Common Table Expressions/Subselect

WITH

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Previously in Data Analytics

LEFT OUTER
RIGHT OUTER
LEFT EXCEPTION
RIGHT EXCEPTION
CROSS
COALESCE
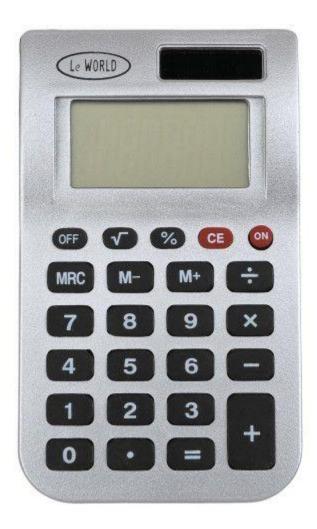
WITH

SELECT INTO

FROM

JOIN
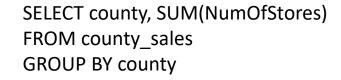
ON

WHERE

GROUP BY

HAVING

UNION

ORDER BY

LIMIT

Cte

A common table expression (CTE) can be thought of as a temporary result set that is defined within the execution scope of a single SELECT, INSERT, UPDATE, DELETE, or CREATE VIEW statement. A CTE is similar to a derived table in that it is not stored as an object and lasts only for the duration of the query. Unlike a derived table, a CTE can be self-referencing and can be referenced multiple times in the same query.

C_{te}

SELECT county, COUNT(DISTINCT store) AS NumOfStores, SUM(total) AS total_sales
FROM sales
WHERE category_name LIKE '%TEQUILA%'
GROUP BY county, store
HAVING count(store)>2 AND sum(total)<10000

SELECT county, SUM(NumOfStores)
FROM county_sales
GROUP BY county

county	numofstores	total_sales
Adair	1	7659.95
Adair	1	2420.24
Adair	1	2123.88
Adair	1	1297.44
Adair	1	2165.28
Adair	1	308.19
Adams	1	5710.36
Allamakee	1	9938.2
Allamakee	1	8080.96
Allamakee	1	1047.16

County	Num_of_Stores
Wayne	2
[null]	8
Poweshiel	9
Guthrie	4
Delaware	3
Harrison	4
Fayette	6
Winnebag	4
Sioux	5
Greene	7

```
WITH county_sales AS (
            SELECT county, COUNT(DISTINCT store) AS NumOfStores, SUM(total) AS total_sales
             FROM sales
             WHERE category_name LIKE '%TEQUILA%'
             GROUP BY county, store
             HAVING count(store)>2 AND sum(total)<10000
             )
SELECT county,
     SUM(NumOfStores)
FROM county_sales
GROUP BY county
```

County	Num_of_Stores
Wayne	2
[null]	8
Poweshiel	9
Guthrie	4
Delaware	3
Harrison	4
Fayette	6
Winnebag	4
Sioux	5
Greene	7

C_{te}

SELECT county, SUM(NumOfStores)
FROM
   (SELECT county, store, COUNT(DISTINCT store) AS NumOfStores, SUM(total) AS total_sales
    FROM sales
    WHERE Category_name LIKE '%TEQUILA%'
    GROUP BY county, store
    HAVING count(store)>20 AND sum(total)>500000) AS county_sales
GROUP BY county

County	Num_of_Stores
Wayne	2
[null]	8
Poweshiel	9
Guthrie	4
Delaware	3
Harrison	4
Fayette	6
Winnebag	4
Sioux	5
Greene	7

DEMO(aggregate over an aggregate)

ACTIVITY: AGGREGATE OVER AN AGGREGATE

EXERCISE

Use What is the total sum of stores by county?

$\mathrm{C_{te}}$

```
WITH
a AS (SELECT county, population
FROM counties
WHERE population >5000),

b AS (SELECT county, sum(total) as total_sales
FROM sales
GROUP BY  county)
```

```
SELECT *
FROM a
JOIN b
ON a.county = b.county
```

a

county	population
Adair	7682
Allamakee	14330
Appanoose	12884
Audubon	6119
Benton	26076
Black Hawk	131090
Boone	26306
Bremer	24276
Buchanan	20958
Buena Vista	20260

b

county	total_sales
Wayne	98824.4
Montgomery	839109.2
	193443.2
Poweshiek	2012519.27
Story	12267027.18
Calhoun	482178.34
Dallas	7898228.42
Decatur	248492.15
Worth	339968.23
Carroll	3183557.2

county	population	county2	total_sales
Adair	7682	Adair	603088.67
Allamakee	14330	Allamakee	1107480.66
Appanoose	12884	Appanoose	1089064.58
Audubon	6119	Audubon	241821.88
Benton	26076	Benton	994344.98
Black Hawk	131090	Black Hawk	22967283.29
Boone	26306	Boone	2441399.88
Bremer	24276	Bremer	2507674.79
Buchanan	20958	Buchanan	1949162.4
Buena Vista	20260	Buena Vista	2432925.21

```
WITH
a AS (SELECT county, population
FROM counties
WHERE population >5000),

b AS (SELECT county, sum(total) as total_sales
FROM sales
GROUP BY  county)

SELECT *
FROM a
JOIN b
ON a.county = b.county
```

county	population	county2	total_sales
Adair	7682	Adair	603088.67
Allamakee	14330	Allamakee	1107480.66
Appanoose	12884	Appanoose	1089064.58
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Black Hawk	131090	Black Hawk	22967283.29
Boone	26306	Boone	2441399.88
Bremer	24276	Bremer	2507674.79
Buchanan	20958	Buchanan	1949162.4
Buena Vista	20260	Buena Vista	2432925.21

```
SELECT *
FROM

(SELECT county, population
FROM counties
WHERE population >5000) as a

JOIN

(SELECT county, sum(total) as total_sales
FROM sales
GROUP BY  county) as b

ON a.county = b.county
```

county	population	county2	total_sales
Adair	7682	Adair	603088.67
Allamakee	14330	Allamakee	1107480.66
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DEMO(joining temp tables)

ACTIVITY: JOINING temp Tables

EXERCISE

Create a process that looks at store and store count

LIMIT to 5 for a sample data set

We also want to review a sum of sales for anything like tequila

USE CTE's for this as we may want some more stats to add later

DEMO(SELECT INTO)

Workshop

Conclusion

We reviewed using WITH to create temporary table and the use cases around this
We looked at doing aggregates over aggregates and joining results

Q & A

The price of light is less than the cost of Darkness.
-Arthur C. Nielsen

EXIT TICKET

CLASS : Common Table Expressions

QUESTION:

In you own words what is a Common Table Expression?