can increase the width or precision of a numeric column.
- You can increase the width of numeric or character columns.
- You can decrease the width of a column only if the column contains only null values or if the table has no rows.
- You can change the data type only if the column contains null values.
- You can convert a `CHAR` column to the `VARCHAR2` data type or convert a `VARCHAR2` column to the `CHAR` data type only if the column contains null values or if you do not change the size.
- A change to the default value of a column affects only subsequent insertions to the table.

Dropping a Column

Use the `DROP COLUMN` clause to drop columns you no longer need from the table.

```
ALTER TABLE  dept80
DROP  COLUMN   job_id;
Table altered.
```

ORACLE

Dropping a Column

You can drop a column from a table by using the `ALTER TABLE` statement with the `DROP COLUMN` clause. This is a feature available in Oracle8*i* and later release.

Guidelines

- The column may or may not contain data.
- Using the `ALTER TABLE` statement, only one column can be dropped at a time.
- The table must have at least one column remaining in it after it is altered.
- Once a column is dropped, it cannot be recovered.

The SET UNUSED Option

- You use the SET UNUSED option to mark one or more columns as unused.
- You use the DROP UNUSED COLUMNS option to remove the columns that are marked as unused.

```
ALTER TABLE   table
SET   UNUSED (column);

          OR
ALTER      TABLE  table
SET UNUSED COLUMN column;
```

```
ALTER TABLE table
DROP  UNUSED COLUMNS;
```

ORACLE

The SET UNUSED Option

The SET UNUSED option marks one or more columns as unused so that they can be dropped when the demand on system resources is lower. This is a feature available in Oracle8*i* and later release. Specifying this clause does not actually remove the target columns from each row in the table (that is, it does not restore the disk space used by these columns). Therefore, the response time is faster than if you executed the DROP clause. Unused columns are treated as if they were dropped, even though their column data remains in the table's rows. After a column has been marked as unused, you have no access to that column. A SELECT * query will not retrieve data from unused columns. In addition, the names and types of columns marked unused will not be displayed during a DESCRIBE, and you can add to the table a new column with the same name as an unused column. SET UNUSED information is stored in the USER_UNUSED_COL_TABS dictionary view.

The DROP UNUSED COLUMNS Option

DROP UNUSED COLUMNS removes from the table all columns currently marked as unused. You can use this statement when you want to reclaim the extra disk space from unused columns in the table. If the table contains no unused columns, the statement returns with no errors.

```
ALTER TABLE  dept80
SET UNUSED (last_name);
Table altered.

 ALTER TABLE  dept80
DROP  UNUSED COLUMNS;
Table altered.
```

Dropping a Table

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

```
DROP TABLE dept80;
Table dropped.
```

ORACLE

Dropping a Table

The `DROP TABLE` statement removes the definition of an Oracle table. When you drop a table, the database loses all the data in the table and all the indexes associated with it.

Syntax

```
DROP TABLE table
```

In the syntax:

table is the name of the table

Guidelines

- All data is deleted from the table.
- Any views and synonyms remain but are invalid.
- Any pending transactions are committed.
- Only the creator of the table or a user with the `DROP ANY TABLE` privilege can remove a table.

Note: The `DROP TABLE` statement, once executed, is irreversible. The Oracle Server does not question the action when you issue the `DROP TABLE` statement. If you own that table or have a high-level privilege, then the table is immediately removed. As with all DDL statements, `DROP TABLE` is committed automatically.

Changing the Name of an Object

- **To change the name of a table, view, sequence, or synonym, execute the `RENAME` statement.**

```
RENAME dept TO detail_dept;
Table renamed.
```

- **You must be the owner of the object.**

ORACLE

Renaming a Table

Additional DDL statements include the `RENAME` statement, which is used to rename a table, view, sequence, or a synonym.

Syntax

```
RENAME    old_name  TO  new_name;
```

In the syntax:

old_name	is the old name of the table, view, sequence, or synonym.
new_name	is the new name of the table, view, sequence, or synonym.

You must be the owner of the object that you rename.

Truncating a Table

- The `TRUNCATE TABLE` statement:
  - Removes all rows from a table
  - Releases the storage space used by that table

```
TRUNCATE TABLE detail_dept;
Table truncated.
```

- You cannot roll back row removal when using `TRUNCATE`.
- Alternatively, you can remove rows by using the `DELETE` statement.

ORACLE

Truncating a Table

Another DDL statement is the TRUNCATE TABLE statement, which is used to remove all rows from a table and to release the storage space used by that table. When using the TRUNCATE TABLE statement, you cannot rollback row removal.

Syntax

```
TRUNCATE  TABLE   table;
```

In the syntax:

table is the name of the table

You must be the owner of the table or have DELETE TABLE system privileges to truncate a table.

The DELETE statement can also remove all rows from a table, but it does not release storage space. The TRUNCATE command is faster. Removing rows with the TRUNCATE statement is faster than removing them with the DELETE statement for the following reasons:

- The TRUNCATE statement is a data definition language (DDL) statement and generates no rollback information.
- Truncating a table does not fire the delete triggers of the table.
- If the table is the parent of a referential integrity constraint, you cannot truncate the table. Disable the constraint before issuing the TRUNCATE statement.

Adding Comments to a Table

- **You can add comments to a table or column by using the COMMENT statement.**

```
COMMENT ON TABLE employees
IS 'Employee Information';
Comment created.
```

- **Comments can be viewed through the data dictionary views:**
  - **ALL_COL_COMMENTS**
  - **USER_COL_COMMENTS**
  - **ALL_TAB_COMMENTS**
  - **USER_TAB_COMMENTS**

ORACLE

Adding a Comment to a Table

You can add a comment of up to 2,000 bytes about a column, table, view, or snapshot by using the COMMENT statement. The comment is stored in the data dictionary and can be viewed in one of the following data dictionary views in the COMMENTS column:

- ALL_COL_COMMENTS
- USER_COL_COMMENTS
- ALL_TAB_COMMENTS
- USER_TAB_COMMENTS

Syntax

```
COMMENT ON TABLE table | COLUMN table.column
  IS 'text';
```

In the syntax:

table	is the name of the table
column	is the name of the column in a table
text	is the text of the comment

You can drop a comment from the database by setting it to empty string (''):

```
COMMENT ON TABLE  employees IS ' ';
```

Summary

In this lesson, you should have learned how to use DDL statements to create, alter, drop, and rename tables.

Statement	Description
CREATE TABLE	Creates a table
ALTER TABLE	Modifies table structures
DROP TABLE	Removes the rows and table structure
RENAME	Changes the name of a table, view, sequence, or synonym
TRUNCATE	Removes all rows from a table and releases the storage space
COMMENT	Adds comments to a table or view

ORACLE

Summary

In this lesson, you should have learned how to use DDL commands to create, alter, drop, and rename tables. You also learned how to truncate a table and add comments to a table.

CREATE TABLE

- Create a table
- Create a table based on another table by using a subquery

ALTER TABLE

- Modify table structures
- Change column widths, change column data types, and add columns

DROP TABLE

- Remove rows and a table structure
- Once executed, this statement cannot be rolled back

RENAME

- Rename a table, view, sequence, or synonym

TRUNCATE

- Remove all rows from a table and release the storage space used by the table
- The `DELETE` statement removes only rows

COMMENT

- Add a comment to a table or a column
- Query the data dictionary to view the comment