COMM1822

Term 2 2022

Introduction to Databases
for Business Analytics

Week 9 Subqueries
and Merge Statement

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Subqueries and Merge Statements

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Subqueries and Merge Statements

❑A subquery is a nested query – one complete query inside another query.

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❑The results of the sub   uery) will be passed to
the outer query (also   https://eduassistpro.github.io/
                                              y).

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Subqueries and Merge Statements

With the **exception** of the ORDER BY clause, you can virtually nest a subquery in any of the clauses in a SELECT statement

```
SELECT
        <SubQuery>
FROM
        <SubQuery>
JOIN
        <SubQuery>
WHERE
        <SubQuery>
HAVING
        <SubQuery>
ORDER BY
        <Column>
```

Subqueries and Merge Statements

Subquery	Description
Single-row subquery	Returns to the outer query one row of results that consists of one column
Multiple-row subquery	R https://eduassistpro.github.io/ one row of results
Multiple-column subquery	Returns to the outer Add WeChat edu_assist_pro one column of results
Correlated subquery	References a column in the outer query, and executes the subquery once for every row in the outer query
Uncorrelated subquery	Executes the subquery first and passes the value to the outer query

Multiple-Row Subqueries

Operator	Description
> ALL	More than the highest value returned by the subquery
< ALL	L ed by the subquery
< ANY	Less than the highest d by the subquery
> ANY	More than the lowest value returned by the subquery
= ANY	Equal to any value returned by the subquery (same as IN)

Multiple-Row Subqueries

❑Multiple Row Subqueries return more than one row of results.

❑Operators such as IN, ANY, ALL, or EXISTS.

❑ANY and ALL operat   comparison operators to
  treat a subquery's results as a set   stead of single values.

Multiple-Column Subqueries

A multiple column subquery returns more than one column to the parent query and can be listed in the parent query's FROM, WHERE or HAVING clause.

Nested Subqueries

The innermost subquery is executed first, then the next highest level subquery is executed, and so on, u outermost query is reac

Correlated Subqueries vs Uncorrelated Subqueries

❑ The sequences of **uncorrelated subqueries** process are as follows:
   1) Inner query is executed first
   2) The result is then passed from the inner query to the parent query
   3) Parent query is execu

❑ On the other hand, the process sequ   **rrelated subqueries** is different:
   1) Inner query is executed once for each row processed by the parent query
   2) Inner query references the row contained in the parent query

Exercise

Logistics Database

Consider the **Logistics Database** from https://www.w3schools.com/sql/sql_any_all.asp

Tables in the database:
Customers (CustomerID, CustomerName, ContactName, Address, City, PostalCode, Country)
Category (CategoryID, CategoryN
Employees (EmployeeID, LastNa
Suppliers (SupplierID, SupplierName, ContactName,   ostalCode, Country, Phone)
Products (ProductID, ProductName, SupplierID, Cate
Shippers (ShipperID, ShipperName, Phone)
Orders (OrderID, CustomerID, EmployeeID, OrderDate, ShipperID)
OrderDetails (OrderDetailID, OrderID, ProductID, Quantity)

Exercise 1

List the product name if it finds any records in the OrderDetails table has quantity equal to 3.

```
SELECT      ProductNam
FROM        Products
WHERE       ProductID = ANY
(    SELECT   ProductID
     FROM     OrderDetails
     WHERE    Quantity = 3
);
```

Result:

Number of Records: 3

ProductName
Scottish Longbreads
Fløtemysost
Mozzarella di Giovanni

Exercise 2

List the customer's name who has ordered a product with quantity of at least 80.

```
SELECT      CustomerName
FROM        Customers
WHERE       CustomerID =
(   SELECT      CustomerID
    FROM        Orders
    WHERE       OrderID = ANY
    (   SELECT      OrderID
        FROM        OrderDetails
        WHERE       Quantity >= 80
    )
);
```

1. Find OrderID with Quantity = 80 in OrderDetails table;
2. Find the CustomerID in Orders table using the OrderID;

3. List all the eligible customers' names in Customers table.

Customers (CustomerID, CustomerName, …)

Orders (OrderID, CustomerID, …)

OrderDetails (OrderDetailID, OrderID, …, Quantity)

Result:

Number of Records: 5

CustomerName

Ernst Handel

Hungry Owl All-Night Grocers

QUICK-Stop

Save-a-lot Markets

Seven Seas Imports

Exercise 3

List the product name if ALL the records in the OrderDetails table has quantity equal to 3.

```
SELECT        ProductName
FROM          Products
WHERE         ProductID = A
(    SELECT   ProductID
     FROM     OrderDetails
     WHERE    Quantity = 3
);
```

Result:

Number of Records: 0

ProductName

Exercise 4

List the customer's name who has ordered the same products as customer 3.
(Please use this link https://www.w3schools.com/sql/trysql.asp?filename=trysql_select_join)

```
SELECT  DISTINCT CustomerNa
FROM            Customers JOIN                OIN OrderDetails USING (OrderID)
WHERE           ProductID IN
(    SELECT     ProductID
     FROM       OrderDetails JOIN Orders USING (
     WHERE      CustomerID = 3
);
```

Result:

Number of Records: 8

CustomerName
Wilman Kala
LILA-Supermercado
Folk och fä HB
Piccolo und mehr
Antonio Moreno Taquería
Ottilies Käseladen
Ernst Handel
Reggiani Caseifici

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Questions

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