

Solving analytical queries on Redshift Cluster:

Here, I 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

<Query>

```
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_transaction_count  
from etl_bankatm_data.fact_atm_trans f, etl_bankatm_data.dim_atm a,  
etl_bankatm_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 inactive_transaction_count desc  
limit 10;
```

<Screenshot of the resultant table>

Query results | Table details

Query 400837 [Link](#)

Completed, started on November 04, 2022 at 06:13:20
ELAPSED TIME: 00 m 02 s

Execution | Data | Visualize

Rows returned (10) [Export](#)

Search rows

atm_number	atm_manufacturer	location	total_transaction_count	inactive_transaction_count
16	NCR	Skive	44043	44043
12	NCR	ÅrøsterÅv Duus	33982	33982
2	NCR	Vejgaard	33725	33725
88	NCR	Storcenter indg. A	32183	32183
30	NCR	NykÅfÅ, bing Mars	30883	30883
52	NCR	FarsÅfÅ,	27361	27361
50	NCR	Aarhus	23416	23416
29	NCR	Skelagervej 15	20773	20773
81	NCR	Spar KÅfÅ, bmand TornhÅfÅ,j	20148	20148
102	NCR	Aalborg Storcenter Afd	18297	18297

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

<Query>

```
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 etl_bankatm_data.fact_atm_trans f
where f.weather_main != ''
group by f.weather_main
order by inactive_count_percent desc
limit 10;
```

<Screenshot of the resultant table>

Query results | Table details

Query 400854 [🔗](#) Execution Data Visualize

Completed, started on November 04, 2022 at 06:14:49
ELAPSED TIME: 00 m 02 s

Rows returned (10) Export ▼

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

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

<Query>

```
select a.atm_number, a.atm_manufacturer, l.location,
count(trans_id) as total_transaction_count
from etl_bankatm_data.fact_atm_trans f, etl_bankatm_data.dim_atm a,
etl_bankatm_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;
```

<Screenshot of the resultant table>

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Query results Table details

Query 400873 [🔗](#) Execution Data Visualize

Completed, started on November 04, 2022 at 06:16:11
ELAPSED TIME: 00 m 02 s

Rows returned (10) Export

Search rows

atm_number	atm_manufacturer	location	total_transaction_count
39	NCR	Svenstrup	55380
20	NCR	Bispensgade	54211
10	NCR	NÅfÅ_resundby	53794
24	NCR	Hobro	53378
45	NCR	Abildgaard	53198
16	NCR	Skive	44043
40	Diebold Nixdorf	Frederikshavn	43767
1	NCR	NÅfÅstved	42787
41	Diebold Nixdorf	Skagen	42732
48	Diebold Nixdorf	BrÅfÅ_nderslev	42493

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

```

select c.year, c.month, c.transaction_count, d.inactive_count,
CAST(trunc(100.0*d.inactive_count/c.transaction_count,2) AS NUMERIC(10,4)) as
inactive_count_percent from
(select a.year, a.month, count(b.trans_id) as transaction_count from
etl_bankatm_data.dim_date
a,etl_bankatm_data.FACT_ATM_TRANS b where a.date_id = b.date_id group by
a.month, a.year) c
left join
(select a.year, a.month, count(b.atm_status) as inactive_count from
etl_bankatm_data.dim_date
a,etl_bankatm_data.FACT_ATM_TRANS b where a.date_id = b.date_id and
b.atm_status='Inactive'
group by a.month, a.year) d
on c.year=d.year and c.month=d.month
order by c.year, c.month;

```

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Query results Table details

Query 400897 [🔗](#) Execution Data Visualize

Completed, started on November 04, 2022 at 06:17:39
ELAPSED TIME: 00 m 02 s

Rows returned (12) Export

Search rows

year	month	transaction_count	inactive_count	inactive_count_percent
2017	April	218865	41830	19.1100
2017	August	217218	36713	16.9000
2017	December	197048	20476	10.3900
2017	February	182659	36656	20.0600
2017	January	180195	35953	19.9500
2017	July	227682	38139	16.7500
2017	June	225166	36789	16.3300
2017	March	209586	41046	19.5800
2017	May	222418	37679	16.9400
2017	November	193967	21684	11.1700

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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 etl_bankatm_data.fact_atm_trans f, etl_bankatm_data.dim_atm a,
etl_bankatm_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;

```

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Query results Table details

Query 400914 [🔗](#) Execution Data Visualize

Completed, started on November 04, 2022 at 06:18:51
ELAPSED TIME: 00 m 02 s

Rows returned (10) Export ▾

Search rows

atm_number ▾	atm_manufacturer ▾	location ▾	total_transaction_amount ▾
39	NCR	Svenstrup	277097637
20	NCR	Bispensgade	271008803
24	NCR	Hobro	268289882
10	NCR	NÅfÅ_resundby	267379103
45	NCR	Abildgaard	265639616
16	NCR	Skive	220677013
40	Diebold Nixdorf	Frederikshavn	219812287
41	Diebold Nixdorf	Skagen	214127315
1	NCR	NÅfÅstved	213721117
48	Diebold Nixdorf	BrÅfÅ_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 etl_bankatm_data.fact_atm_trans f, etl_bankatm_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;

```

The screenshot shows a web interface for query results. At the top, there's a navigation bar with a search icon, a user profile, and a location dropdown set to 'N. Virginia'. Below this, the interface is divided into two tabs: 'Query results' (active) and 'Table details'. The 'Query results' tab shows 'Query 400931' with a status of 'Completed, started on November 04, 2022 at 06:19:55' and an 'ELAPSED TIME: 00 m 02 s'. There are buttons for 'Execution', 'Data', and 'Visualize'. Below the query info, it says 'Rows returned (10)' and has an 'Export' button. A search bar for rows is present. The table has four columns: 'card_type', 'total_transaction_count', 'inactive_count', and 'inactive_count_percent'. The data is as follows:

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
HÅfÅ\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
HÅfÅ\vekort	8459	1208	14.2800
Visa Dankort	427840	60547	14.1500

At the bottom of the interface, there's a footer with '© 2022, Amazon Web Services, Inc. or its affiliates.' and links for 'Privacy', 'Terms', and 'Cookie preferences'.

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 etl_bankatm_data.fact_atm_trans f, etl_bankatm_data.dim_atm a,
etl_bankatm_data.dim_location l,
etl_bankatm_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;

```

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Query results Table details

Query 400961

Completed, started on November 04, 2022 at 06:21:23
ELAPSED TIME: 00 m 02 s

Execution Data Visualize

Rows returned (10)

Search rows

atm_number	atm_manufacturer	location	weekend_flag	total_transaction_count
1	NCR	NÅfÅstved	0	32711
1	NCR	NÅfÅstved	1	10076
10	NCR	NÅfÅ_resundby	0	41667
10	NCR	NÅfÅ_resundby	1	12127
100	NCR	Intern Skive	0	17812
100	NCR	Intern Skive	1	1
101	NCR	Bryggen Vejle	0	11693
101	NCR	Bryggen Vejle	1	3247
102	NCR	Aalborg Storcenter Afd	0	14556
102	NCR	Aalborg Storcenter Afd	1	3741

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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 etl_bankatm_data.fact_atm_trans f inner join etl_bankatm_data.dim_atm a on
f.atm_id =
a.atm_id
inner join etl_bankatm_data.dim_location l on a.atm_location_id = l.location_id
inner join etl_bankatm_data.dim_date d on f.date_id = d.date_id
where l.location = 'Vejgaard' and d.weekday in
(
select d.weekday
from etl_bankatm_data.fact_atm_trans f inner join etl_bankatm_data.dim_date d
on f.date_id = d.date_id
inner join etl_bankatm_data.dim_location l on f.weather_loc_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;

```


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N. Virginia

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fact_atm_trans

217

Run

Save

Schedule

Clear

Send feedback

Query results

Table details

Query 400980

Execution

Data

Visualize

Completed, started on November 04, 2022 at 06:22:58

ELAPSED TIME: 00 m 02 s

Rows returned (2)

Export

Search rows

< 1 >

atm_number	atm_manufacturer	location	weekday	total_transaction_count
103	Diebold Nixdorf	Vejgaard	Friday	4757
2	NCR	Vejgaard	Friday	6290