COURSE TECHNOLOGY
CENGAGE Learning™

# About the Presentations

- The presentations cover the objectives found in the opening of each chapter.
- All chapter objectives are listed in the beginning of each presentation.
- You may customize the presentations to fit your class needs.
- Some figures from the chapters are included. A complete set of images from the book can be found on the Instructor Resources disc.

COURSE TECHNOLOGY
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# Oracle 12*c*: SQL

*Chapter 3*
*Table Creation and Management*

# Objectives

- Identify the table name and structure
- Create a new table using the CREATE TABLE command
- Use a subquery to create a new table
- Add a column to an existing table
- Modify the definition of a column in an existing table
- Delete a column from an existing table

# Objectives (continued)

- Mark a column as unused and then delete it at a later time
- Rename a table
- Truncate a table
- Drop a table

# Database Table

- A database object
- Stores data for the database
- Consists of columns and rows
- Created and modified through data definition language (DDL) commands

# Table Design

- Table and column names:
  - Can contain a maximum 30 characters – no blank spaces
  - Must begin with a letter
  - Can contain numbers, underscore (_), and number sign (#)
  - Must be unique
  - No reserved words are allowed

# Table Design (continued)

| Datatype | Description |
|---|---|
| VARCHAR2(*n*) | *Va*riable-length *cha*racter data, and the *n* represents the column's maximum length. The maximum size is 4000 characters. There's no default size for this datatype; a minimum value must be specified. Example: VARCHAR2(9) can contain up to nine letters, numbers, or symbols. |
| CHAR(*n*) | Fixed-length character column, and the *n* represents the column's length. The default size is 1, and the maximum size is 2000. Example: CHAR(9) can contain nine letters, numbers, or symbols. However, if fewer than nine are entered, spaces are added to the right to force the data to reach a length of nine. |
| NUMBER(*p*, *s*) | Numeric column. The *p* indicates **precision**, the total number of digits to the left and right of the decimal position, to a maximum of 38 digits; the *s*, or **scale**, indicates the number of positions to the right of the decimal. Example: NUMBER(7, 2) can store a numeric value up to 99999.99. If precision or scale isn't specified, the column defaults to a precision of 38 digits. |
| DATE | Stores date and time between January 1, 4712 BC and December 31, 9999 AD. Seven bytes are allocated to the column to store the century, year, month, day, hour, minute, and second of a date. Oracle 11*g* displays the date in the format DD-MON-YY. Other aspects of a date can be displayed by using the TO_CHAR format. Oracle 11*g* defines the field width as seven bytes. |

# Extended Data Types

- Introduced in Oracle 12*c*:
  - Enables storage of additional data  bytes in specific data types
  - Database parameters must be enabled by an Oracle system administrator

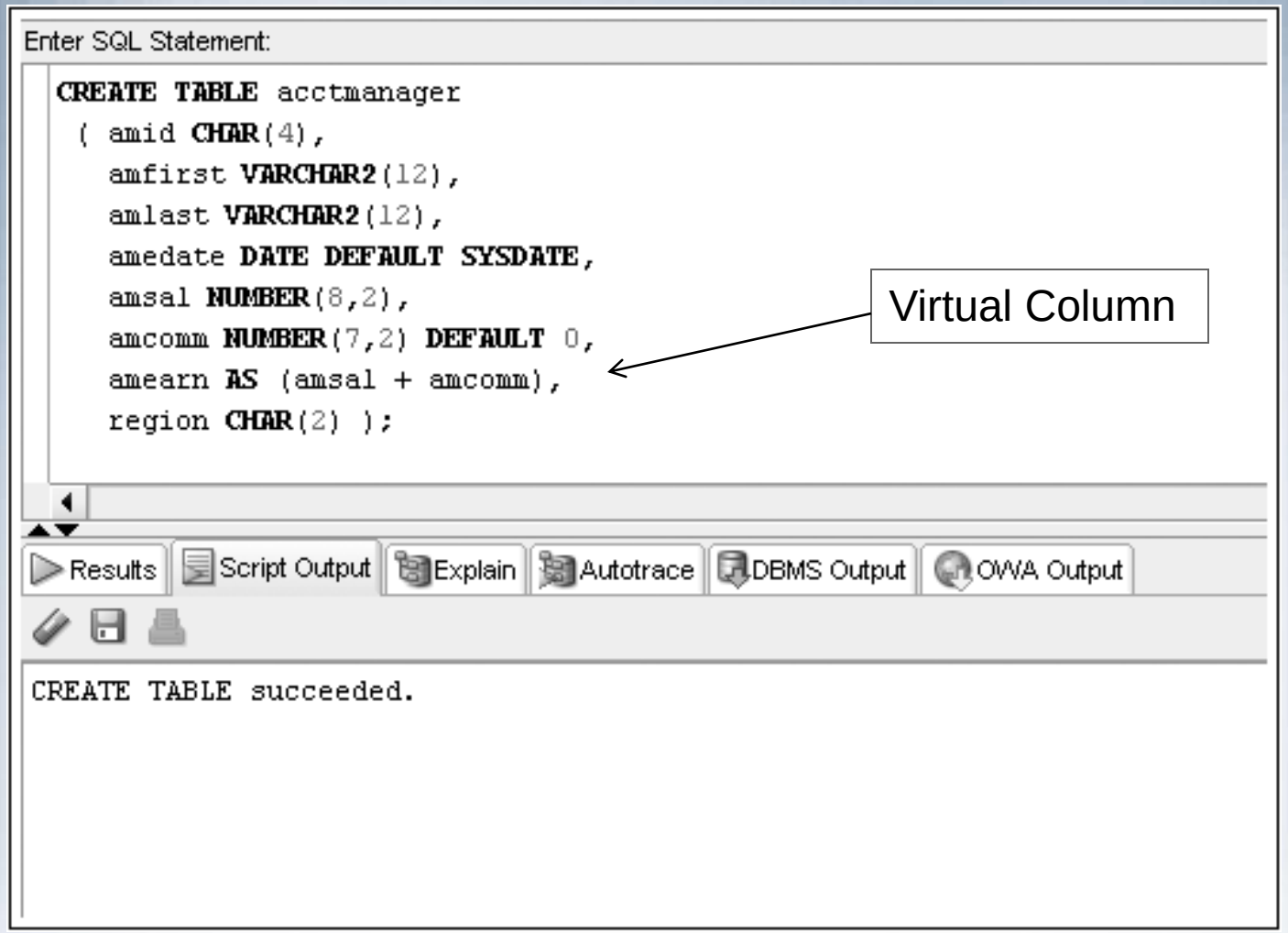
# Table Creation

```
CREATE TABLE [ schema. ] tablename
  ( columnname datatype [ DEFAULT value ]
  [ , columnname datatype [ DEFAULT value ]] );
```

# Defining Columns

- Column definition list must be enclosed in parentheses
- Datatype must be specified for each column
- Maximum of 1,000 columns

# CREATE TABLE Command Example

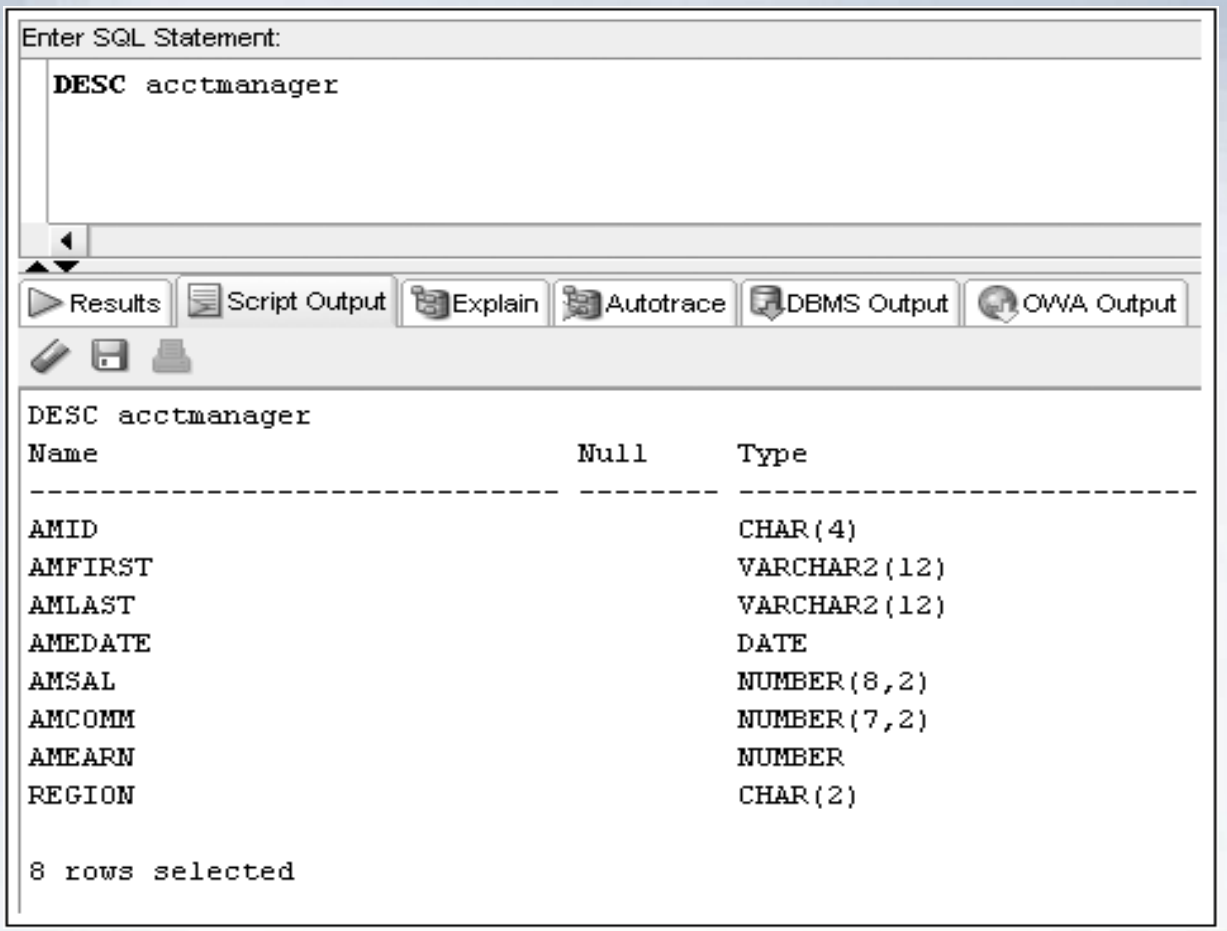


# Viewing List of Tables: USER_TABLES

- A data dictionary is a typical component of a DBMS that maintains information about database objects
- You can query the data dictionary to verify all the tables that exist in your schema
- The USER_TABLES data dictionary object maintains information regarding all your tables

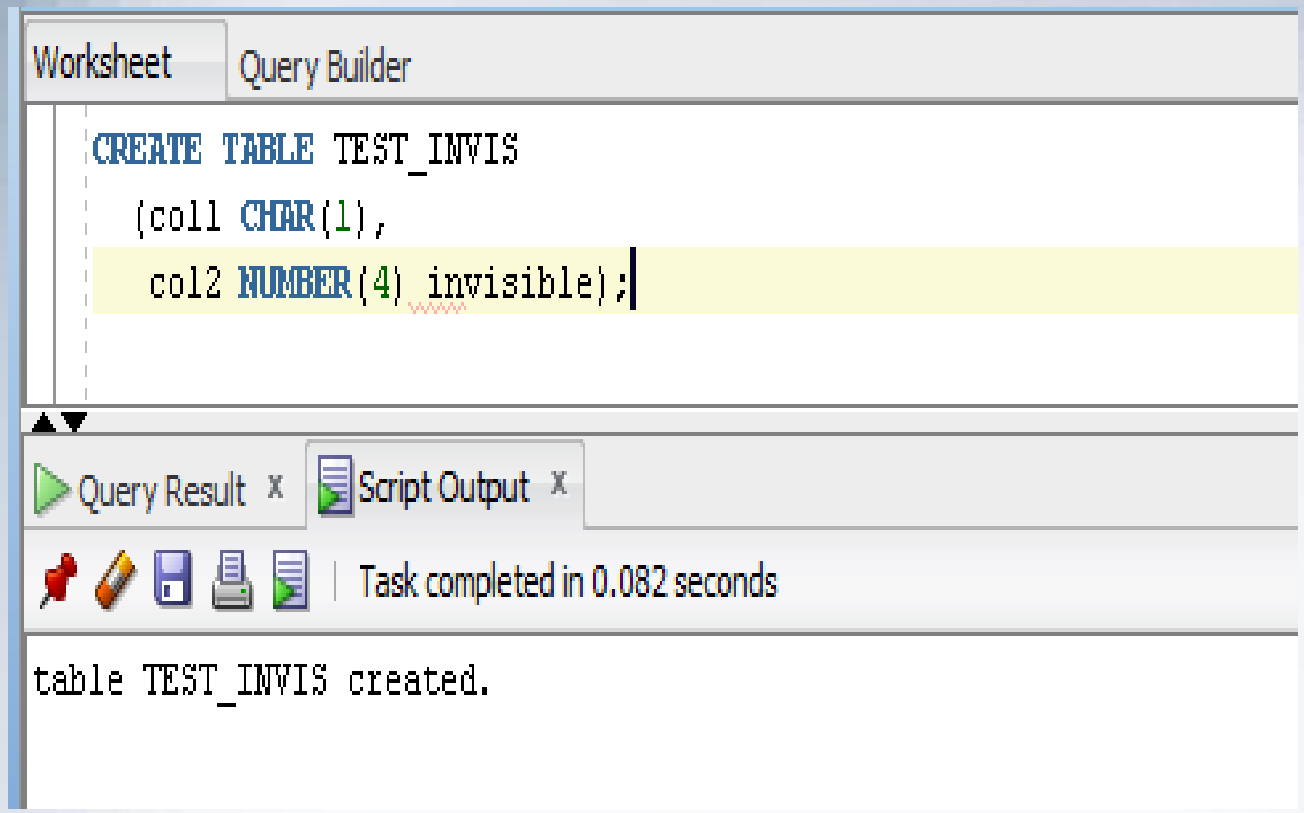
# Viewing Table Structures: DESCRIBE

- DESCRIBE displays the structure of a specified table



# Invisible Columns

- Oracle 12*c* allows hidden columns



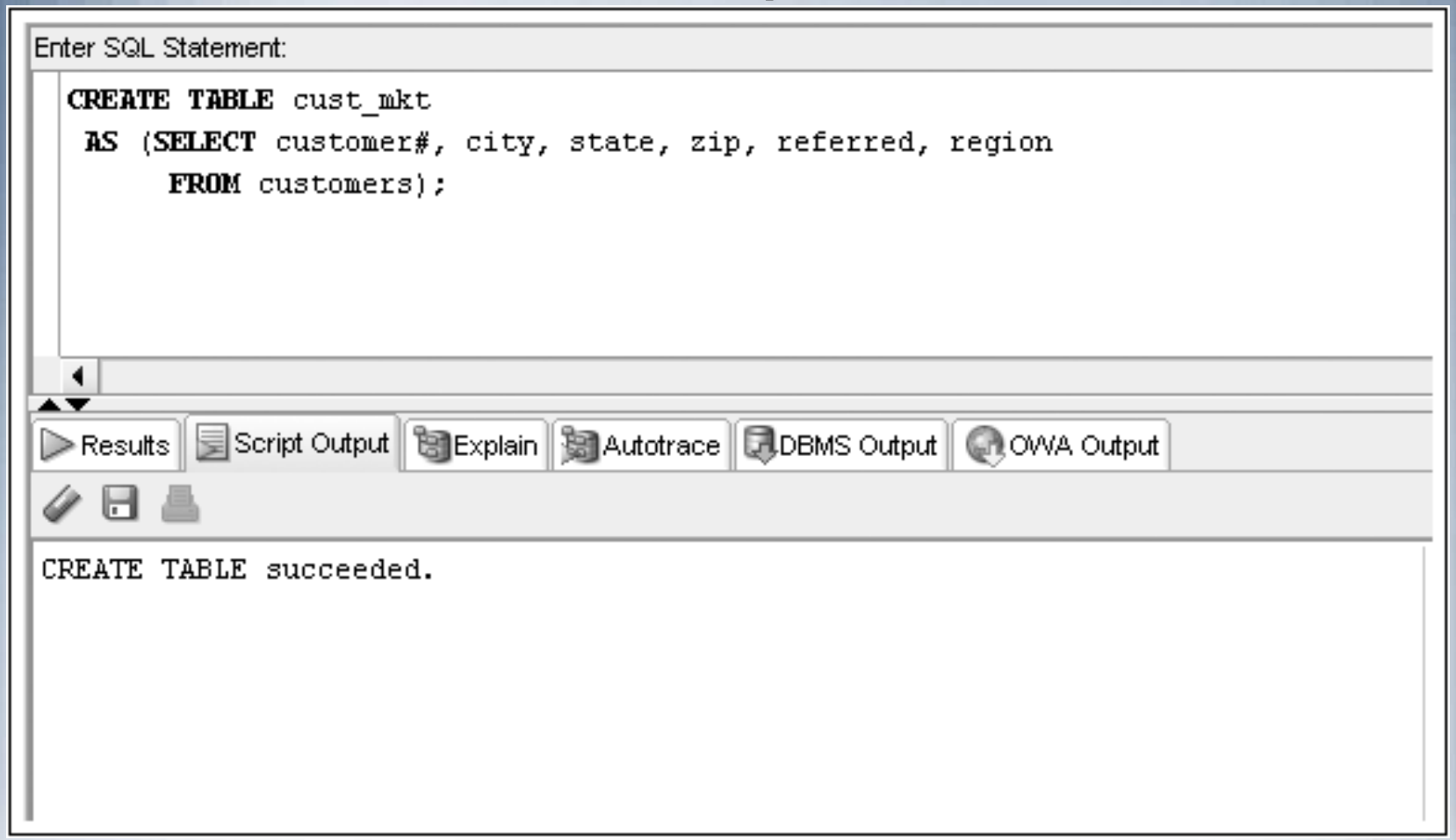
# Table Creation through Subqueries

- You can use subqueries to retrieve data from an existing table
- Requires use of AS keyword
- New column names can be assigned

# CREATE TABLE…AS

```
CREATE TABLE tablename [(columnname, …)]
AS (subquery);
```

# CREATE TABLE…AS Command Example



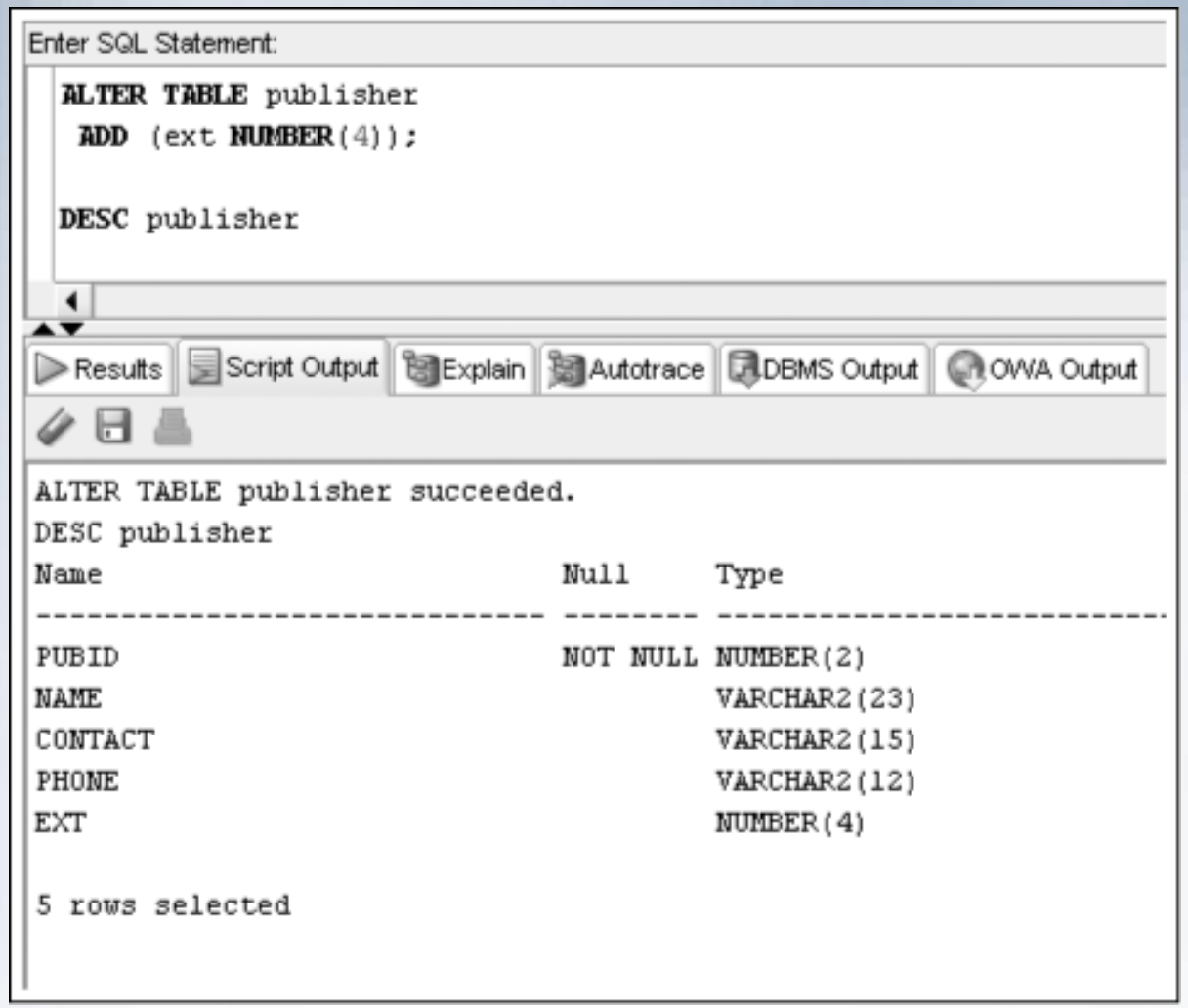
# Modifying Existing Tables

- Accomplished through the ALTER TABLE command
- Use an ADD clause to add a column
- Use a MODIFY clause to change a column
- Use a DROP COLUMN to drop a column

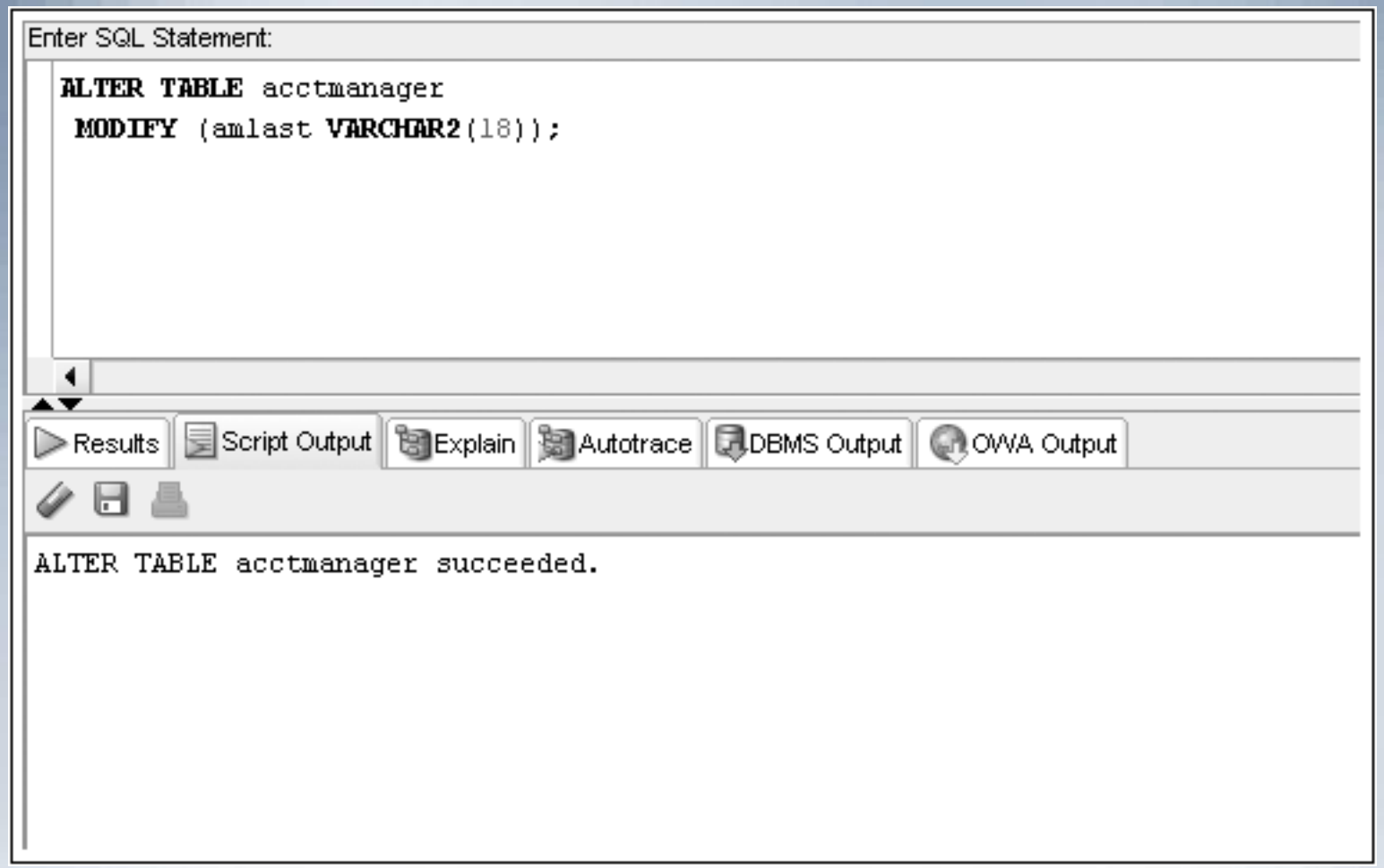
# ALTER TABLE Command Syntax

```
ALTER TABLE tablename
ADD|MODIFY|DROP COLUMN| columnname [definition];
```

# ALTER TABLE…ADD Command



# ALTER TABLE…MODIFY Command

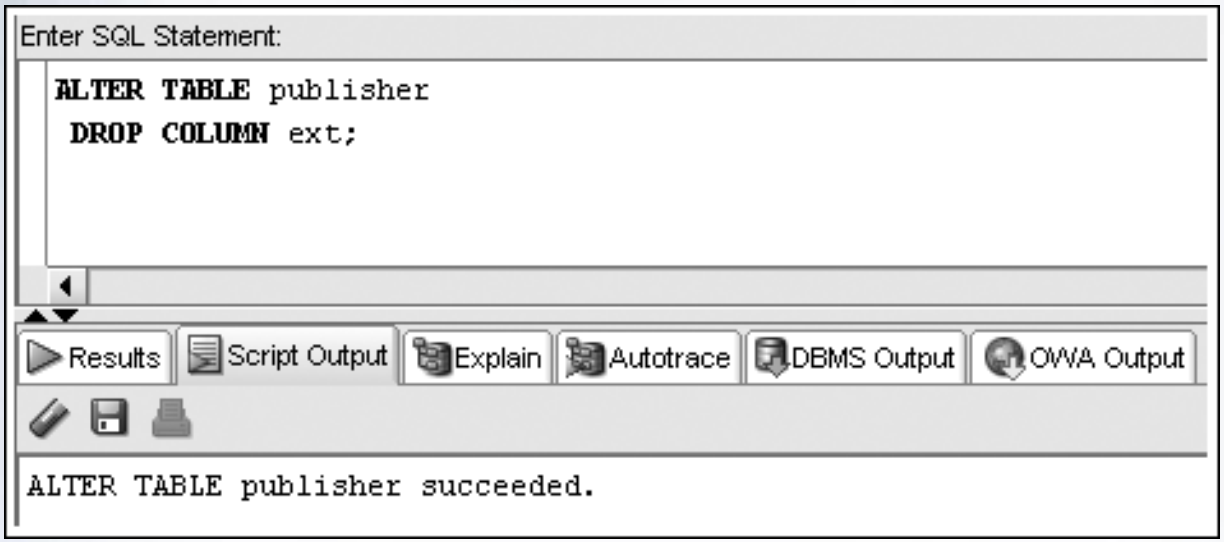


# Modification Guidelines

- Column must be as wide as the data it already contains
- If a NUMBER column already contains data, size cannot be decreased
- Adding or changing default data does not affect existing data

# ALTER TABLE…DROP COLUMN Command

- Can only reference one column per execution
- Deletion is permanent
- Cannot delete last remaining column in a table



# ALTER TABLE…SET UNUSED Command

- Once marked for deletion, a column cannot be restored
- Storage space is freed at a later time

```
ALTER TABLE tablename
SET UNUSED (columnname);
     OR
ALTER TABLE tablename
SET UNUSED COLUMN columnname;
```

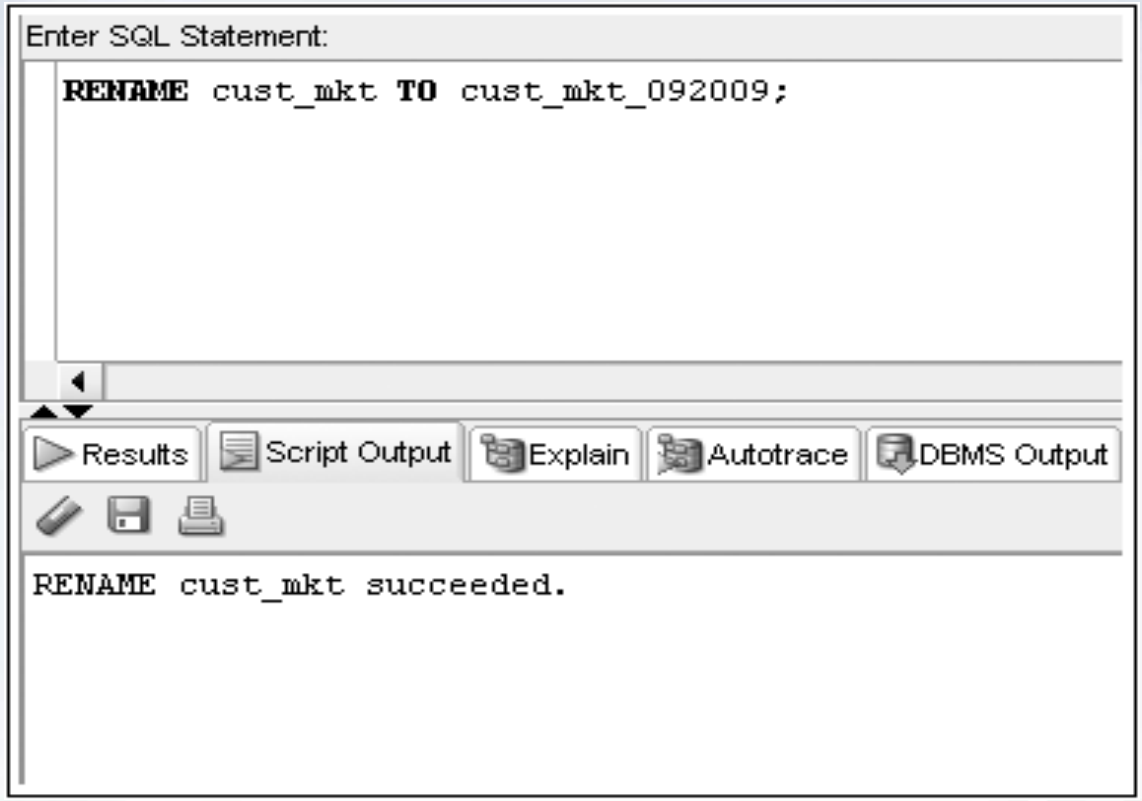
# ALTER TABLE…DROP UNUSED Command

- Frees up storage space from columns previously marked as unused

```
ALTER TABLE tablename
DROP UNUSED COLUMNS;
```

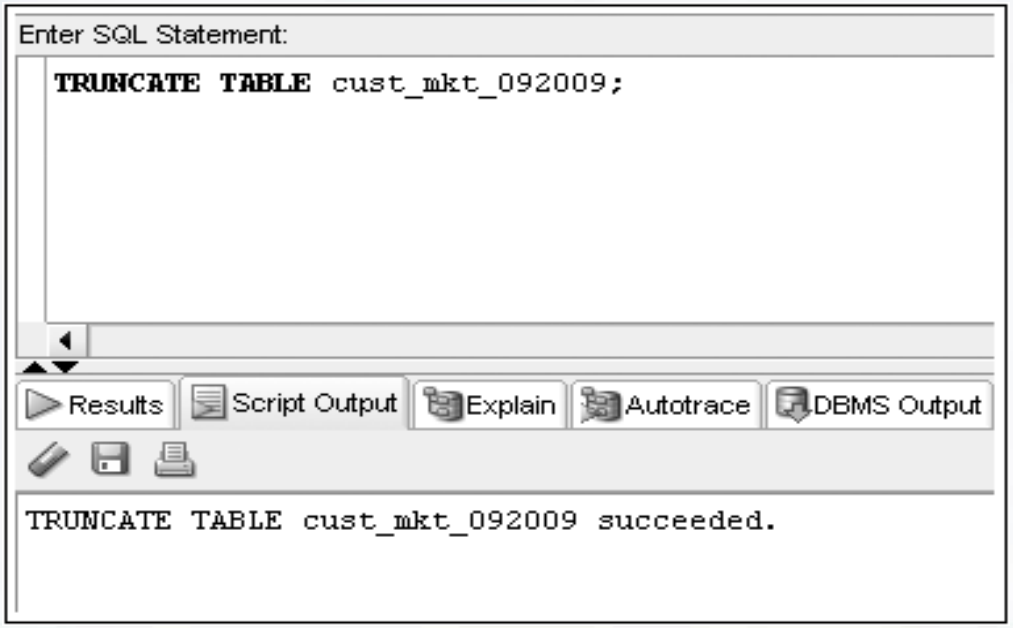
# Renaming a Table

- RENAME…TO is used to rename a table – the old name is no longer valid



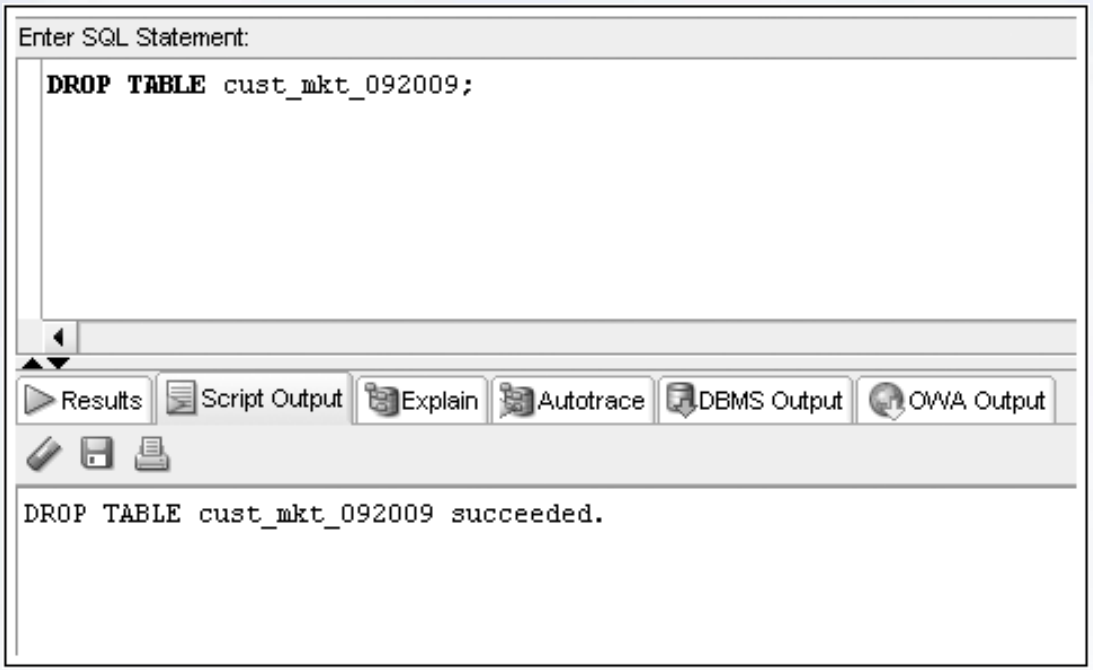
# Truncating a Table

- TRUNCATE TABLE command – rows are deleted
- Structure of table remains



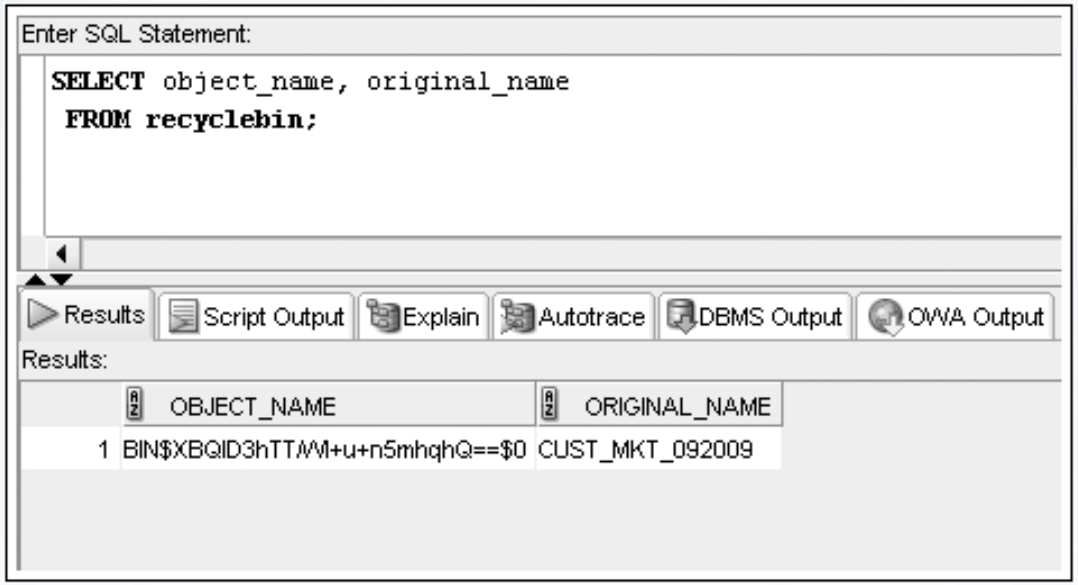
# Deleting a Table

- DROP TABLE command – table structure and contents are deleted



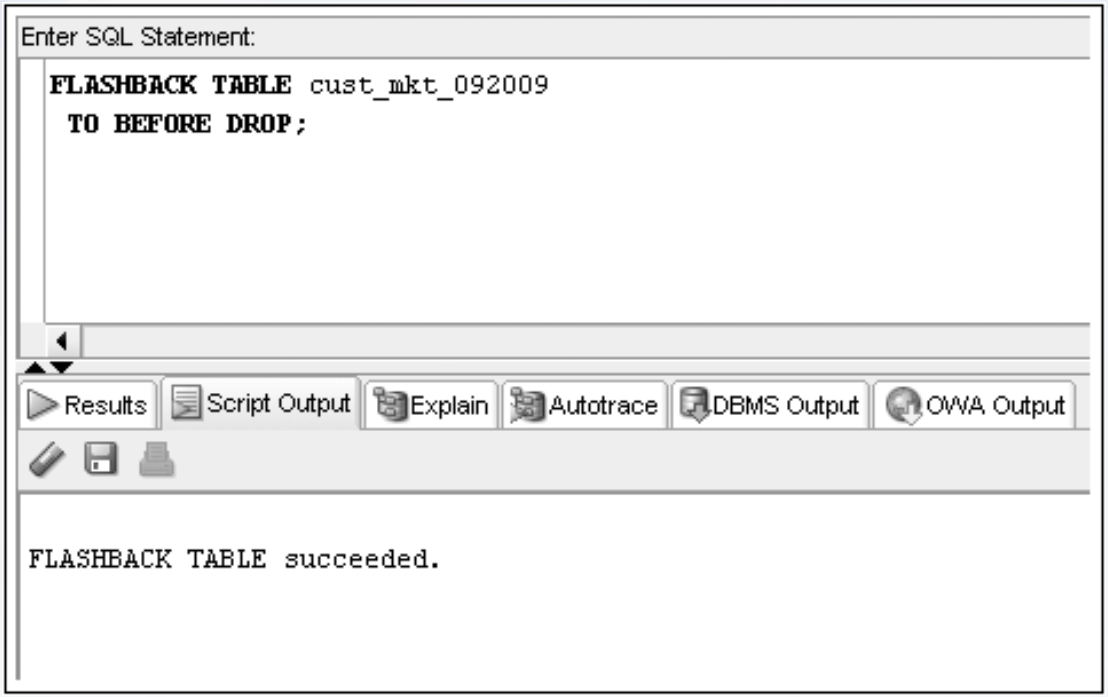
# DROP TABLE without Purge Option

- Oracle 10*g* introduced a recycle bin
- Dropped tables can be recovered from the recycle bin

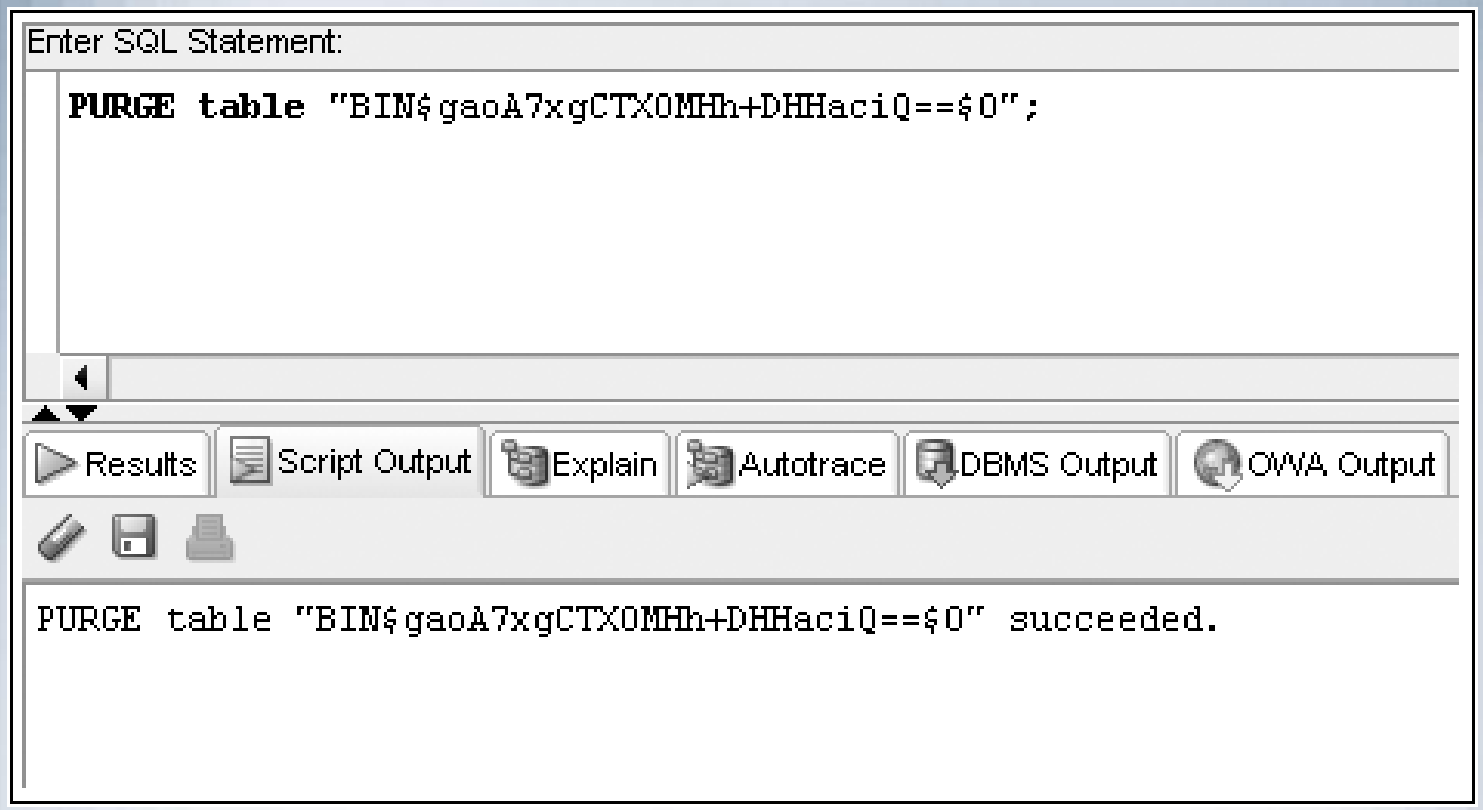


# FLASHBACK Command

- The FLASHBACK command recovers a table from the recycle bin



# Use PURGE to Remove a Table from the Recycle Bin



# PURGE Option Available for DROP TABLE Command

- Using the PURGE option will permanently remove a table from the database
- The table will not be copied into the recycle bin

```
DROP TABLE cust_mktg_092009 PURGE;
```

# Summary

- You create a table with the CREATE TABLE command
- Each column to be contained in the table must be defined in terms of the column name, data type, and for certain data types, the width
- A table can contain up to 1000 columns
- Each column name within a table must be unique
- You can change the structure of a table with the ALTER TABLE command
- Columns can be added, resized, and even deleted with the ALTER TABLE command
- Tables can be renamed with the RENAME...TO command

# Summary (continued)

- To delete all the rows in a table, use the TRUNCATE TABLE command
- To remove both the structure of a table and all its contents, use the DROP TABLE command
- A dropped table is moved to the recycle bin and can be recovered using the FLASHBACK TABLE command
- Using the PURGE option in a DROP TABLE command permanently removes the table, meaning you cannot recover it from the recycle bin