

# Solving analytical queries on Redshift Cluster

Here, you have to write the query used for solving the question and the screenshots of the table which is outputted after the query is run on the AWS Redshift Query editor UI.

## 1. Top 10 ATMs where most transactions are in the 'inactive' state

```
select a.atm_number, a.atm_manufacturer, l.location,  
count(trans_id) as total_transaction_count,  
sum(case when atm_status = 'Inactive' then 1 else 0 end) as  
inactive_count,  
(inactive_count/total_transaction_count)*100 as count_percent  
from atm_data.fact_atm_trans f, atm_data.dim_atm a, atm_data.dim_location l  
where f.atm_id = a.atm_id and a.atm_location_id = l.location_id  
group by a.atm_number, a.atm_manufacturer, l.location  
having count_percent > 50  
order by inactive_count desc  
limit 10;
```

The screenshot displays the AWS Redshift Query Editor interface. The top navigation bar shows the AWS logo, a search bar, and the URL: `us-east-1.console.aws.amazon.com/redshiftv2/home?region=us-east-1#query-editor:`. The main interface is divided into several sections:

- Resources:** A sidebar on the left with tabs for 'Select database', 'Select schema', and 'Filter tables'. It shows the 'devetl' database and 'public' schema.
- Query Editor:** The central area with a tabbed interface for 'Query 1' through 'Query 10'. The active tab 'Query 1' contains the SQL query from the previous block.
- Query Results:** A section below the query editor showing the execution status (Completed), start time (February 28, 2023 at 10:04:37), and elapsed time (00 m 02 s). It indicates 'Rows returned (10)' and provides a search bar for the results.
- Table Details:** A table at the bottom showing the columns: `atm_number`, `atm_manufacturer`, `location`, `total_transaction_count`, `inactive_count`, and `count_percent`.

us-east-1.console.aws.amazon.com/redshiftv2/home?region=us-east-1#query-editor:

Services

Search

[Alt+S]

dev1

Select schema **aws**

To view tables, select a schema.

public

Filter tables

No resources

No resources to display

```
1 select a.atm_number, a.atm_manufacturer, l.location,
2 count(atan_id) as total_transaction_count,
3 sum(case when atan_status = 'Inactive' then 1 else 0 end) as
4 inactive_count,
5 (inactive_count/total_transaction_count)*100 as count_percent
6 from aws_data_fact_atm_transaction f, atm_data_dim_atm a, atm_data_dim_location l
7 where f.atm_id = a.atm_id and a.atm_location_id = l.location_id
8 group by a.atm_number, a.atm_manufacturer, l.location
9 having count_percent > 80
10 order by inactive_count desc
11 limit 10;
12
```

Run

Save

Schedule

Clear

Send Feedback

Query results

Table details

Query 1400217

Execution

Data

Visualize

Rows returned 10

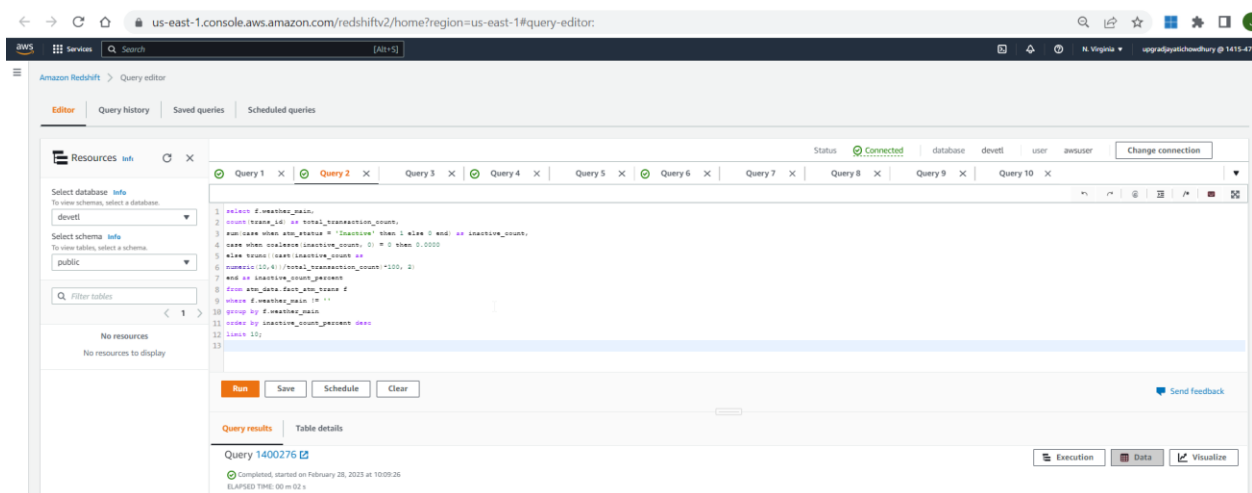
Export

Search rows

atan_number	atan_manufacturer	location	total_transaction_count	inactive_count	count_percent
15	NCR	Vestre	44043	44043	100
45	NCR	Aurs	33982	33982	100
2	NCR	Vejgaard	33725	33725	100
88	NCR	Storcenter indg. A	32185	32185	100
30	NCR	Nyk&A_bing Mors	30883	30883	100
52	NCR	Fars&f&	27361	27361	100
50	NCR	Aarhus	25416	25416	100
29	NCR	Skelagervej 15	20773	20773	100
81	NCR	Spar K&A_bmand Torsh&f&_j	20148	20148	100

## 2. Number of ATM failures corresponding to the different weather conditions recorded at the time of the transactions

```
select f.weather_main,  
count(trans_id) as total_transaction_count,  
sum(case when atm_status = 'Inactive' then 1 else 0 end) as inactive_count,  
case when coalesce(inactive_count, 0) = 0 then 0.0000  
else trunc((cast(inactive_count as  
numeric(10,4))/total_transaction_count)*100, 2)  
end as inactive_count_percent  
from atm_data.fact_atm_trans f  
where f.weather_main != ''  
group by f.weather_main  
order by inactive_count_percent desc  
limit 10;
```



Query results

Table details

Query 1400276

Completed, started on February 28, 2023 at 10:09:26  
ELAPSED TIME: 00 m 02 s

Execution

Data

Visualize

Rows returned (10)

Export

Search rows

< 1 > ⌕

weather_main	total_transaction_count	inactive_count	inactive_count_percent
Snow	23405	4813	20.5600
Fog	18174	3729	20.5100
Clouds	1181901	194027	16.4100
Rain	545135	86017	15.7700
Clear	543949	85531	15.7200
Mist	82801	12864	15.5300
Thunderstorm	2549	361	14.1600
Drizzle	62530	8670	13.8600
TORNADO	38	1	2.6300
Haze	3	0	0.0000

### 3. Top 10 ATMs with the most number of transactions throughout the year

```
select a.atm_number, a.atm_manufacturer, l.location,
count(trans_id) as total_transaction_count
from atm_data.fact_atm_trans f, atm_data.dim_atm a, atm_data.dim_location l
where f.atm_id = a.atm_id and a.atm_location_id = l.location_id
group by a.atm_number, a.atm_manufacturer, l.location
order by total_transaction_count desc
limit 10;
```

The screenshot displays the Amazon Redshift Query Editor interface. The top section shows the query editor with a SQL query for finding the top 10 ATMs by transaction count. The query is as follows:

```
1 select a.atm_number, a.atm_manufacturer, l.location,
2 count(trans_id) as total_transaction_count
3 from atm_data.fact_atm_trans f, atm_data.dim_atm a, atm_data.dim_location l
4 where f.atm_id = a.atm_id and a.atm_location_id = l.location_id
5 group by a.atm_number, a.atm_manufacturer, l.location
6 order by total_transaction_count desc
7 limit 10;
```

The query has been executed successfully, as indicated by the status "Completed, started on February 28, 2023 at 10:11:21" and "ELAPSED TIME: 00 m 01 s". The results are displayed in a table with 10 rows and 5 columns: atm\_number, atm\_manufacturer, location, and total\_transaction\_count.

atm_number	atm_manufacturer	location	total_transaction_count
31	NCR	Slagelse	83320
39	NCR	Svenstrup	55380
12	NCR	ÅlfEosterÅfÅv Duus	54211
24	NCR	Hobro	53378
34	NCR	Skipperen	53198
15	NCR	Vestre	44043
30	NCR	NykÅfÅ, bing Mors Lobby	43767
1	NCR	NÅfÅstved	42787
41	Diebold Nixdorf	Skagen	42732
48	Diebold Nixdorf	BrÅfÅ, nderslev	42493

#### 4. Number of overall ATM transactions going inactive per month for each month

```
select d.year, d.month,
count(trans_id) as total_transaction_count,
sum(case when atm_status = 'Inactive' then 1 else 0 end) as inactive_count,
case when coalesce(inactive_count, 0) = 0 then 0.0000
else trunc((cast(inactive_count as
numeric(10,4))/total_transaction_count)*100, 2)
end as inactive_count_percent
from atm_data.fact_atm_trans f inner join atm_data.dim_date d on f.date_id =
d.date_id
group by d.year, d.month
order by d.year, d.month
```

The screenshot displays the AWS Redshift console interface. At the top, the browser address bar shows the URL: `us-east-1.console.aws.amazon.com/redshiftv2/home?region=us-east-1#query-editor:`. The console header includes the AWS logo, a search bar, and navigation tabs for 'Resources', 'Query Editor', and 'Query Results'. The 'Query Editor' tab is active, showing a SQL query in a text area. The query is as follows:

```
1 select d.year, d.month,
2 count(trans_id) as total_transaction_count,
3 sum(case when atm_status = 'Inactive' then 1 else 0 end) as inactive_count,
4 case when coalesce(inactive_count, 0) = 0 then 0.0000
5 else trunc((cast(inactive_count as
6 numeric(10,4))/total_transaction_count)*100, 2)
7 end as inactive_count_percent
8 from atm_data.fact_atm_trans f inner join atm_data.dim_date d on f.date_id =
9 d.date_id
10 group by d.year, d.month
11 order by d.year, d.month
```

Below the query editor, there are buttons for 'Run', 'Save', 'Schedule', and 'Clear'. The 'Run' button is highlighted. To the right of the query editor, there are tabs for 'Query results' and 'Table details'. The 'Query results' tab is selected, showing the execution status: 'Completed, started on February 28, 2023 at 10:12:34' and 'ELAPSED TIME: 00 m 02 s'. Below this, there are buttons for 'Execution', 'Data', and 'Visualize'. The 'Data' button is selected, displaying a table of results.

**Query results** | **Table details**

Query 1400319

Completed, started on February 28, 2023 at 10:12:34  
ELAPSED TIME: 00 m 02 s

Rows returned (12)

Search rows

year	month	total_transaction_count	inactive_count	inactive_count_percent
2017	April	213754	38607	18.0600
2017	August	217231	36214	16.6700
2017	December	207250	24192	11.6700
2017	February	186270	34909	18.7400
2017	January	200120	36983	18.4800
2017	July	226425	36722	16.2100
2017	June	212558	37004	17.4000
2017	March	203202	39498	19.4300
2017	May	221385	38058	17.1900
2017	November	183977	21631	11.7500

## 5. Top 10 ATMs with the highest total withdrawn amount throughout the year

```
select a.atm_number, a.atm_manufacturer, l.location,  
sum(transaction_amount) as total_transaction_amount  
from atm_data.fact_atm_trans f, atm_data.dim_atm a, atm_data.dim_location l  
where f.atm_id = a.atm_id and a.atm_location_id = l.location_id  
group by a.atm_number, a.atm_manufacturer, l.location  
order by total_transaction_amount desc  
limit 10;
```

The screenshot displays the Amazon Redshift Query Editor interface. The top navigation bar shows the AWS logo, services menu, search bar, and user information. The main editor area contains a SQL query (Query 6) that selects the top 10 ATMs by total transaction amount. The query is as follows:

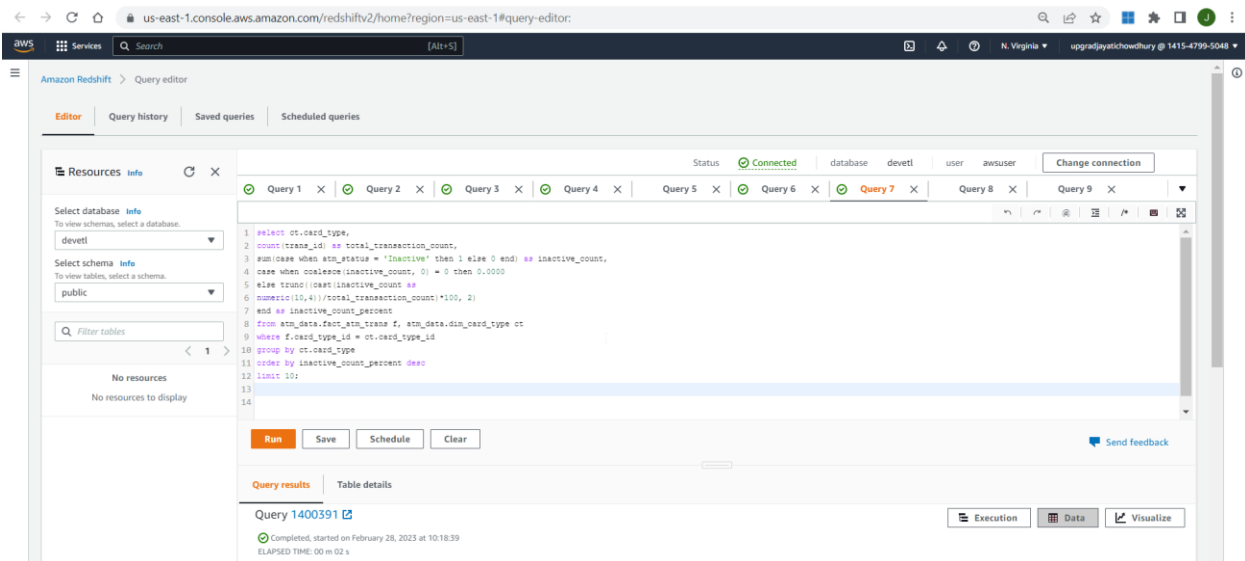
```
1 select a.atm_number, a.atm_manufacturer, l.location,  
2 sum(transaction_amount) as total_transaction_amount  
3 from atm_data.fact_atm_trans f, atm_data.dim_atm a, atm_data.dim_location l  
4 where f.atm_id = a.atm_id and a.atm_location_id = l.location_id  
5 group by a.atm_number, a.atm_manufacturer, l.location  
6 order by total_transaction_amount desc  
7 limit 10;
```

Below the query editor, the 'Query results' tab is active, showing the results of Query 1400374. The query was completed on February 28, 2023, at 10:17:22, with an elapsed time of 00 m 02 s. The results are displayed in a table with 10 rows and 4 columns: atm\_number, atm\_manufacturer, location, and total\_transaction\_amount.

atm_number	atm_manufacturer	location	total_transaction_amount
31	NCR	Slagelse	414078473
39	NCR	Svenstrup	277097637
12	NCR	Årøester År Å Duus	271008803
24	NCR	Hobro	268289882
34	NCR	Skipperen	265639616
15	NCR	Vestre	220677013
30	NCR	Nyk Å Å, bing Mors Lobby	219812287
41	Diebold Nixdorf	Skagen	214127315
1	NCR	N Å Å Å stved	213721117
48	Diebold Nixdorf	Br Å Å Å, nderslev	212883099

## 6. Number of failed ATM transactions across various card types

```
select ct.card_type,  
count(trans_id) as total_transaction_count,  
sum(case when atm_status = 'Inactive' then 1 else 0 end) as inactive_count,  
case when coalesce(inactive_count, 0) = 0 then 0.0000  
else trunc((cast(inactive_count as  
numeric(10,4))/total_transaction_count)*100, 2)  
end as inactive_count_percent  
from atm_data.fact_atm_trans f, atm_data.dim_card_type ct  
where f.card_type_id = ct.card_type_id  
group by ct.card_type  
order by inactive_count_percent desc  
limit 10;
```

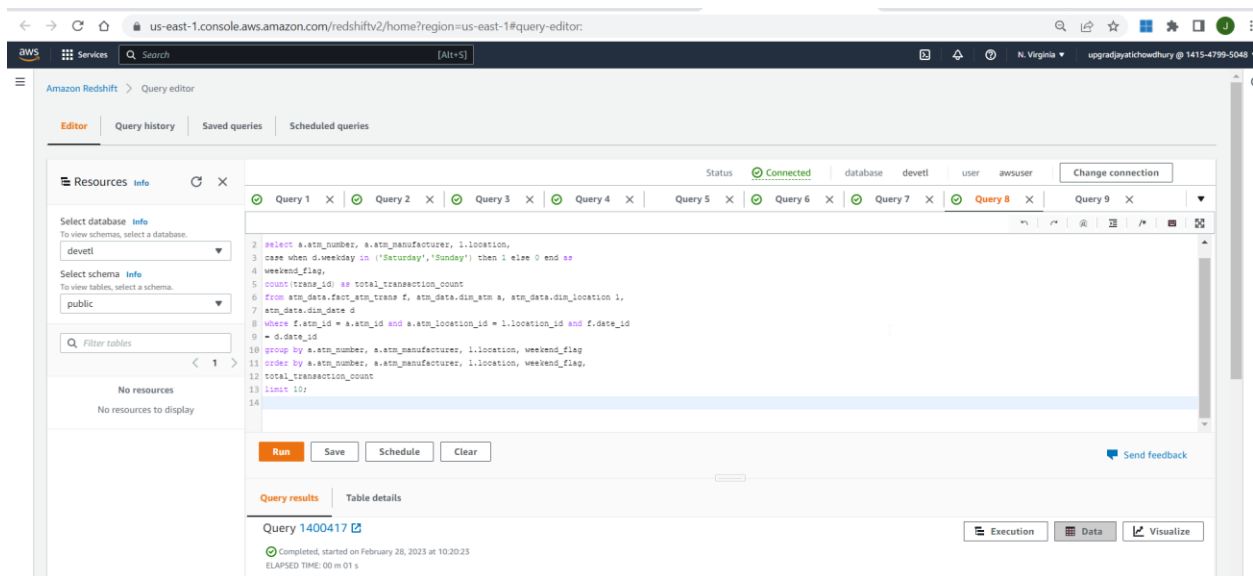




Query results		Table details	
Query 1400391		ExecutionDataVisualize	
Completed, started on February 28, 2023 at 10:18:39			
ELAPSED TIME: 00 m 02 s			
Rows returned (10)		Export	
Search rows		< 1 > ⚙	
card_type	total_transaction_count	inactive_count	inactive_count_percent
Mastercard - on-us	458226	86000	18.7600
VISA	170828	30713	17.9700
Dankort - on-us	143813	24680	17.1600
CIRRUS	17362	2953	17.0000
HÃfÃ'vekort - on-us	62487	10331	16.5300
Dankort	28581	4557	15.9400
MasterCard	400507	63482	15.8500
Visa Dankort - on-us	748805	112972	15.0800
HÃfÃ'vekort	8459	1208	14.2800
Visa Dankort	427840	60547	14.1500

**7. Number of transactions happening on an ATM on weekdays and on weekends throughout the year. Order this by the ATM\_number, ATM\_manufacturer, location, weekend\_flag and then total\_transaction\_count**

```
select a.atm_number, a.atm_manufacturer, l.location,  
case when d.weekday in ('Saturday','Sunday') then 1 else 0 end as  
weekend_flag,  
count(trans_id) as total_transaction_count  
from atm_data.fact_atm_trans f, atm_data.dim_atm a, atm_data.dim_location l,  
atm_data.dim_date d  
where f.atm_id = a.atm_id and a.atm_location_id = l.location_id and f.date_id  
= d.date_id  
group by a.atm_number, a.atm_manufacturer, l.location, weekend_flag  
order by a.atm_number, a.atm_manufacturer, l.location, weekend_flag,  
total_transaction_count  
limit 10;
```



Query results

Table details

Query 1400417

Completed, started on February 28, 2023 at 10:20:23  
ELAPSED TIME: 00 m 01 s

Execution

Data

Visualize

Rows returned (10)

Export

Search rows

< 1 > ⚙

atm_number	atm_manufacturer	location	weekend_flag	total_transaction_count
1	NCR	NÅfÅstved	0	31723
1	NCR	NÅfÅstved	1	11064
100	NCR	Intern Skive	0	14135
100	NCR	Intern Skive	1	4162
101	NCR	Bryggen Vejle	0	11226
101	NCR	Bryggen Vejle	1	3714
102	NCR	Aalborg Storcenter Afd	0	6607
102	NCR	Aalborg Storcenter Afd	1	2434
103	Diebold Nixdorf	Vejgaard	0	16899
103	Diebold Nixdorf	Vejgaard	1	4278

## 8. Most active day in each ATMs from location "Vejgaard"

```
select a.atm_number, a.atm_manufacturer, l.location, d.weekday,
count(trans_id) as total_transaction_count
from atm_data.fact_atm_trans f inner join atm_data.dim_atm a on f.atm_id =
a.atm_id
inner join atm_data.dim_location l on a.atm_location_id = l.location_id
inner join atm_data.dim_date d on f.date_id = d.date_id
where l.location = 'Vejgaard' and d.weekday in
( select d.weekday
from atm_data.fact_atm_trans f inner join atm_data.dim_date d
on f.date_id = d.date_id
inner join atm_data.dim_location l on f.location_id = l.location_id
where l.location = 'Vejgaard'
group by d.weekday
order by count(f.trans_id) desc
limit 1 )
group by a.atm_number, a.atm_manufacturer, l.location, d.weekday
order by total_transaction_count;
```

The screenshot displays the AWS Redshift console interface. At the top, the browser address bar shows the URL: `us-east-1.console.aws.amazon.com/redshiftv2/home?region=us-east-1#query-editor:`. The console header includes the AWS logo, a search bar, and navigation links for 'Resources', 'Info', and 'X'. The main content area is divided into two panes. The left pane, titled 'Resources', shows a tree view with 'deveti' selected as the database and 'public' as the schema. The right pane, titled 'Query editor', contains a SQL query (Query 1) and buttons for 'Run', 'Save', 'Schedule', and 'Clear'. Below the query editor, the 'Query results' tab is active, showing 'Query 1400433' with a status of 'Completed' and an elapsed time of '00 m 02 s'. The results are displayed in a table with 5 columns: 'atm\_number', 'atm\_manufacturer', 'location', 'weekday', and 'total\_transaction\_count'. Two rows of data are shown, both for the location 'Vejgaard' on 'Friday'.

atm_number	atm_manufacturer	location	weekday	total_transaction_count
103	Diebold Nixdorf	Vejgaard	Friday	3853
2	NCR	Vejgaard	Friday	5635