Lesson 7

Using Sub queries to Solve Queries

What You will learn at the end of this Session?

1. Define subqueries

2. Describe the types of problems that the subqueries can solve

3. List the types of subqueries
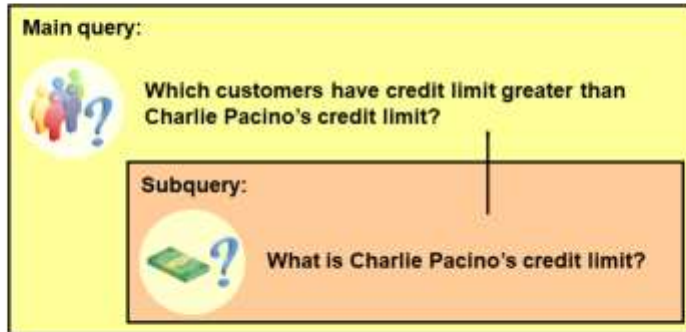
4. Write single-row and multiple-row subqueries

Objectives

In this lesson, you learn about the more advanced features of the SELECT statement. You can write subqueries in the WHERE clause of another SQL statement to obtain values based on an unknown conditional value. This lesson also covers single-row subqueries and multiple-row subqueries.

Using a Subquery to Solve a Problem

> Suppose you want to write a query to find out who earns a salary greater than Abel's salary.
>
> To solve this problem, you need *two* queries: one to find how much Abel earns, and a second query to find who earns more than that amount.
>
> You can solve this problem by combining the two queries, placing one query *inside* the other query.
>
> The inner query (or *subquery*) returns a value that is used by the outer query (or *main query*). Using a subquery is equivalent to performing two sequential queries and using the result of the first query as the search value in the second query.

```
SELECT    select_list
FROM      table
WHERE     expr operator
                          (SELECT    select_list
                           FROM      table);
```

- The subquery (inner query) executes *before* the main query (outer query).

- The result of the subquery is used by the main query.

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Subquery Syntax

A subquery is a SELECT statement that is embedded in the clause of another SELECT statement. You can build powerful statements out of simple ones by using subqueries. They can be very useful when you need to select rows from a table with a condition that depends on the data in the table itself.

You can place the subquery in a number of SQL clauses, including the following:

- WHERE clause
- HAVING clause
- FROM clause

In the syntax:

operator includes a comparison condition such as >, =, or IN

Note: Comparison conditions fall into two classes: single-row operators (>, =, >=, <, <>, <=) and multiple-row operators (IN, ANY, ALL, EXISTS).

The subquery is often referred to as a nested SELECT, sub-SELECT, or inner SELECT statement. The subquery generally executes first, and its output is used to complete the query condition for the main (or outer) query.

Using a Subquery

In the slide, the inner query determines the credit limit of customer Charlie
Pacino. The outer query takes the result of the inner query and uses this result
to display all the customers who have a credit limit more than that of customer
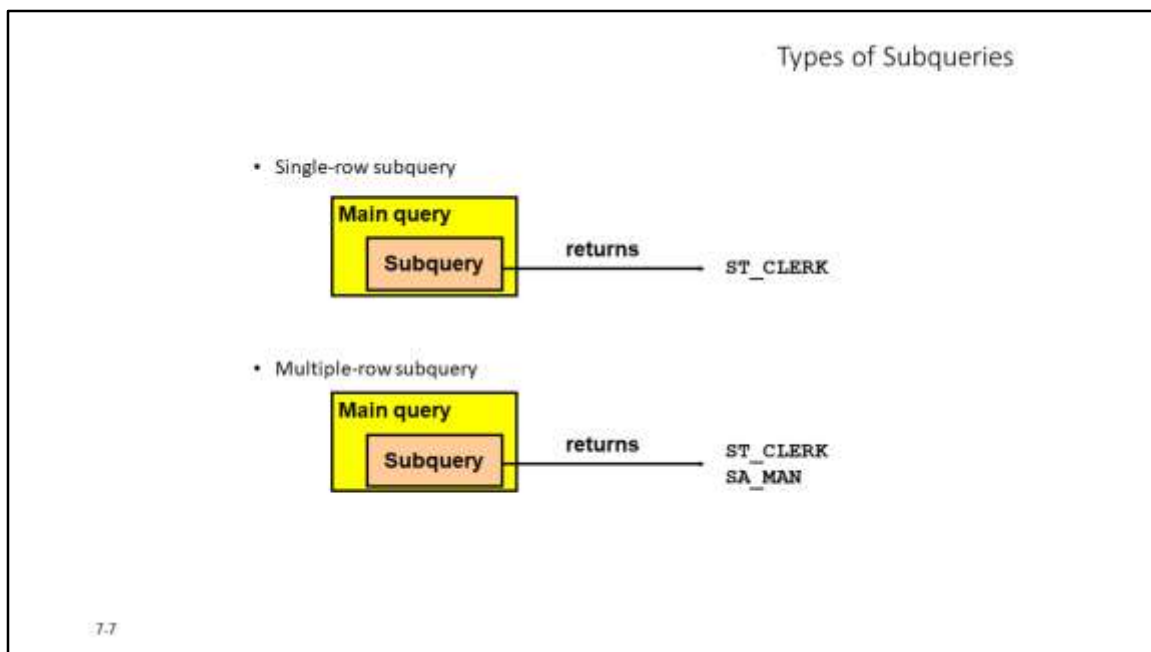Charlie Pacino.

Guidelines for Using Subqueries

A subquery must be enclosed in parentheses.
Place the subquery on the right side of the comparison condition for readability.
However, the subquery can appear on either side of the comparison operator.
Two classes of comparison conditions are used in subqueries: single-row operators and
multiple-row operators.

Types of Subqueries

Single-row subqueries: Queries that return only one row from the inner SELECT statement

Multiple-row subqueries: Queries that return more than one row from the inner SELECT statement

Note: There are also multiple-column subqueries, which are queries that return more than one column from the inner SELECT statement. These are covered in the *Oracle Database: SQL Fundamentals II* course.