

Project: OLAP Operations (using Redshift or PostgreSQL)

Objective: Perform OLAP operations (Drill Down, Rollup, Cube, Slice, and Dice) on the "sales_sample" table to analyze sales data. The project will include the following tasks:

1. Database Creation

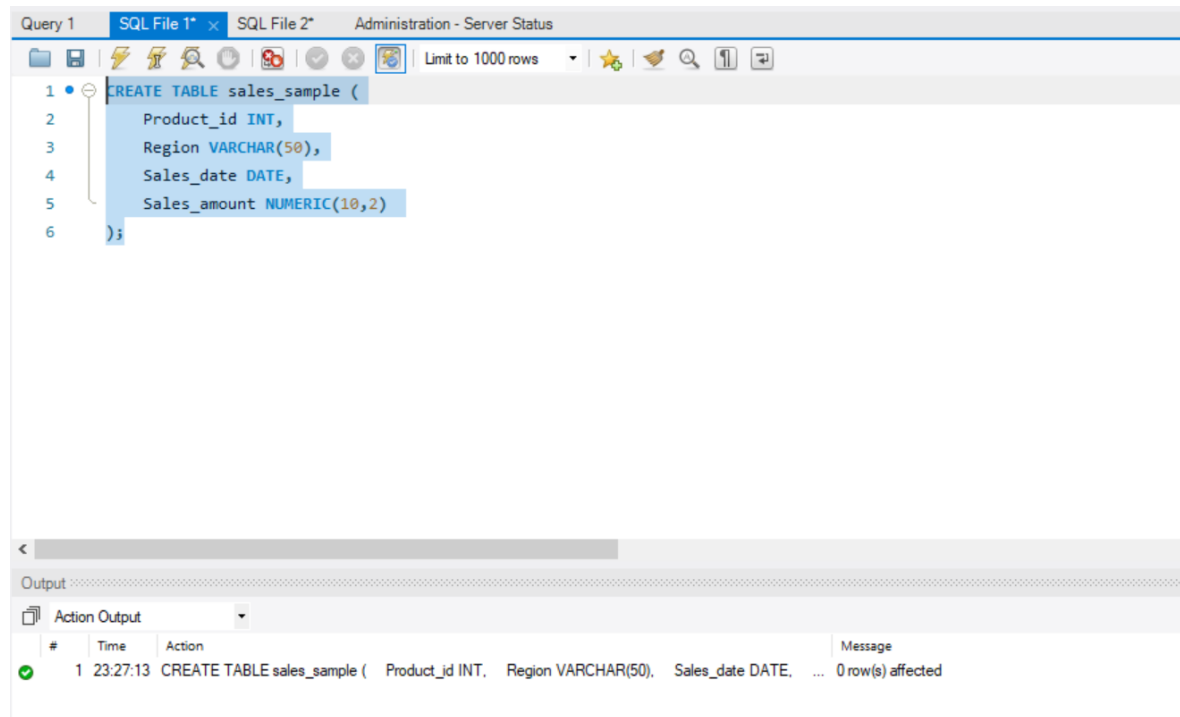
Create a table named "sales_sample" with the specified columns:

Product_Id (Integer)

Region (varchar(50))-like East ,West etc

Date (Date)

Sales_Amount (int/numeric)



2. Data Creation

Insert 10 sample records into the "sales_sample" table, representing sales data.

Query 1 SQL File 1* SQL File 2* Administration - Server Status

Limit to 1000 rows

```

1 INSERT INTO sales_sample (product_id, region, sales_date, sales_amount)
2 VALUES
3 (1, 'Gotham', '2024-01-01', 500.00),
4 (2, 'Metropolis', '2024-01-02', 700.00),
5 (3, 'Themyscira', '2024-01-03', 800.00),
6 (4, 'Central City', '2024-01-04', 600.00),
7 (5, 'Atlantis', '2024-01-05', 750.00),
8 (6, 'New York', '2024-01-06', 550.00),
9 (7, 'Asgard', '2024-01-07', 850.00),
10 (8, 'Wakanda', '2024-01-08', 650.00),
11 (9, 'Xandar', '2024-01-09', 720.00),
12 (10, 'Latveria', '2024-01-10', 900.00);

```

Output

Action Output

#	Time	Action	Message
1	23:27:13	CREATE TABLE sales_sample (Product_id INT, Region VARCHAR(50), Sales_date DATE, ...	0 row(s) affected
2	23:27:54	INSERT INTO sales_sample (product_id, region, sales_date, sales_amount) VALUES (1, 'Gotham', '20...	10 row(s) affected Records: 10 Duplicates: 0 Warnings: 0

3. Perform OLAP operations

a) Drill Down-Analyze sales data at a more detailed level. Write a query to perform drill down from region to product level to understand sales performance.

Drill Down - full

Query 1 SQL File 1* SQL File 2* Administration - Server Status

Limit to 1000 rows

```

1 WITH RegionSales AS (
2 SELECT
3     region,
4     SUM(sales_amount) AS total_sales_region
5 FROM sales_sample
6 GROUP BY region
7 ),
8 ProductSales AS (

```

Result Grid

region	total_sales_region	product_id	total_sales_product	percentage_of_region_sales
Asgard	850.00	7	850.00	100.0000000
Atlantis	750.00	5	750.00	100.0000000
Central City	600.00	4	600.00	100.0000000
Gotham	500.00	1	500.00	100.0000000
Latveria	900.00	10	900.00	100.0000000
Metropolis	700.00	2	700.00	100.0000000
New York	550.00	6	550.00	100.0000000
Themyscira	800.00	3	800.00	100.0000000
Wakanda	650.00	8	650.00	100.0000000
Xandar	720.00	9	720.00	100.0000000

Drill down single region –

Query 1 SQL File 1* x SQL File 2* Administration - Server Status

Limit to 1000 rows

```

1 • SELECT
2     region,
3     product_id,
4     SUM(sales_amount) AS total_sales
5 FROM sales_sample
6 WHERE region = 'Gotham'
7 GROUP BY region, product_id

```

Result Grid | Filter Rows: | Export: | Wrap Cell Content: |

region	product_id	total_sales
Gotham	1	500.00

b) Rollup- To summarize sales data at different levels of granularity. Write a query to perform roll up from product to region level to view total sales by region.

Query 1 SQL File 1* x SQL File 2* Administration - Server Status

Limit to 1000 rows

```

1 • SELECT
2     region,
3     product_id,
4     SUM(sales_amount) AS total_sales
5 FROM sales_sample
6 GROUP BY region, product_id WITH ROLLUP
7 ORDER BY region, product_id;

```

Result Grid | Filter Rows: | Export: | Wrap Cell Content: |

region	product_id	total_sales
Latveria	10	900.00
Xandar	9	720.00
Wakanda	8	650.00
Asgard	7	850.00
New York	6	550.00
Atlantis	5	750.00
Central City	4	600.00
Themyscira	3	800.00
Metropolis	2	700.00
Gotham	1	500.00
ROLLUP	NULL	7020.00
Asgard	NULL	850.00
Atlantis	NULL	750.00
Central City	NULL	600.00
Gotham	NULL	500.00

c) Cube - To analyze sales data from multiple dimensions simultaneously. Write a query to Explore sales data from different perspectives, such as product, region, and date.

Cube alternative using aggregate function

```
Query 1  SQL File 1*  SQL File 2*  Administration - Server Status
Limit to 1000 rows
1 • SELECT
2     product_id,
3     region,
4     sales_date,
5     SUM(sales_amount) AS total_sales
6 FROM sales_sample
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content: [A](#)

	product_id	region	sales_date	total_sales
▶	10	NULL	NULL	900.00
	10	Latveria	NULL	900.00
	10	Latveria	2024-01-10	900.00
	9	NULL	NULL	720.00
	9	Xandar	NULL	720.00
	9	Xandar	2024-01-09	720.00
	8	NULL	NULL	650.00
	8	Waka...	NULL	650.00
	8	Waka...	2024-01-08	650.00
	7	NULL	NULL	850.00
	7	Asgard	NULL	850.00
	7	Asgard	2024-01-07	850.00
	6	NULL	NULL	550.00

Result 22 x

d) Slice- To extract a subset of data based on specific criteria. Write a query to slice the data to view sales for a particular region or date range.

Slice by region

The screenshot shows a SQL query editor with a toolbar at the top. The query is as follows:

```
1 • SELECT
2     product_id,
3     sales_date,
4     SUM(sales_amount) AS total_sales
5 FROM sales_sample
6 WHERE region = 'Gotham'
7 GROUP BY product_id, sales_date
8 ORDER BY product_id, sales_date;
9
```

Below the query editor, the 'Result Grid' tab is active, showing a single row of data:

	product_id	sales_date	total_sales
▶ 1		2024-01-01	500.00

Slice by sales_date

The screenshot shows a SQL query editor with a toolbar at the top. The query is as follows:


```
1 • SELECT product_id,
2     region,
3     SUM(sales_amount) AS total_sales
4 FROM sales_sample
5 WHERE sales_date BETWEEN '2024-01-01' AND '2024-01-31'
6 GROUP BY product_id, region
7 ORDER BY product_id, region;
8
```

Below the query editor, the 'Result Grid' tab is active, showing a list of 10 rows of data:

	product_id	region	total_sales
▶ 1		Gotham	500.00
2		Metropolis	700.00
3		Themyscira	800.00
4		Central City	600.00
5		Atlantis	750.00
6		New York	550.00
7		Asgard	850.00
8		Wakanda	650.00
9		Xandar	720.00
10		Latveria	900.00

e) Dice - To extract data based on multiple criteria. Write a query to view sales for specific combinations of product, region, and date

```
1 • SELECT
2     product_id,
3     region,
4     sales_date,
5     SUM(sales_amount) AS total_sales
6 FROM sales_sample
7 WHERE
8     product_id IN (1, 2)
9     AND region IN ('Gotham', 'Metropolis')
10    AND sales_date BETWEEN '2024-01-01' AND '2024-01-05'
11 GROUP BY product_id, region, sales_date
12 ORDER BY product_id, region, sales_date;
```

Result Grid				
		Filter Rows:		Export:  Wrap Cell Content: I A
	product_id	region	sales_date	total_sales
▶	1	Gotham	2024-01-01	500.00
	2	Metropolis	2024-01-02	700.00