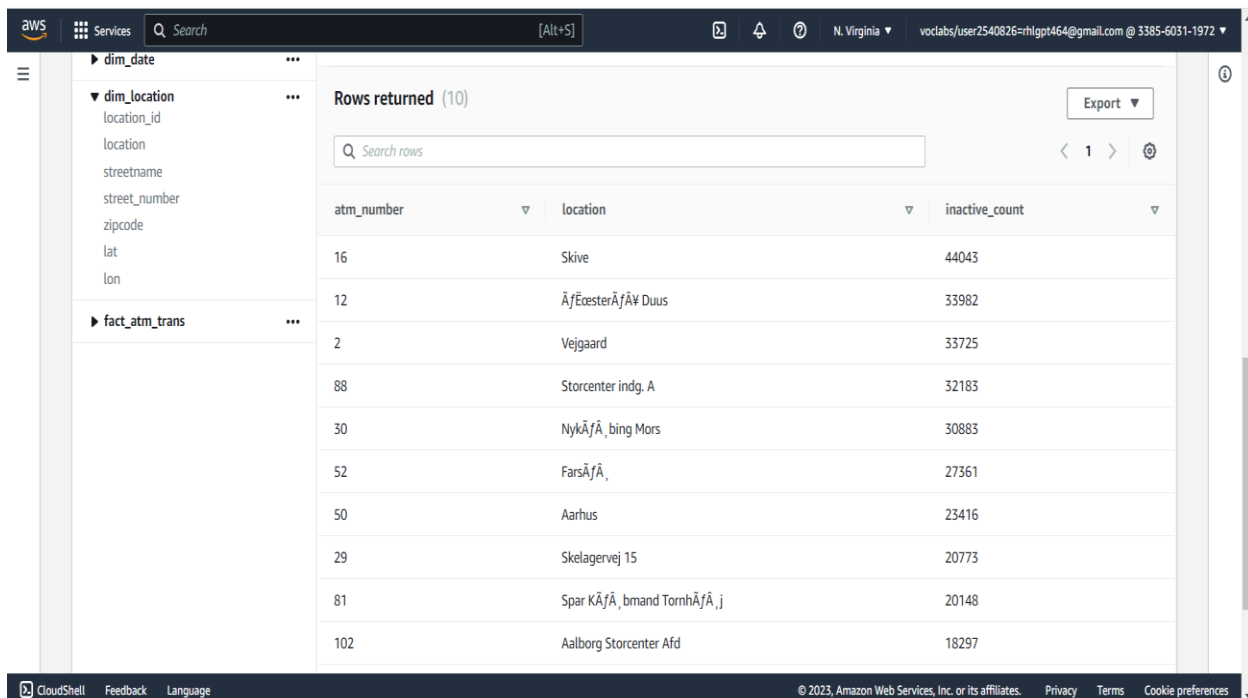


Solving analytical queries on Redshift Cluster

Queries 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, l.location, count(trans_id) as Inactive_count
from atm_details.dim_atm a, atm_details.dim_location l, atm_details.fact_atm_trans f
where f.atm_id = a.atm_id and a.atm_location_id = l.location_id and atm_status='Inactive'
group by a.atm_number,l.location
order by Inactive_count desc limit 10;
```

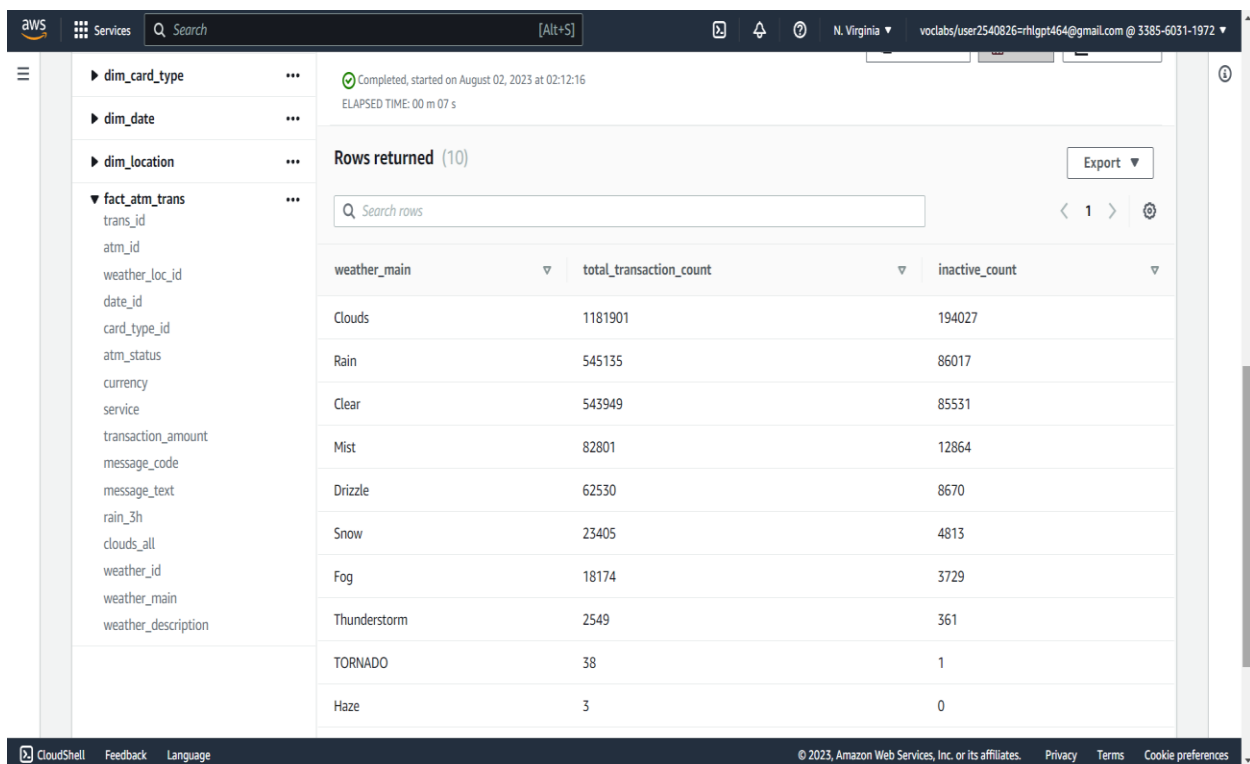


Rows returned (10)

atm_number	location	inactive_count
16	Skive	44043
12	Århus	33982
2	Vejgaard	33725
88	Storcenter indg. A	32183
30	Nykøbing Mors	30883
52	Farsø	27361
50	Aarhus	23416
29	Skelagervej 15	20773
81	Spar Kårebo, bmand Tornhøj	20148
102	Aalborg Storcenter Afd	18297

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

```
select weather_main,
count(trans_id) as Total_transaction_count, sum(case when atm_status = 'Inactive' then 1 else
0 end) as Inactive_count
from atm_details.fact_atm_trans
where weather_main != ' '
group by weather_main
order by Inactive_count desc limit 10;
```



Completed, started on August 02, 2023 at 02:12:16
ELAPSED TIME: 00 m 07 s

Rows returned (10)

Search rows

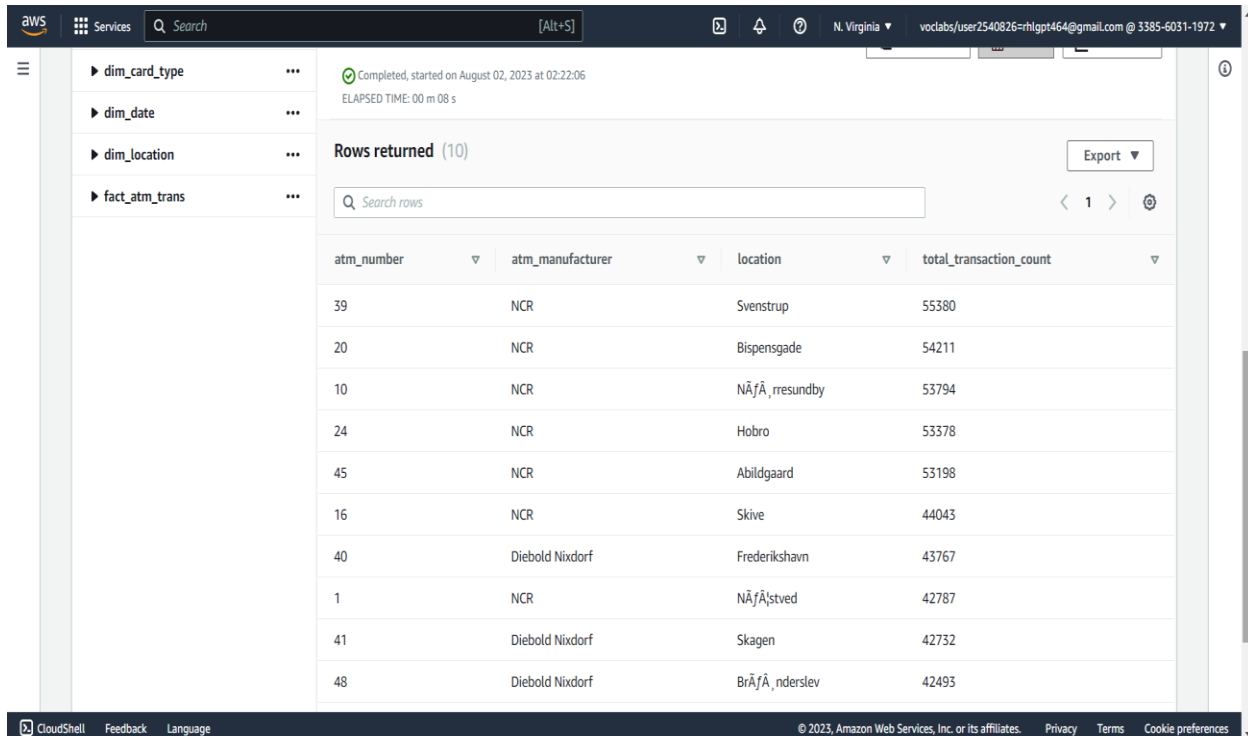
weather_main	total_transaction_count	inactive_count
Clouds	1181901	194027
Rain	545135	86017
Clear	545949	85531
Mist	82801	12864
Drizzle	62530	8670
Snow	23405	4813
Fog	18174	3729
Thunderstorm	2549	361
TORNADO	38	1
Haze	3	0

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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_details.fact_atm_trans f, atm_details.dim_atm a, atm_details.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;
```



Completed, started on August 02, 2023 at 02:22:06
ELAPSED TIME: 00 m 08 s

Rows returned (10)

Search rows

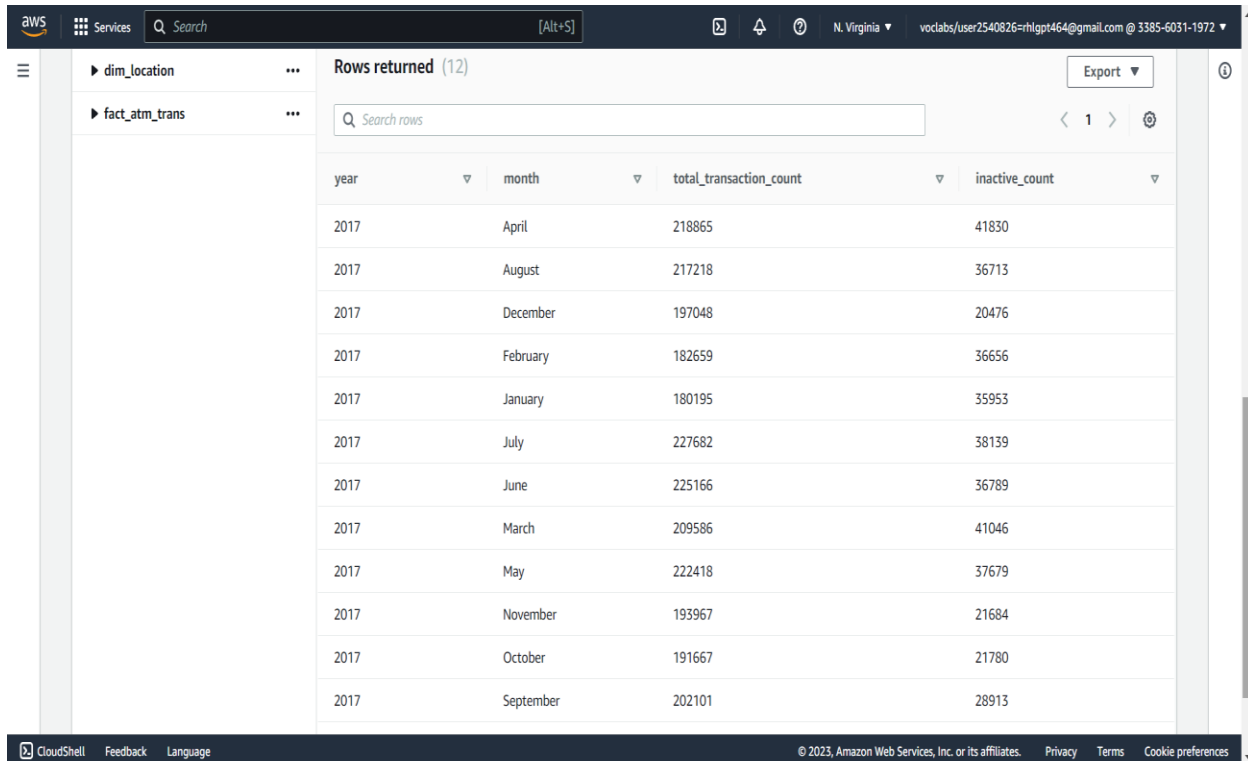
atm_number	atm_manufacturer	location	total_transaction_count
39	NCR	Svenstrup	55380
20	NCR	Bispensgade	54211
10	NCR	NÃfÃ, rresundby	53794
24	NCR	Hobro	53378
45	NCR	Abildgaard	53198
16	NCR	Skive	44043
40	Diebold Nixdorf	Frederikshavn	43767
1	NCR	NÃfÃstved	42787
41	Diebold Nixdorf	Skagen	42732
48	Diebold Nixdorf	BrÃfÃ, nderslev	42493

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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
from atm_details.fact_atm_trans f, atm_details.dim_date d
where f.date_id = d.date_id
group by d.year, d.month
order by d.year, d.month;
```

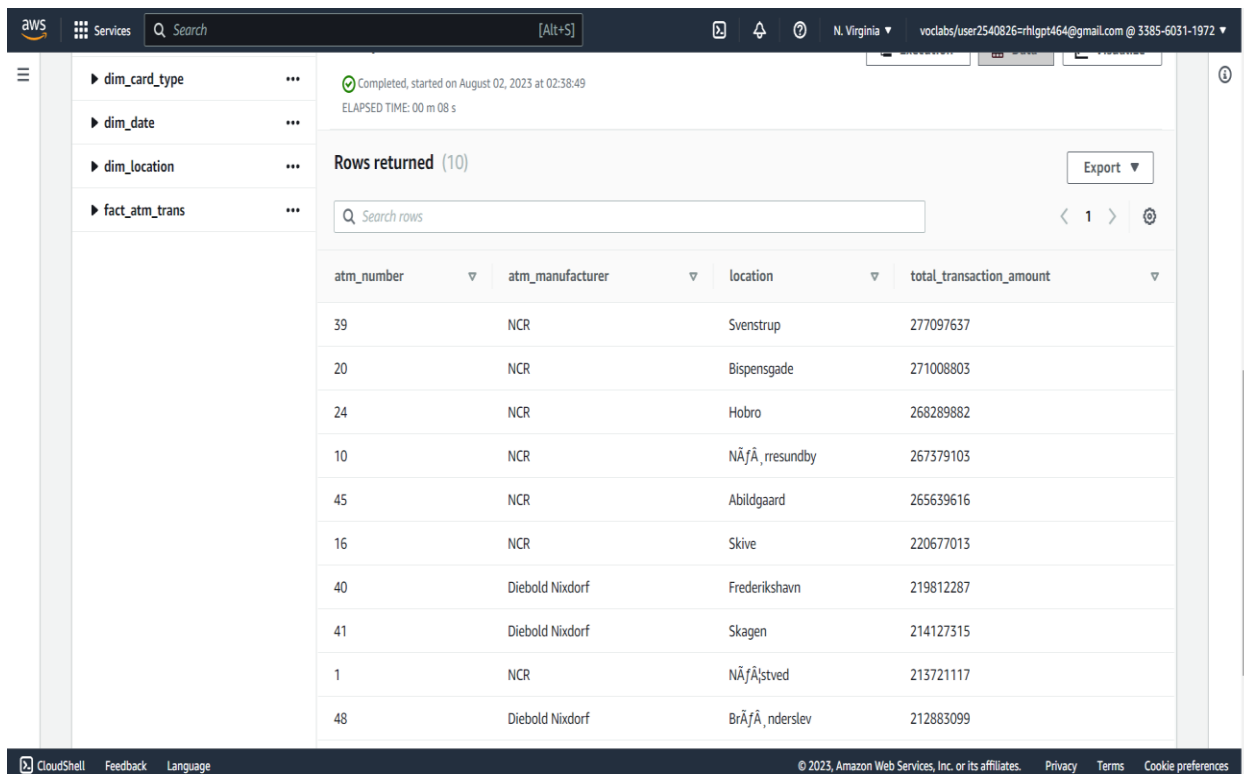


The screenshot shows the AWS CloudShell interface with a query result table. The table has 4 columns: year, month, total_transaction_count, and inactive_count. It displays 12 rows of data for the year 2017, one for each month. The total_transaction_count and inactive_count values are as follows:

year	month	total_transaction_count	inactive_count
2017	April	218865	41830
2017	August	217218	36713
2017	December	197048	20476
2017	February	182659	36656
2017	January	180195	35953
2017	July	227682	38139
2017	June	225166	36789
2017	March	209586	41046
2017	May	222418	37679
2017	November	193967	21684
2017	October	191667	21780
2017	September	202101	28913

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_details.fact_atm_trans f, atm_details.dim_atm a, atm_details.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;
```



Completed, started on August 02, 2023 at 02:38:49
ELAPSED TIME: 00 m 08 s

Rows returned (10)

Search rows

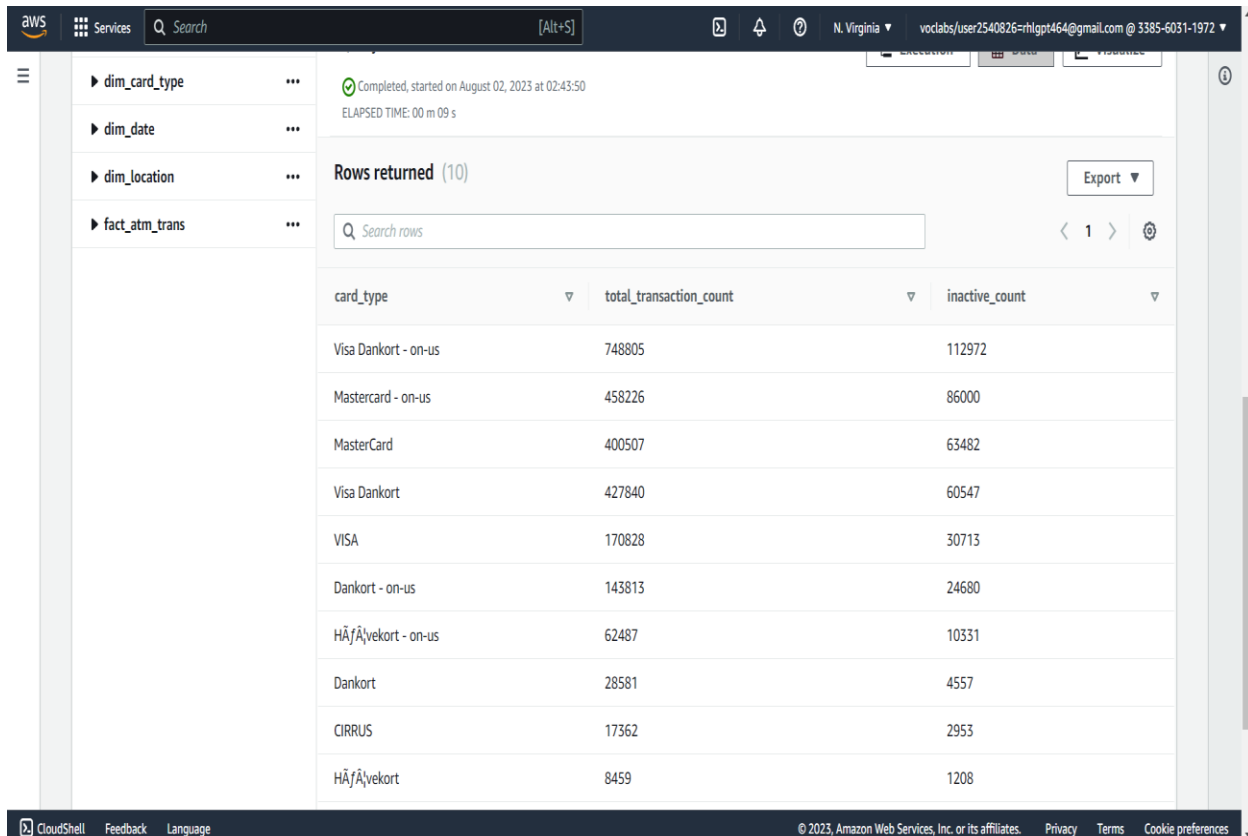
atm_number	atm_manufacturer	location	total_transaction_amount
39	NCR	Svenstrup	277097637
20	NCR	Bispensgade	271008803
24	NCR	Hobro	268289882
10	NCR	NÅfÅ, resundby	267379103
45	NCR	Abildgaard	265639616
16	NCR	Skive	220677013
40	Diebold Nixdorf	Frederikshavn	219812287
41	Diebold Nixdorf	Skagen	214127315
1	NCR	NÅfÅstved	213721117
48	Diebold Nixdorf	BrÅfÅ, nderslev	212883099

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6. Number of failed ATM transactions across various card types

```
select c.card_type,
count(trans_id) as total_transaction_count,
sum(case when atm_status = 'Inactive' then 1 else 0 end) as inactive_count
from atm_details.fact_atm_trans f, atm_details.dim_card_type c where f.card_type_id =
c.card_type_id
group by c.card_type
order by inactive_count desc
limit 10;
```



Completed, started on August 02, 2023 at 02:43:50
ELAPSED TIME: 00 m 09 s

Rows returned (10)

Search rows

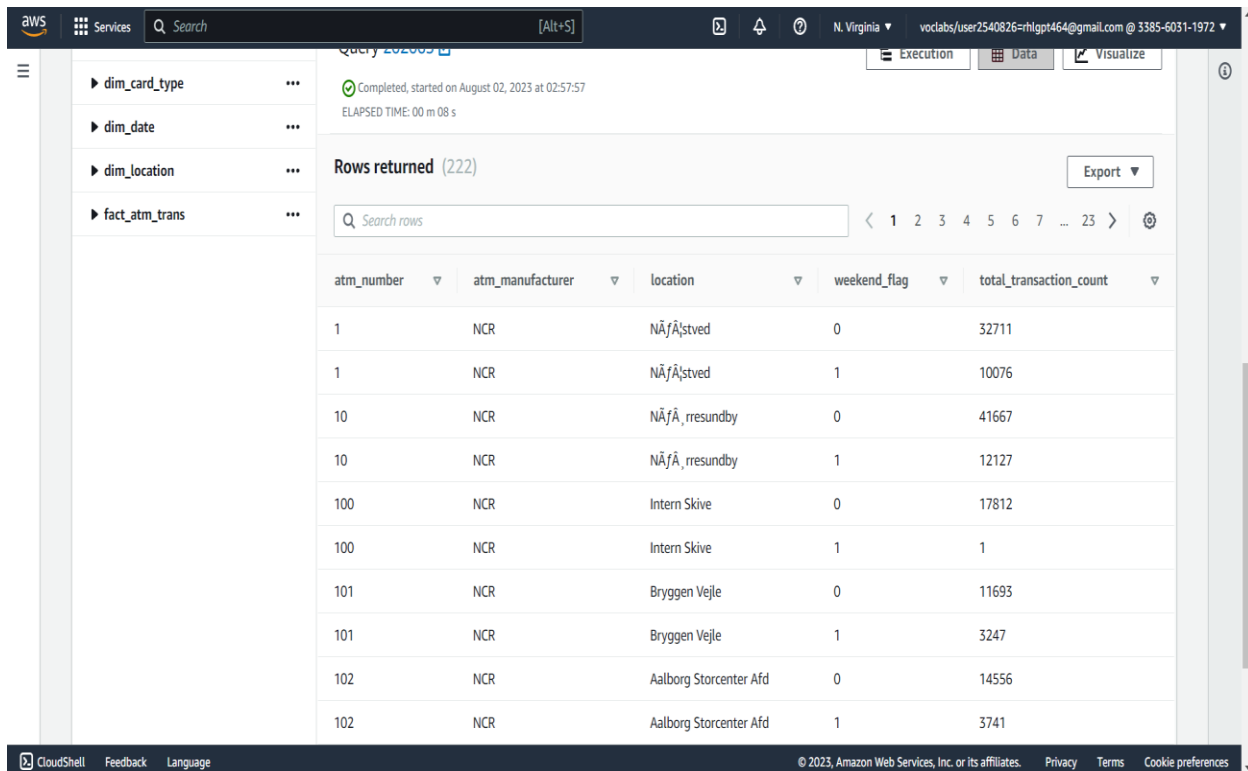
card_type	total_transaction_count	inactive_count
Visa Dankort - on-us	748805	112972
Mastercard - on-us	458226	86000
MasterCard	400507	63482
Visa Dankort	427840	60547
VISA	170828	30713
Dankort - on-us	143813	24680
HÃfÃ\vekort - on-us	62487	10331
Dankort	28581	4557
CIRRUS	17362	2953
HÃfÃ\vekort	8459	1208

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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_details.fact_atm_trans f, atm_details.dim_atm a, atm_details.dim_location l,
atm_details.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;
```



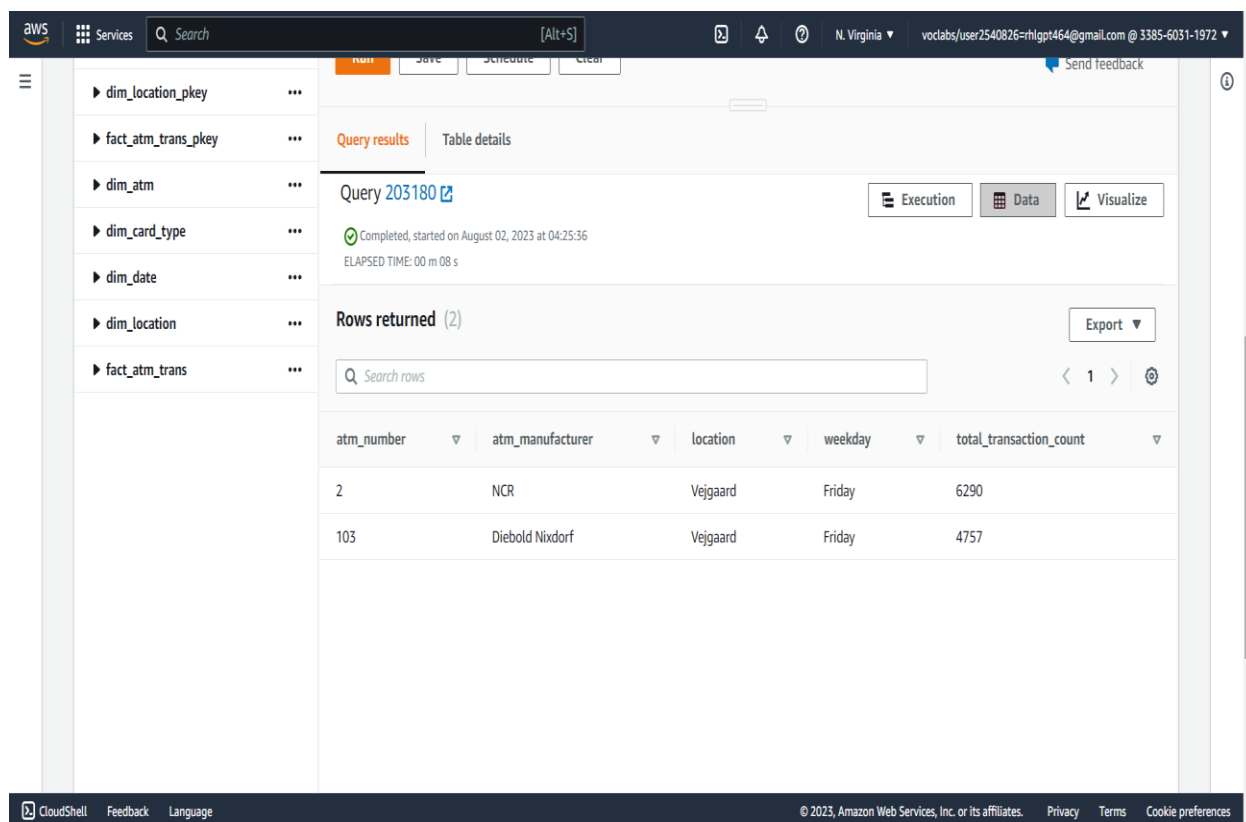
Query completed, started on August 02, 2023 at 02:57:57
ELAPSED TIME: 00 m 08 s

Rows returned (222)

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

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

```
select atm_number, atm_manufacturer, location, weekday, total_transaction_count from
(select a.atm_number, a.atm_manufacturer, l.location, d.weekday, count(trans_id) as
total_transaction_count,
ROW_NUMBER() OVER(PARTITION BY a.atm_number ORDER BY total_transaction_count
DESC) AS rank
from atm_details.fact_atm_trans f inner join atm_details.dim_atm a on f.atm_id = a.atm_id
inner join atm_details.dim_location l on a.atm_location_id = l.location_id inner join
atm_details.dim_date d on f.date_id = d.date_id
where l.location = 'Vejgaard'
group by a.atm_number, a.atm_manufacturer, l.location, d.weekday
order by total_transaction_count)
where rank=1
order by total_transaction_count DESC;
```



The screenshot shows the AWS CloudShell interface with a query executed. The query results are displayed in a table with the following columns: atm_number, atm_manufacturer, location, weekday, and total_transaction_count. The results show two rows for the location 'Vejgaard' on Friday.

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