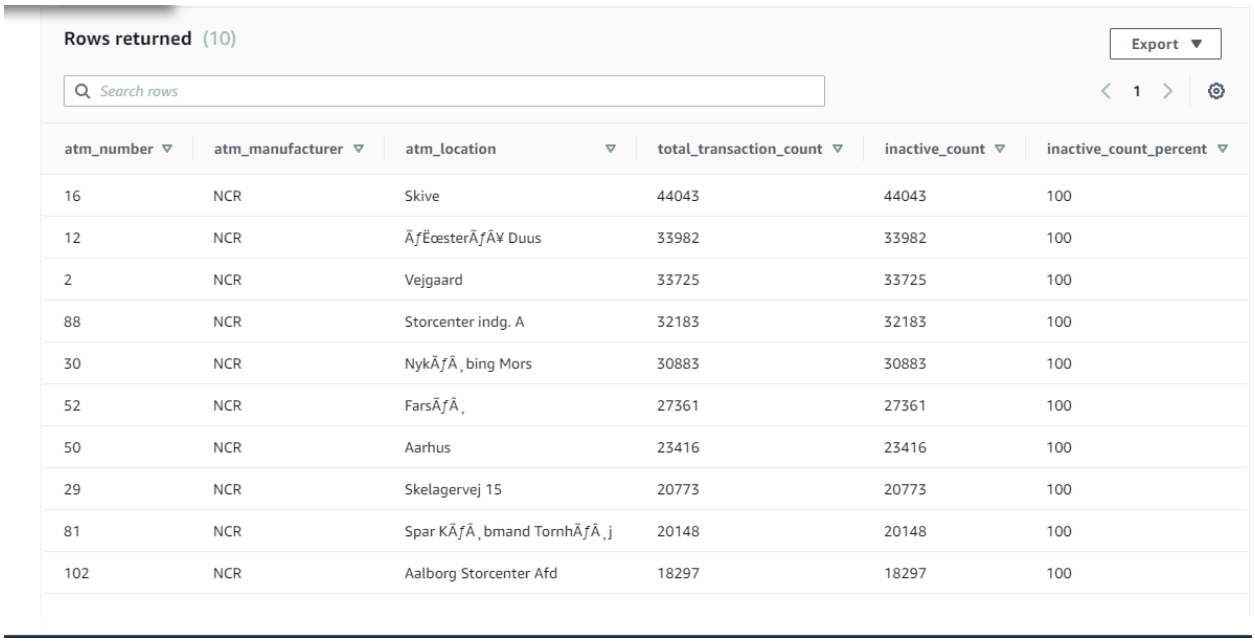
Solving analytical queries on RedShift Cluster

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

```
Select atm_number, atm_manufacturer, atm_location, total_transaction_count, inactive_count,
(inactive_count*100/total_transaction_count) as inactive_count_percent
From
 (select dim_atm.atm_number, atm_manufacturer,
total_transaction_count,inactive_count,weather_loc_id
from
 (select atm_id,weather_loc_id, count(transaction_amount)
total_transaction_count,atm_status, count(atm_status) inactive_count
from
etl_project.fact_atm_trans
where atm_status = 'Inactive'
group by atm_id,atm_status,weather_loc_id
order by total_transaction_count desc limit 10) f, etl_project.DIM_ATM
where f.atm_id = DIM_ATM.atm_number and f.weather_loc_id = dim_atm.atm_location_id
order by f.total_transaction_count desc) d,etl_project.dim_location
where dim_location.atm_location_id = d.weather_loc_id
order by d.total_transaction_count desc limit 10;
```



Rows returned (10)

Export

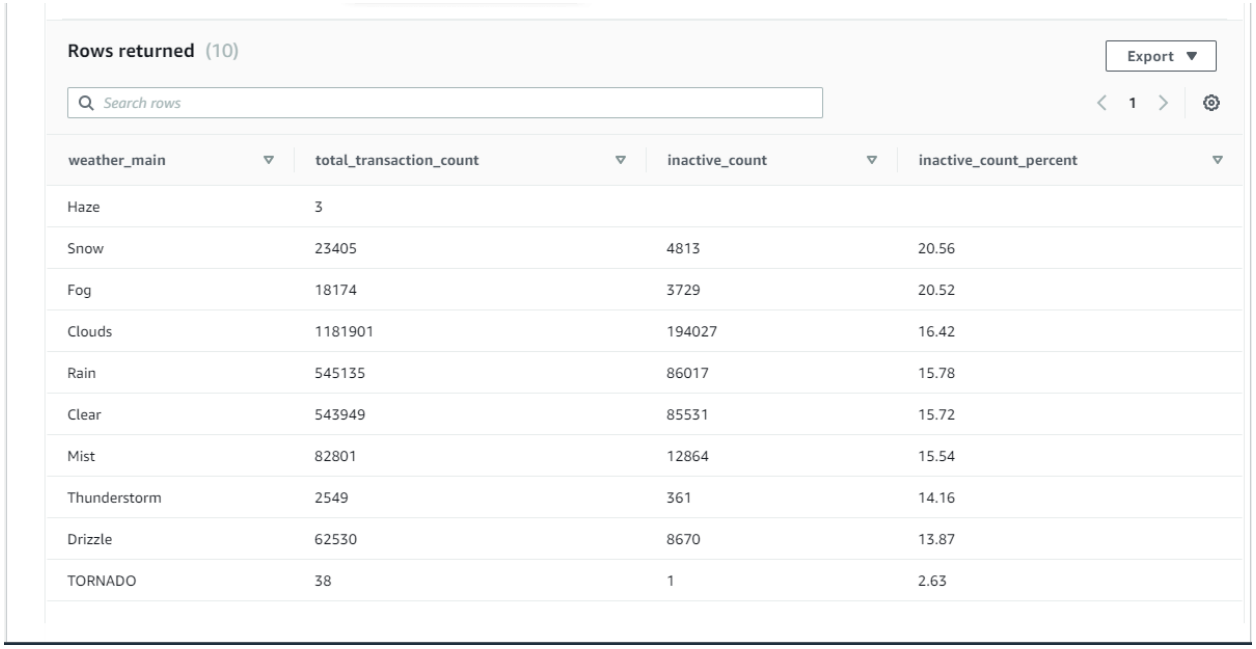
Search rows

1

atm_number	atm_manufacturer	atm_location	total_transaction_count	inactive_count	inactive_count_percent
16	NCR	Skive	44043	44043	100
12	NCR	ÃƒËœesterÃƒÂ¥ Duus	33982	33982	100
2	NCR	Vejgaard	33725	33725	100
88	NCR	Storcenter indg. A	32183	32183	100
30	NCR	NykÃƒÂ¸bing Mors	30883	30883	100
52	NCR	FarsÃƒÂ¸	27361	27361	100
50	NCR	Aarhus	23416	23416	100
29	NCR	Skelagervej 15	20773	20773	100
81	NCR	Spar KÃƒÂ¸bmand TornhÃƒÂ¸j	20148	20148	100
102	NCR	Aalborg Storcenter Afd	18297	18297	100

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

```
Select
 l.weather_main,l.total_transaction_count,f.inactive_count,
convert(decimal(7,2),(100 * convert(float,f.inactive_count)/convert(float,l.total_transaction_count))) as
inactive_count_percent
from
 (select weather_main,count(transaction_amount) total_transaction_count
from
etl_project.fact_atm_trans
where weather_main is not null and TRIM(weather_main) > ''
group by weather_main) l
LEFT JOIN
(select weather_main ,count(atm_status) as inactive_count
From
 etl_project.fact_atm_trans
where weather_main is not null and TRIM(weather_main) > ''
group by weather_main,atm_status having
case when atm_status = 'Inactive'
then atm_status = 'Inactive' else NULL end )
f on l.weather_main = f.weather_main order by inactive_count_percent desc ;
```



Rows returned (10)

Export

Search rows

1

weather_main	total_transaction_count	inactive_count	inactive_count_percent
Haze	3		
Snow	23405	4813	20.56
Fog	18174	3729	20.52
Clouds	1181901	194027	16.42
Rain	545135	86017	15.78
Clear	543949	85531	15.72
Mist	82801	12864	15.54
Thunderstorm	2549	361	14.16
Drizzle	62530	8670	13.87
TORNADO	38	1	2.63

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

```
select atm_number, atm_manufacturer, atm_location, total_transaction_count
from
 (select DIM_ATM.atm_number, atm_manufacturer, total_transaction_count,weather_loc_id
From
 (select atm_id,weather_loc_id, count(transaction_amount) total_transaction_count
from
etl_project.fact_atm_trans
group by atm_id,weather_loc_id
order by total_transaction_count desc limit 10) f, etl_project.DIM_ATM
where f.atm_id = DIM_ATM.atm_number and f.weather_loc_id = DIM_ATM.atm_location_id
order by f.total_transaction_count desc) d,etl_project.dim_location
where dim_location.atm_location_id = d.weather_loc_id
order by d.total_transaction_count desc limit 10;
```

Rows returned (10)

Export

Search rows

1

atm_number	atm_manufacturer	atm_location	total_transaction_count
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

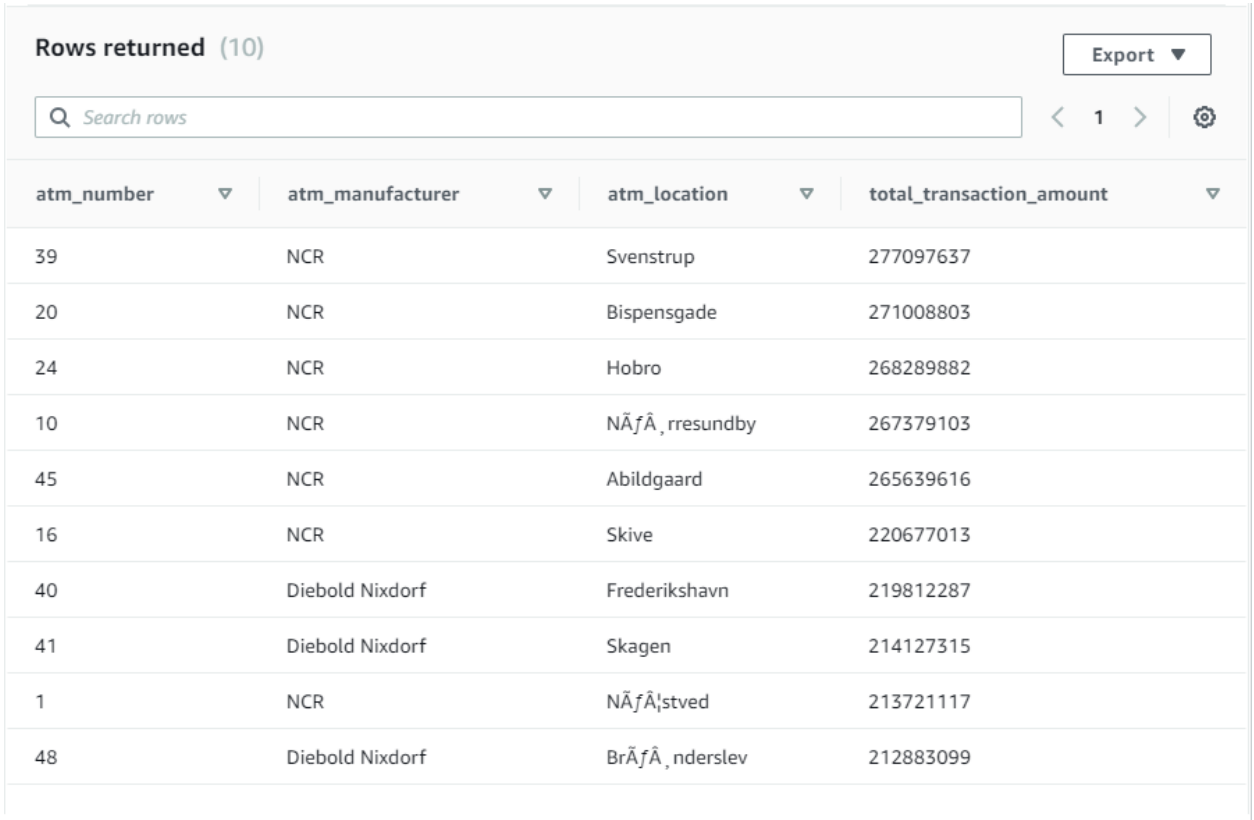
4. **Number of overall ATM transactions going inactive per month for each month**

```
SELECT a.year,
a.month,
a.total_transaction_count,
b.inactive_count,
convert( decimal(7,2), ( 100 * convert(float, b.inactive_count) / convert(float,
a.total_transaction_count) ) ) AS inactive_count_percent
FROM
(SELECT year, month,count(transaction_amount) total_transaction_count
FROM etl_project.fact_atm_trans, etl_project.dim_date
WHERE fact_atm_trans.date_id = dim_date.date_id
GROUP BY year, month ) a
LEFT JOIN
(SELECT year, month, count(atm_status) inactive_count
FROM etl_project.fact_atm_trans, etl_project.dim_date
WHERE atm_status = 'Inactive' AND fact_atm_trans.date_id = dim_date.date_id
GROUP BY year, month ) b
ON a.month = b.month AND a.year = b.year;
```

year	month	total_transaction_count	inactive_count	inactive_count_percent
2017	June	225166	36789	16.34
2017	October	191667	21780	11.36
2017	March	209586	41046	19.58
2017	December	197048	20476	10.39
2017	August	217218	36713	16.90
2017	May	222418	37679	16.94
2017	April	218865	41830	19.11
2017	November	193967	21684	11.18
2017	September	202101	28913	14.31
2017	January	180195	35953	19.95

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

```
select atm_number, atm_manufacturer, atm_location, total_transaction_amount
from
 (select dim_atm.atm_number, atm_manufacturer, total_transaction_amount , weather_loc_id
From
 (select atm_id,weather_loc_id, sum(transaction_amount) total_transaction_amount
from
etl_project.fact_atm_trans
group by atm_id,weather_loc_id
order by total_transaction_amount desc limit 10) f, etl_project.dim_atm
where f.atm_id = dim_atm.atm_number and f.weather_loc_id = dim_atm.atm_location_id
order by f.total_transaction_amount desc) d,etl_project.dim_location
where dim_location.atm_location_id = d.weather_loc_id
order by d.total_transaction_amount desc limit 10;
```



Rows returned (10)

Export

Search rows

1

atm_number	atm_manufacturer	atm_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

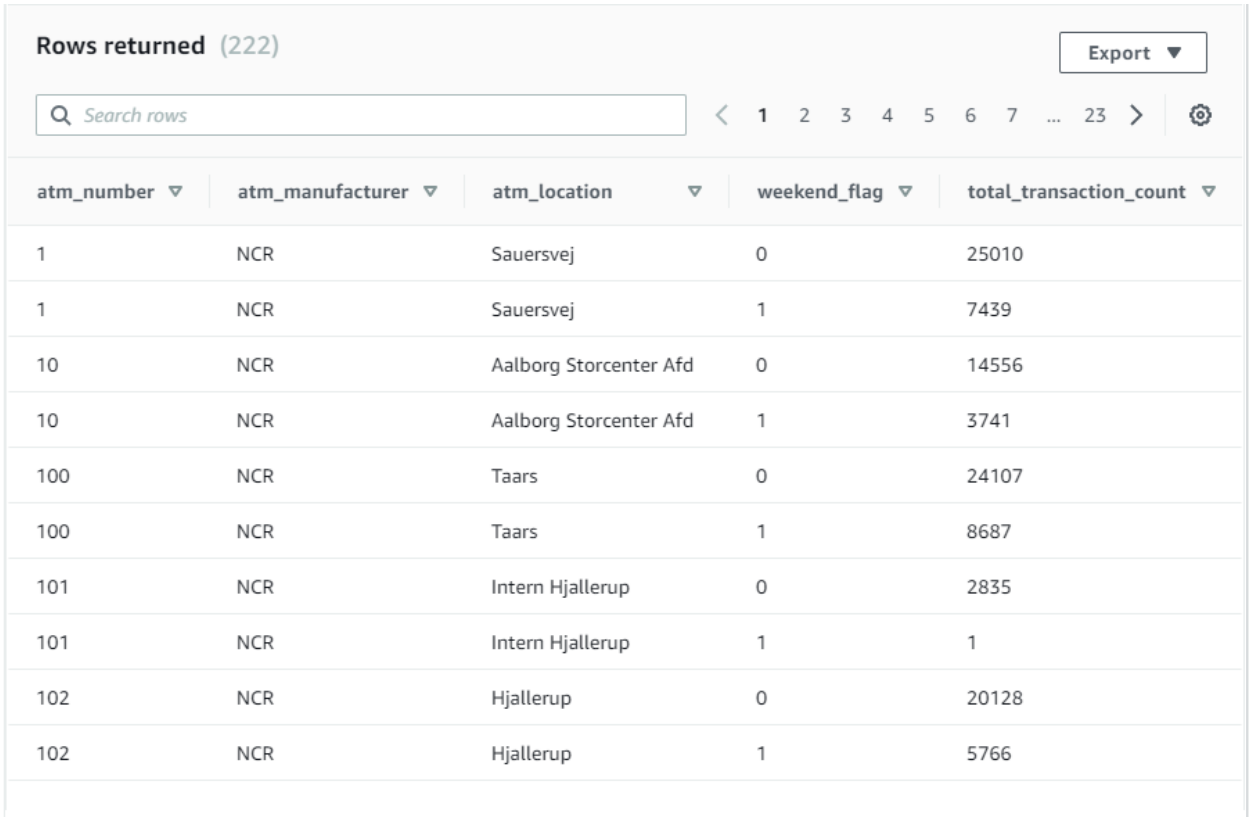
6. Number of failed ATM transactions across various card types

```
SELECT a.card_type,
a.total_transaction_count,
b.inactive_count,
convert( decimal(7,
2),
( 100 * convert(float,
b.inactive_count) / convert(float,
a.total_transaction_count) ) ) AS inactive_count_percent
FROM
(SELECT dim_card_type.card_type_id, card_type, count(transaction_amount) total_transaction_count
FROM etl_project.fact_atm_trans, etl_project. dim_card_type
WHERE fact_atm_trans.card_type_id = dim_card_type.card_type_id
GROUP BY card_type, dim_card_type.card_type_id ) a
LEFT JOIN
(SELECT fact_atm_trans.card_type_id, card_type, count(atm_status) inactive_count
FROM etl_project.fact_atm_trans, etl_project. dim_card_type
WHERE atm_status = 'Inactive' AND fact_atm_trans.card_type_id = dim_card_type.card_type_id
GROUP BY card_type, fact_atm_trans.card_type_id ) b
ON a.card_type_id = b.card_type_id
ORDER BY inactive_count_percent desc;
```

card_type	total_transaction_count	inactive_count	inactive_count_percent
Mastercard - on-us	458226	86000	18.77
VISA	170828	30713	17.98
Dankort - on-us	143813	24680	17.16
CIRRUS	17362	2953	17.01
HÃƒÂ¦vekort - on-us	62487	10331	16.53
Dankort	28581	4557	15.94
MasterCard	400507	63482	15.85
Visa Dankort - on-us	748805	112972	15.09
HÃƒÂ¦vekort	8459	1208	14.28
Visa Dankort	427840	60547	14.15

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.atm_location, case when d.weekday in ('Saturday','Sunday')
then '1' else '0' end as weekend_flag, count(*) total_transaction_count
from
 etl_project.fact_atm_trans f, etl_project.dim_atm a, etl_project.dim_location l, etl_project.dim_date d
where f.atm_id = a.atm_id and f.weather_loc_id = l.atm_location_id and f.date_id = d.date_id
 group by atm_number, atm_manufacturer, atm_location,
 case when weekday in ('Saturday','Sunday') then '1' else '0' end
order by atm_number asc, atm_number, atm_manufacturer, atm_location,
 case when weekday in ('Saturday','Sunday') then '1' else '0' end asc;
```



Rows returned (222)

Export

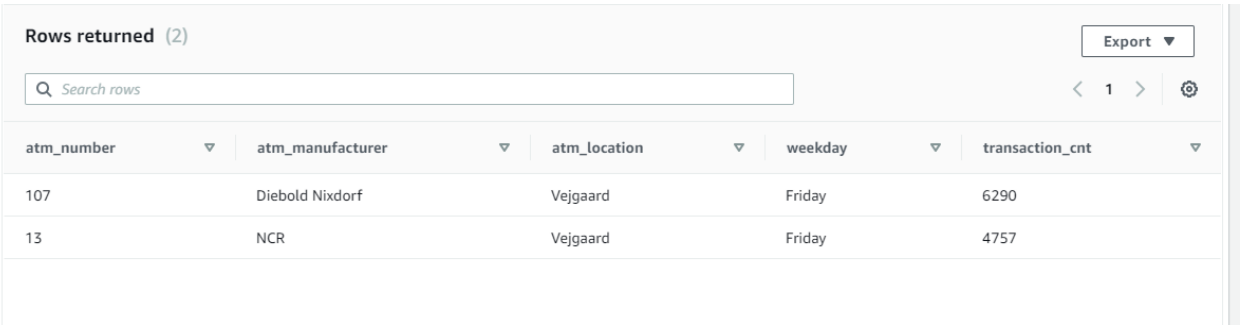
Search rows

1 2 3 4 5 6 7 ... 23

atm_number	atm_manufacturer	atm_location	weekend_flag	total_transaction_count
1	NCR	Sauersvej	0	25010
1	NCR	Sauersvej	1	7439
10	NCR	Aalborg Storcenter Afd	0	14556
10	NCR	Aalborg Storcenter Afd	1	3741
100	NCR	Taars	0	24107
100	NCR	Taars	1	8687
101	NCR	Intern Hjallerup	0	2835
101	NCR	Intern Hjallerup	1	1
102	NCR	Hjallerup	0	20128
102	NCR	Hjallerup	1	5766

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

```
select atm_number,atm_manufacturer,atm_location,weekday,transaction_cnt
from
(select a.atm_number,a.atm_manufacturer,l.atm_location,weekday, count(TRANS_ID) AS
transaction_cnt, row_number() over(partition by atm_number,atm_manufacturer,atm_location order
by transaction_cnt desc) as tc
From
 etl_project.fact_atm_trans f, etl_project.dim_atm a, etl_project.dim_location l, etl_project.dim_date d
where f.atm_id = a.atm_id and f.weather_loc_id = l.atm_location_id and f.date_id = d.date_id and
atm_location = 'Vejgaard'
group by atm_number, atm_manufacturer, atm_location,weekday
order by atm_number asc, atm_manufacturer, atm_location,case when weekday in ('Saturday','Sunday')
then '1' else '0' end asc) where tc = 1
```



Rows returned (2)

Export

Search rows

1

atm_number	atm_manufacturer	atm_location	weekday	transaction_cnt
107	Diebold Nixdorf	Vejgaard	Friday	6290
13	NCR	Vejgaard	Friday	4757