

# Common Table Expressions Using WITH Part 1 Notes

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## 1 What is a Common Table Expression?

- Works like function in programming
- Makes queries easier to read
- Organizes queries into **reusable** modules
- Better matches to how you think about data analysis
- Uses WITH

### Example:

```
1  WITH product_details AS (  
2      SELECT ProductName, CategoryName, UnitPrice, UnitInStock  
3      FROM Products  
4      JOIN Categories ON PRODUCTS.CategoryId = Categories.id  
5      WHERE Products.Discontinued = 0  
6  )  
7  
8  SELECT * FROM product_details // <- Noticed it's used like a  
9  ORDER BY CategoryName, ProductName  
10
```

## 2 Convert a Subquery to a CTE

- To declare multiple CTES, WITH is required only once

### Example:

```

1  \ \ ===== BEFORE CTE =====
2
3  SELECT all_orders.EmployeeID, Employees.LastName, all_orders.
   order_count AS total_order_count, late_orders.order_count AS
   late_order_count
4  FROM (
5      SELECT EmployeeID, COUNT(*) AS order_count
6      FROM Orders
7      GROUP BY EmployeeID
8  ) all_orders
9  JOIN (
10     SELECT EmployeeID, COUNT(*) AS order_count
11     FROM Orders
12     WHERE RequiredDate <= ShippedDate
13     GROUP BY EmployeeID
14 ) late_orders
15 ON all_orders.EmployeeID = late_orders.employeeID
16 JOIN Employees
17 ON all_orders.EmployeeId = Employees.Id
18
19
20 \ \ ===== AFTER CTE =====
21
22 SELECT EmployeeID, COUNT(*) AS order_count
23 FROM Orders
24 GROUP BY EmployeeID
25 ),
26 late_orders AS (
27     SELECT EmployeeID, COUNT(*) AS order_count
28     FROM Orders
29     WHERE RequiredDate <= ShippedDate
30     GROUP BY EmployeeID
31 )
32 SELECT Employees.ID, LastName, all_orders.order_count AS
   total_order_count, late_orders.order_count AS late_order_count
33 FROM Employees
34 JOIN all_orders ON Employees.ID = all_orders.EmployeeID
35 JOIN late_orders ON Employees.ID = late_orders.EmployeeID
36

```