# Executing Subqueries and UNION Statements

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## Subquery Concepts

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A query within a query

Uses

- Breakdown complex logic
- Simplify reading
- "Sneak in" operations otherwise not allowed
  - Place an aggregate function on a where clause

Can often be replaced by a join

- Joins may perform faster
  - SQL Server will frequently rewrite subqueries as joins
- Most readable query is frequently best

# Using Subqueries

## SELECT Line

Access information from tables in SELECT line
- Average order amount
- Highest product price

Query must return a single (scalar) value



## FROM Line

Create a "dynamic" table
Useful for breaking down queries
Query must be aliased

## WHERE Line

Useful for comparing values from other tables

- Find customers who have placed orders
- Find orders containing a particular product category



## Predicates Used with Subqueries

`IN`

- Confirm column value exists in subquery
- Similar to an inner join

`EXISTS`

- Returns true if subquery returns values
- Frequently used with correlated queries

`ALL`

- Compares column value to all items returned by subquery
- Subquery must return only one column

`ANY` or `SOME`

- Compares column value to any item returned by subquery
- Subquery must return only one column
- `ANY` and `SOME` are identical



## Correlated Subqueries

Pass column from main (outer) query into subquery
Used to simulate a join

# UNION Statements

## UNION Fundamentals

Unions are essentially two queries tacked on one another

Scenarios

- Multiple tables with address
  - Need to create a mailing list
- Large tables have been divided for performance purposes
  - Archive data in one table, current data in another



## UNION Requirements

Each query must contain the same number of columns

Data types must be compatible

First query sets column names of result set

If using `ORDER BY` there can only be one at the end

By default `UNION` queries are `DISTINCT`

- Use `UNION ALL` to return all rows with duplicate values