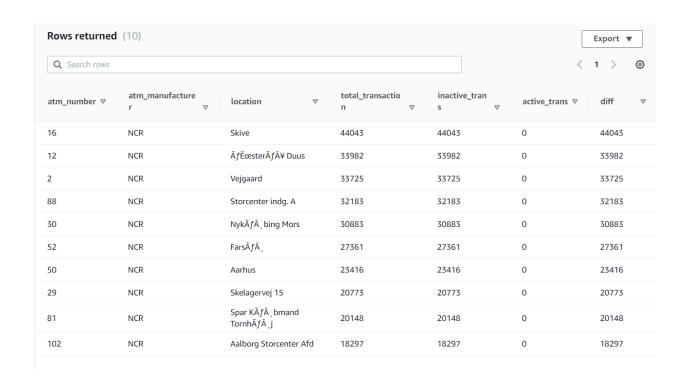# Solving analytical queries on Redshift Cluster

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
        d.atm_number,
        d.atm_manufacturer,
        l.location,
        count(*) as total_transaction,
        sum(case when atm_status = 'Inactive' then 1 else 0 end) as inactive_trans,
        sum(case when atm_status = 'Active' then 1 else 0 end) as active_trans,
        sum(case when atm_status = 'Inactive' then 1 else 0 end) -  sum(case when atm_status
= 'Active' then 1 else 0 end) as diff

from
        etlproject.fact_atm_trans f
inner join
        etlproject.dim_atm d
on
        d.atm_id = f.atm_id
inner join
        etlproject.dim_location l
on
         l.location_id  =  d.atm_location_id
where
        atm_status in ('Inactive', 'Active')
group by d.atm_number, d.atm_manufacturer, l.location
order by diff desc
limit 10
;
```

Rows returned (10)

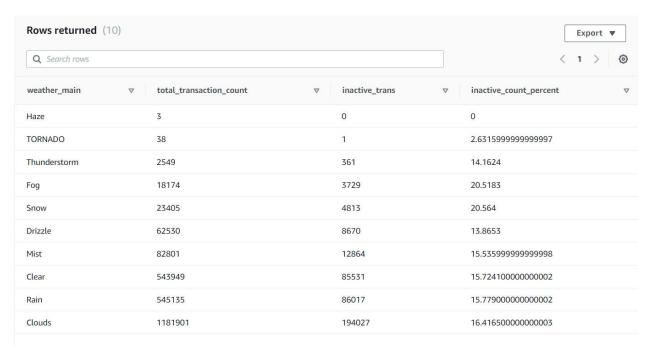| atm_number ▽	atm_manufacturer ▽	location ▽	total_transaction ▽	inactive_trans ▽	active_trans ▽	diff ▽
16	NCR	Skive	44043	44043	0	44043
12	NCR	ÃƒËœesterÃƒÂ¥ Duus	33982	33982	0	33982
2	NCR	Vejgaard	33725	33725	0	33725
88	NCR	Storcenter indg. A	32183	32183	0	32183
30	NCR	NykÃƒÂ¸bing Mors	30883	30883	0	30883
52	NCR	FarsÃƒÂ¸	27361	27361	0	27361
50	NCR	Aarhus	23416	23416	0	23416
29	NCR	Skelagervej 15	20773	20773	0	20773
81	NCR	Spar KÃƒÂ¸bmand TornhÃƒÂ¸j	20148	20148	0	20148
102	NCR	Aalborg Storcenter Afd	18297	18297	0	18297

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

```
select
        weather_main,
        count(*) as total_transaction_count,
        sum(case when atm_status = 'Inactive' then 1 else 0 end) as inactive_trans,
        round(cast(sum(case when atm_status = 'Inactive' then 1 else 0 end) as
float)/cast(count(*) as float)  * 100.00, 4) as inactive_count_percent

from
etlproject.fact_atm_trans f
where
        atm_status in ('Inactive', 'Active')
    and weather_main <> ''
group by weather_main
;
```

Rows returned (10)

weather_main	total_transaction_count	inactive_trans	inactive_count_percent
Haze	3	0	0
TORNADO	38	1	2.6315999999999997
Thunderstorm	2549	361	14.1624
Fog	18174	3729	20.5183
Snow	23405	4813	20.564
Drizzle	62530	8670	13.8653
Mist	82801	12864	15.535999999999998
Clear	543949	85531	15.724100000000002
Rain	545135	86017	15.779000000000002
Clouds	1181901	194027	16.416500000000003

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

```
select
        d.atm_number,
        d.atm_manufacturer,
    l.location,
    count(*) as total_transaction
from
        etlproject.fact_atm_trans f
inner join
        etlproject.dim_atm d
on
        d.atm_id = f.atm_id
inner join
        etlproject.dim_location l
on
        l.location_id = d.atm_location_id
group by d.atm_number, d.atm_manufacturer, l.location
order by  total_transaction desc
limit 10
;
```
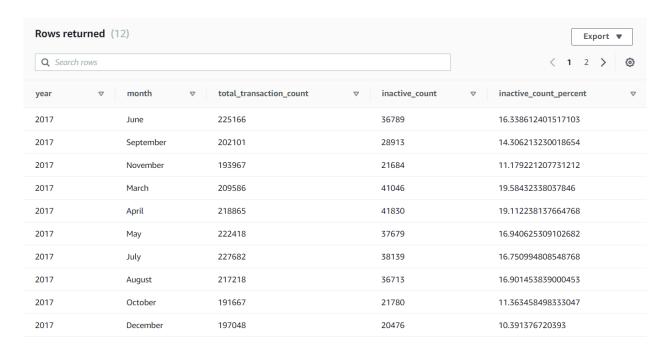
Rows returned (10)   Export ▼

Q Search rows   ⟨ 1 ⟩ ⚙

atm_number	atm_manufacturer	location	total_transaction
39	NCR	Svenstrup	55380
20	NCR	Bispensgade	54211
10	NCR	NÃƒÂ¸rresundby	53794
24	NCR	Hobro	53378
45	NCR	Abildgaard	53198
16	NCR	Skive	44043
40	Diebold Nixdorf	Frederikshavn	43767
1	NCR	NÃƒÂ¦stved	42787
41	Diebold Nixdorf	Skagen	42732
48	Diebold Nixdorf	BrÃƒÂ¸nderslev	42493

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

```
select
        year,
        month,
        count(*) as total_transaction_count,
        sum(case when atm_status = 'Inactive' then 1 else 0 end) inactive_count,
        cast(sum(case when atm_status = 'Inactive' then 1 else 0 end) as float)/cast(count(*) as
float)*100.0  inactive_count_percent
from
        etlproject.fact_atm_trans f
inner join
        etlproject.dim_date dt
on
        dt.date_id  =  f.date_id
group by month, year
;
```

Rows returned (12)

Export ▼

Q Search rows

〈 1 2 〉 ⚙

year	month	total_transaction_count	inactive_count	inactive_count_percent
2017	June	225166	36789	16.338612401517103
2017	September	202101	28913	14.306213230018654
2017	November	193967	21684	11.179221207731212
2017	March	209586	41046	19.58432338037846
2017	April	218865	41830	19.112238137664768
2017	May	222418	37679	16.940625309102682
2017	July	227682	38139	16.750994808548768
2017	August	217218	36713	16.901453839000453
2017	October	191667	21780	11.363458498333047
2017	December	197048	20476	10.391376720393

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

```
select
        d.atm_number,
        d.atm_manufacturer,
        l.location,
        sum(transaction_amount) as total_transaction_amount
from
        etlproject.fact_atm_trans f
inner join
        etlproject.dim_atm d
on
        d.atm_id = f.atm_id
inner join
        etlproject.dim_location l
on
        l.location_id  =  d.atm_location_id
group by d.atm_number, d.atm_manufacturer, l.location
order by total_transaction_amount desc
limit 10
;
```

Rows returned (10)   Export ▼

Q Search rows   ‹ 1 › ⚙

atm_number ▽	atm_manufacturer ▽	location ▽	total_transaction_amount ▽
39	NCR	Svenstrup	277097637
20	NCR	Bispensgade	271008803
24	NCR	Hobro	268289882
10	NCR	NÃƒÂ¸rresundby	267379103
45	NCR	Abildgaard	265639616
16	NCR	Skive	220677013
40	Diebold Nixdorf	Frederikshavn	219812287
41	Diebold Nixdorf	Skagen	214127315
1	NCR	NÃƒÂ¦stved	213721117
48	Diebold Nixdorf	BrÃƒÂ¸nderslev	212883099

6. Number of failed ATM transactions across various card types

```sql
select
        dm.card_type,
        count(*) as total_transaction_count,
        sum(case when atm_status = 'Inactive' then 1 else 0 end) as inactive_count,
        cast(sum(case when atm_status = 'Inactive' then 1 else 0 end) as float)/ cast(count(*) as
float) * 100.0 as inactive_count_percent
from
        etlproject.fact_atm_trans f
inner join
        etlproject.dim_card_type dm
on
        dm.card_type_id  = f.card_type_id
where
        atm_status in ('Inactive', 'Active')
group by dm.card_type
;
```

Rows returned (12)   Export ▾

🔍 Search rows   ‹ 1 2 › ⚙

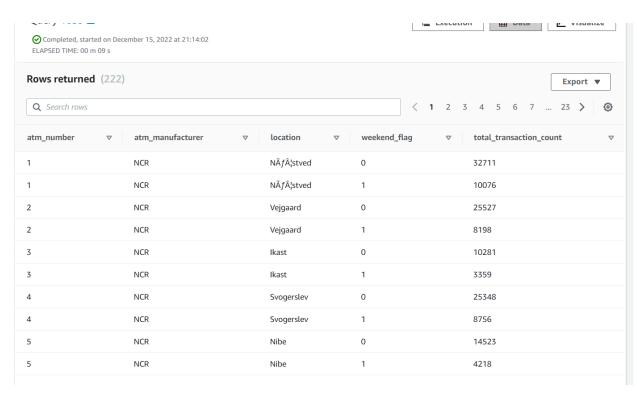| card_type	total_transaction_count	inactive_count	inactive_count_percent
Visa Dankort - on-us	748805	112972	15.086971908574329
Visa Dankort	427840	60547	14.151785714285714
VISA	170828	30713	17.97890275598848
Dankort	28581	4557	15.94415870683321
Mastercard - on-us	458226	86000	18.768031495375645
HÃƒÂ¦vekort - on-us	62487	10331	16.533038872085392
MasterCard	400507	63482	15.850409605824616
Dankort - on-us	143813	24680	17.161174580879337
CIRRUS	17362	2953	17.008409169450527
HÃƒÂ¦vekort	8459	1208	14.28064783071285

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
        d.atm_number,
        d.atm_manufacturer,
        l.location,
        case when dt.weekday in ('Sunday', 'Saturday') then 1 else 0 end   as weekend_flag,
        count(*)  as total_transaction_count
from
        etlproject.fact_atm_trans f
inner join
        etlproject.dim_atm d
on
        d.atm_id = f.atm_id
inner join
        etlproject.dim_location l
on
         l.location_id  =  d.atm_location_id
inner join
        etlproject.dim_date dt
on
         dt.date_id  =  f.date_id
group by d.atm_number, d.atm_manufacturer, l.location, weekend_flag
order by d.atm_number, d.atm_manufacturer, l.location, weekend_flag, total_transaction_count
;
```

Query 1000

✓ Completed, started on December 15, 2022 at 21:14:02
ELAPSED TIME: 00 m 09 s

Rows returned (222)

🔍 Search rows   ‹ **1** 2 3 4 5 6 7 … 23 › ⚙

atm_number ▽	atm_manufacturer ▽	location ▽	weekend_flag ▽	total_transaction_count ▽
1	NCR	NÃƒÂ¦stved	0	32711
1	NCR	NÃƒÂ¦stved	1	10076
2	NCR	Vejgaard	0	25527
2	NCR	Vejgaard	1	8198
3	NCR	Ikast	0	10281
3	NCR	Ikast	1	3359
4	NCR	Svogerslev	0	25348
4	NCR	Svogerslev	1	8756
5	NCR	Nibe	0	14523
5	NCR	Nibe	1	4218

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

```
with t1 as (
  select
     d.atm_number,
     d.atm_manufacturer,
     l.location,
     dt.weekday,
     count(*) as total_transaction_count
  from
     etlproject.fact_atm_trans f
  inner join etlproject.dim_atm d
  on
     d.atm_id = f.atm_id
  inner join
     etlproject.dim_date dt
  on
     dt.date_id = f.date_id
  inner join
     etlproject.dim_location l
  on
     l.location_id = d.atm_location_id
  where
     l.location = 'Vejgaard'
  group by d.atm_number, d.atm_manufacturer, l.location, dt.weekday
),
t2 as (
        select * from t1
)
select
        atm_number,
   atm_manufacturer,
   location,
        weekday,
   total_transaction_count
from
        t1 t
where
        t.total_transaction_count = (select max(total_transaction_count)
                                          from t2
                                where
                                        t.atm_number = t2.atm_number
                )
;
```

Query results | Table details

Query **1983** ↗

✓ Completed, started on December 15, 2022 at 21:38:16
ELAPSED TIME: 00 m 27 s

Execution | **Data** | Visualize

Rows returned (2)

Export ▼

🔍 Search rows

‹ 1 › ⚙

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