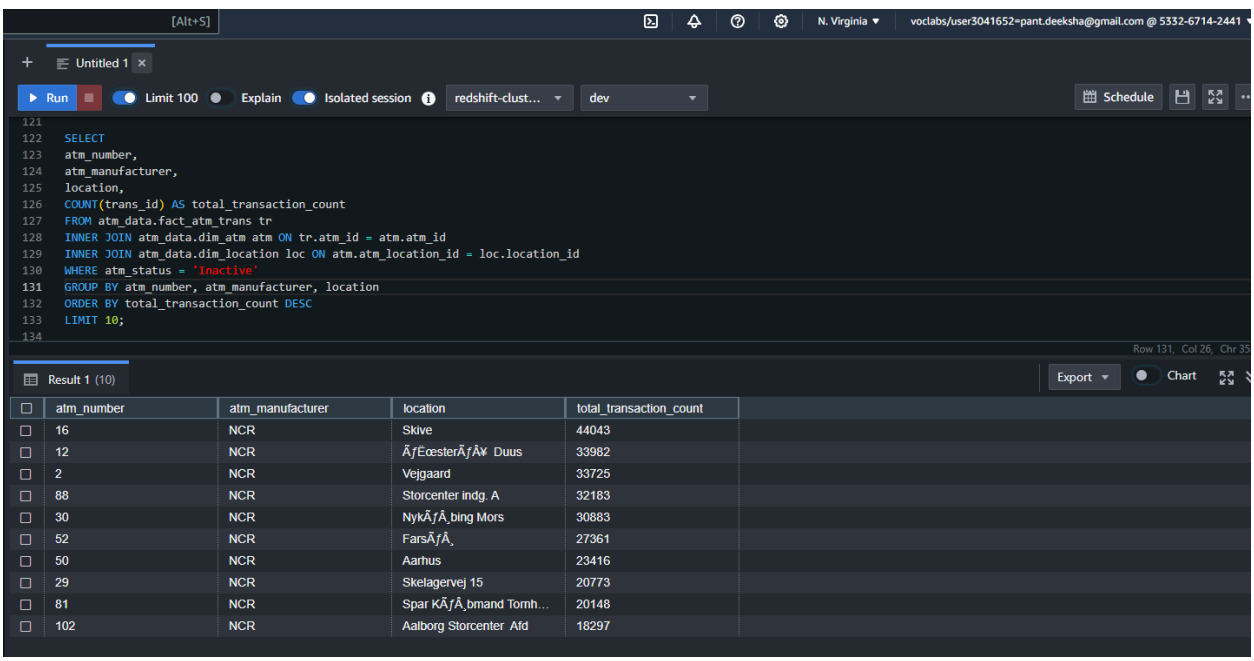
Solving analytical queries on Redshift Cluster

Queries 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
        atm_number,
        atm_manufacturer,
        location,
        COUNT(trans_id) AS total_transaction_count
FROM atm_data.fact_atm_trans tr
        INNER JOIN atm_data.dim_atm atm ON tr.atm_id = atm.atm_id
        INNER JOIN atm_data.dim_location loc ON atm.atm_location_id = loc.location_id
WHERE atm_status = 'Inactive'
GROUP BY atm_number, atm_manufacturer, location
ORDER BY total_transaction_count DESC
LIMIT 10;
```



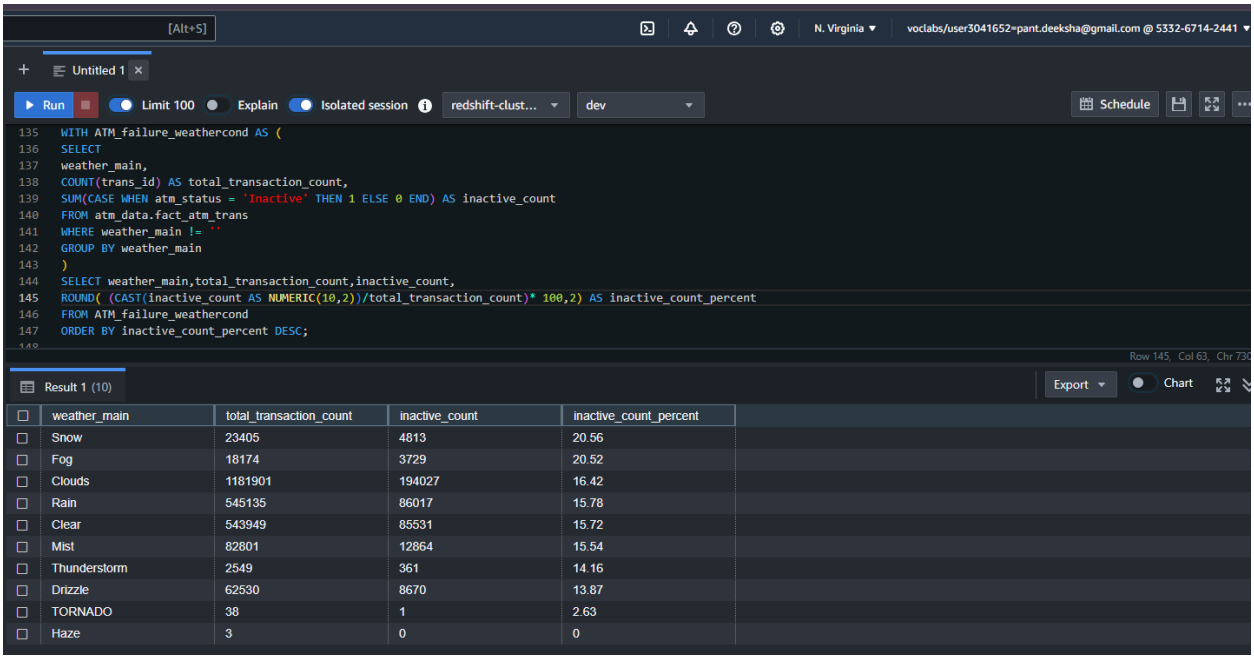
atm_number	atm_manufacturer	location	total_transaction_count
16	NCR	Skive	44043
12	NCR	ÃƒÈœsterÃƒÂ¥ Duus	33982
2	NCR	Vejgaard	33725
88	NCR	Storcenter indg. A	32183
30	NCR	NykÃƒÂ¸bing Mors	30883
52	NCR	FarsÃƒÂ¸	27361
50	NCR	Aarhus	23416
29	NCR	Skelagervej 15	20773
81	NCR	Spar KÃƒÂ¸bmand Tornh...	20148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

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

<Query>

```
WITH ATM_failure_weathercond AS (
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_data.fact_atm_trans
WHERE weather_main != ''
GROUP BY weather_main
)
SELECT
        weather_main,
        total_transaction_count,
        inactive_count,
        ROUND( (CAST(inactive_count AS NUMERIC(10,2))/total_transaction_count)* 100,2)
        AS inactive_count_percent
FROM ATM_failure_weathercond
ORDER BY inactive_count_percent DESC;
```

<Screenshot of the resultant table>



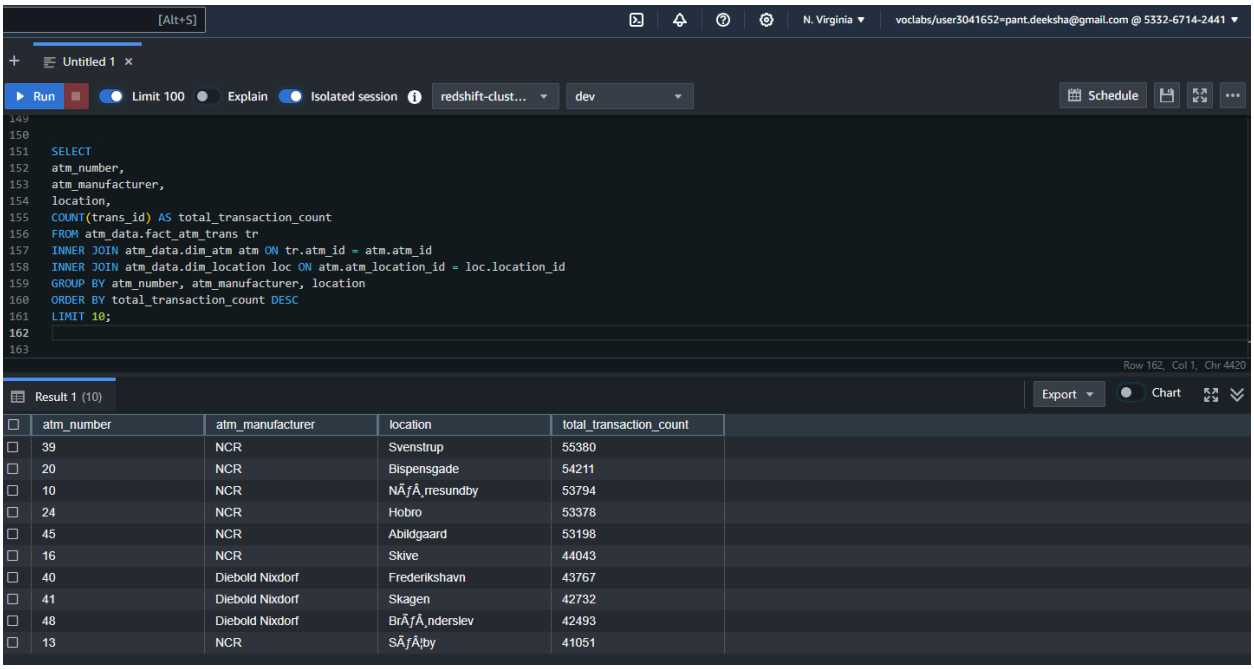
weather_main	total_transaction_count	inactive_count	inactive_count_percent
Snow	23405	4813	20.56
Fog	18174	3729	20.52
Clouds	1181901	194027	16.42
Rain	545135	86017	15.78
Clear	543949	85531	15.72
Mist	82801	12864	15.54
Thunderstorm	2549	361	14.16
Drizzle	62530	8670	13.87
TORNADO	38	1	2.63
Haze	3	0	0

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

<Query>

```
SELECT
        atm_number,
        atm_manufacturer,
        location,
        COUNT(trans_id) AS total_transaction_count
FROM atm_data.fact_atm_trans tr
        INNER JOIN atm_data.dim_atm atm ON tr.atm_id = atm.atm_id
        INNER JOIN atm_data.dim_location loc ON atm.atm_location_id = loc.location_id
GROUP BY atm_number, atm_manufacturer, location
ORDER BY total_transaction_count DESC
LIMIT 10;
```

<Screenshot of the resultant table>



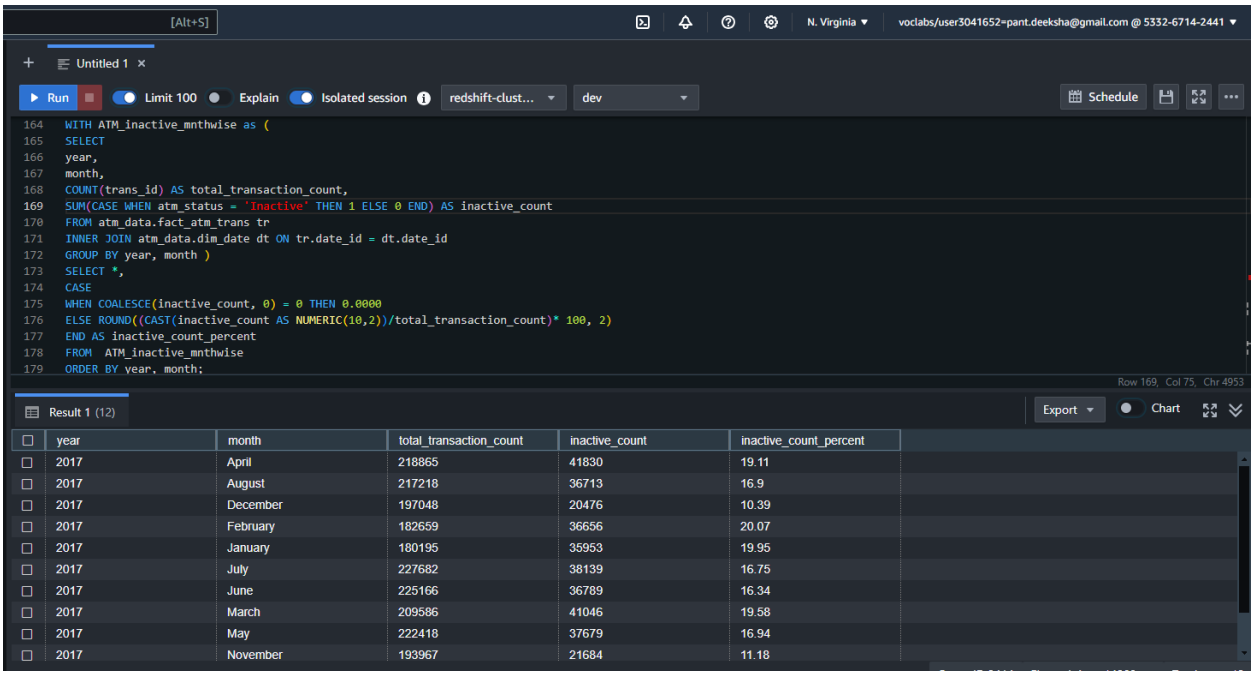
atm_number	atm_manufacturer	location	total_transaction_count
39	NCR	Svenstrup	55380
20	NCR	Bispensgade	54211
10	NCR	NÃƒÂ¸resundby	53794
24	NCR	Hobro	53378
45	NCR	Abildgaard	53198
16	NCR	Skive	44043
40	Diebold Nixdorf	Frederikshavn	43767
41	Diebold Nixdorf	Skagen	42732
48	Diebold Nixdorf	BrÃƒÂ¸nderslev	42493
13	NCR	SÃƒÂ¦by	41051

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

<Query>

```
WITH ATM_inactive_mnthwise as (
        SELECT
                year,
                month,
                COUNT(trans_id) AS total_transaction_count,
                SUM(CASE WHEN atm_status = 'Inactive' THEN 1 ELSE 0 END) AS
                inactive_count
        FROM atm_data.fact_atm_trans tr
                INNER JOIN atm_data.dim_date dt ON tr.date_id = dt.date_id
        GROUP BY year, month
)
SELECT *,
        CASE
                WHEN COALESCE(inactive_count, 0) = 0 THEN 0.0000
                ELSE ROUND((CAST(inactive_count AS
                NUMERIC(10,2))/total_transaction_count)* 100, 2)
                END AS inactive_count_percent
FROM  ATM_inactive_mnthwise
ORDER BY year, month;
```

<Screenshot of the resultant table>



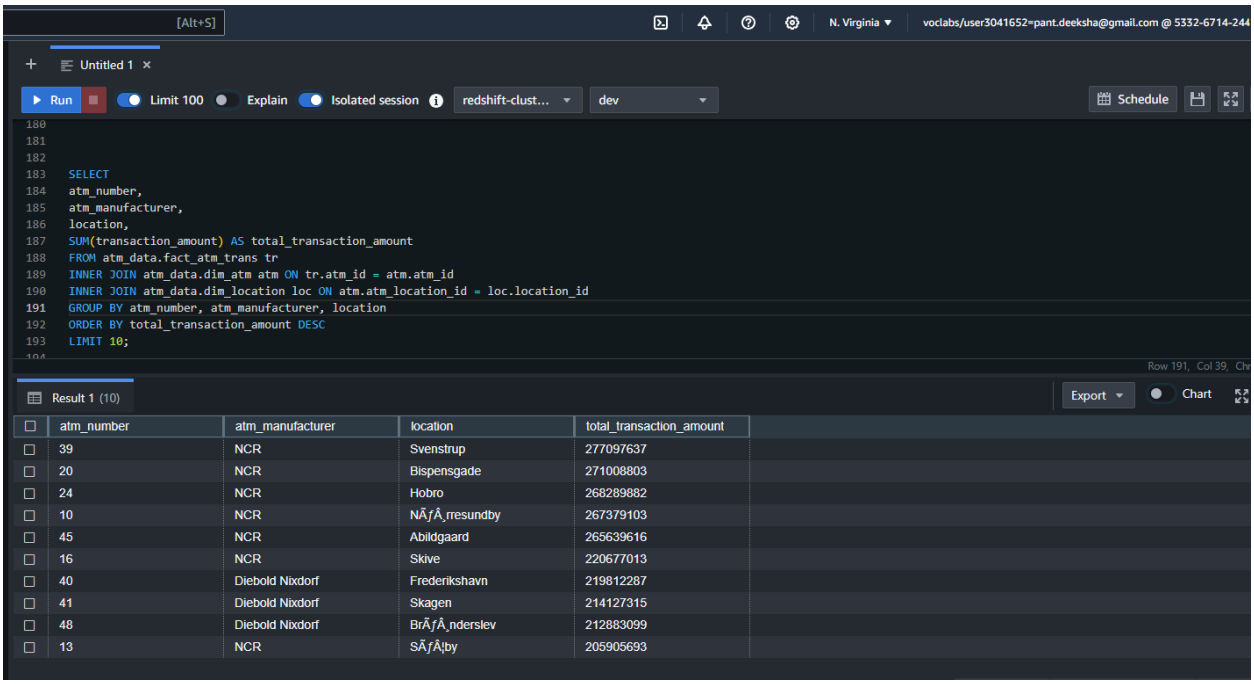
year	month	total_transaction_count	inactive_count	inactive_count_percent
2017	April	218865	41830	19.11
2017	August	217218	36713	16.9
2017	December	197048	20476	10.39
2017	February	182659	36656	20.07
2017	January	180195	35953	19.95
2017	July	227682	38139	16.75
2017	June	225166	36789	16.34
2017	March	209586	41046	19.58
2017	May	222418	37679	16.94
2017	November	193967	21684	11.18

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

<Query>

```
SELECT
        atm_number,
        atm_manufacturer,
        location,
        SUM(transaction_amount) AS total_transaction_amount
FROM atm_data.fact_atm_trans tr
        INNER JOIN atm_data.dim_atm atm ON tr.atm_id = atm.atm_id
        INNER JOIN atm_data.dim_location loc ON atm.atm_location_id = loc.location_id
GROUP BY atm_number, atm_manufacturer, location
ORDER BY total_transaction_amount DESC
LIMIT 10;
```

<Screenshot of the resultant table>



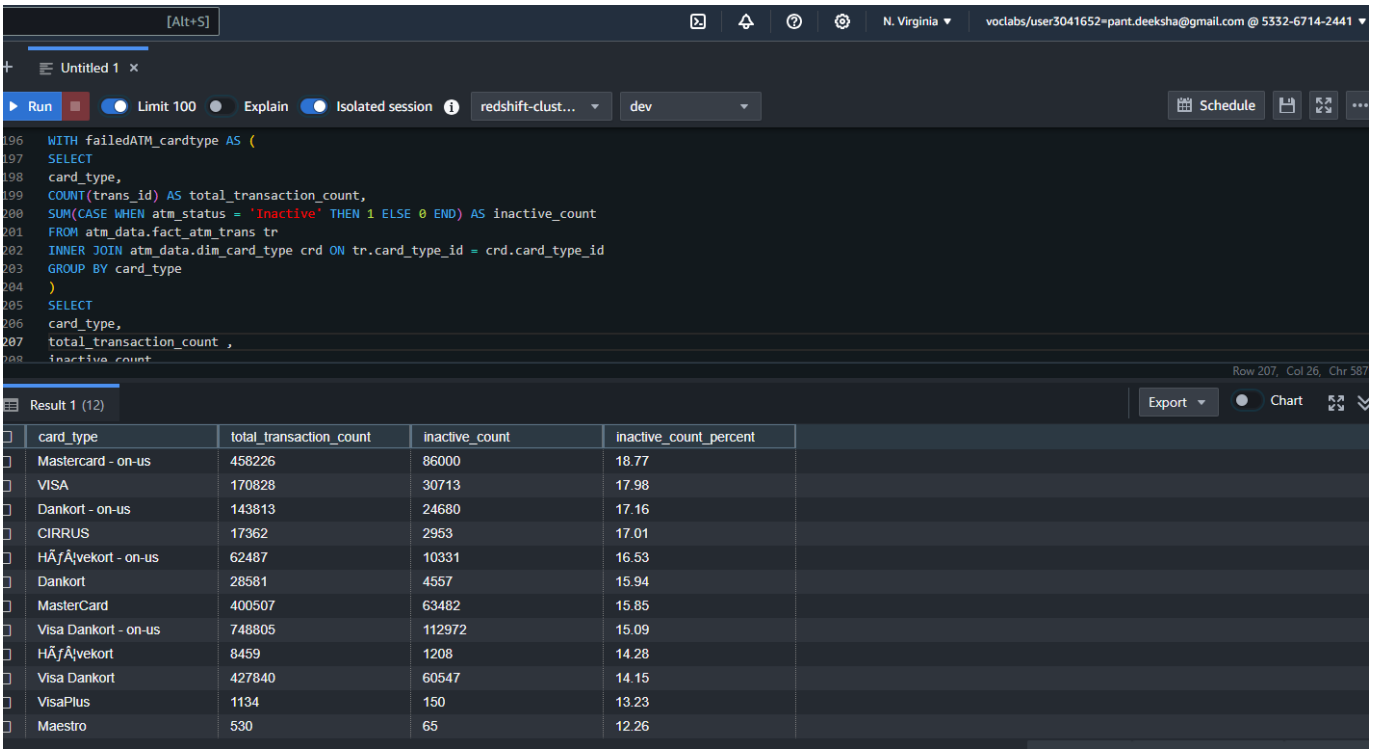
atm_number	atm_manufacturer	location	total_transaction_amount
39	NCR	Svenstrup	277097637
20	NCR	Bispensgade	271008803
24	NCR	Hobro	268289882
10	NCR	NÃƒÂ¸rresundby	267379103
45	NCR	Abildgaard	265639616
16	NCR	Skive	220677013
40	Diebold Nixdorf	Frederikshavn	219812287
41	Diebold Nixdorf	Skagen	214127315
48	Diebold Nixdorf	BrÃƒÂ¸nderslev	212883099
13	NCR	SÃƒÂ¦by	205905693

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

<Query>

```
WITH failedATM_cardtype AS (
SELECT
        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_data.fact_atm_trans tr
        INNER JOIN atm_data.dim_card_type crd ON tr.card_type_id = crd.card_type_id
GROUP BY card_type
)
SELECT
        card_type,
        total_transaction_count ,
        inactive_count,
        ROUND((CAST(inactive_count AS NUMERIC(10,2))/ total_transaction_count) * 100, 2)
        AS inactive_count_percent
FROM failedATM_cardtype
ORDER BY inactive_count_percent DESC;
```

<Screenshot of the resultant table>



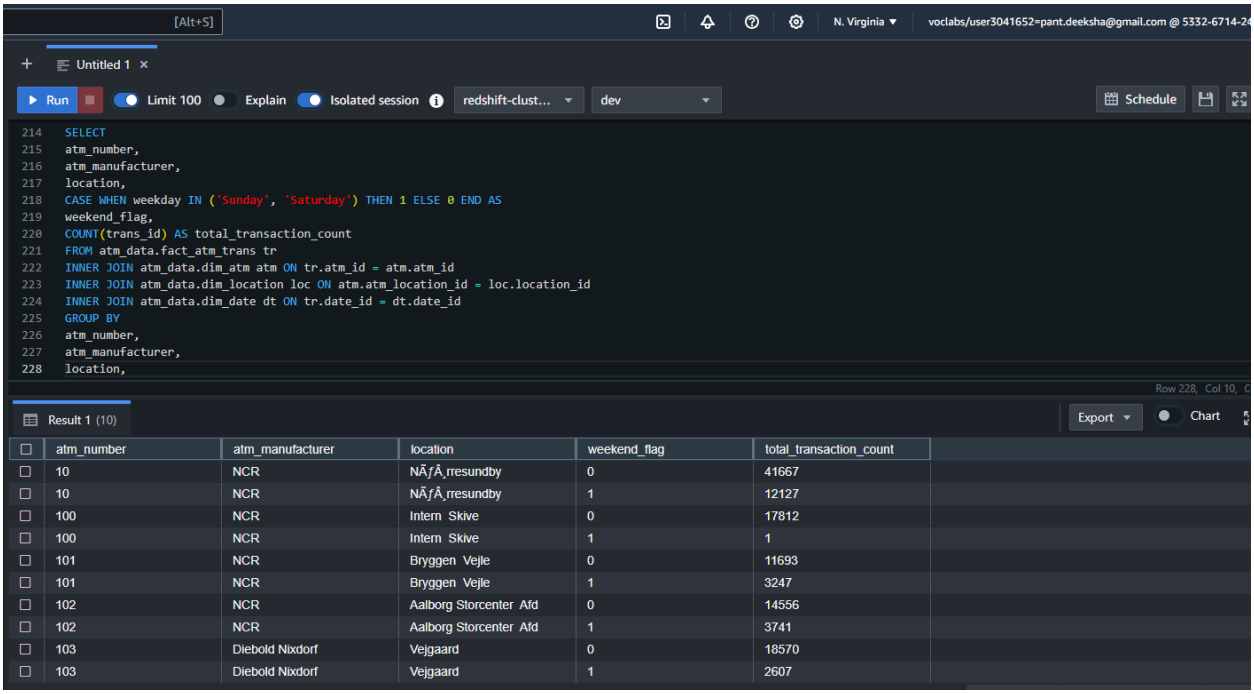
card_type	total_transaction_count	inactive_count	inactive_count_percent
Mastercard - on-us	458226	86000	18.77
VISA	170828	30713	17.98
Dankort - on-us	143813	24680	17.16
CIRRUS	17362	2953	17.01
HÃƒÂ¦vekort - on-us	62487	10331	16.53
Dankort	28581	4557	15.94
MasterCard	400507	63482	15.85
Visa Dankort - on-us	748805	112972	15.09
HÃƒÂ¦vekort	8459	1208	14.28
Visa Dankort	427840	60547	14.15
VisaPlus	1134	150	13.23
Maestro	530	65	12.26

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**

<Query>

```
SELECT
        atm_number,
        atm_manufacturer,
        location,
        CASE WHEN weekday IN ('Sunday', 'Saturday') THEN 1 ELSE 0 END AS
        weekend_flag,
        COUNT(trans_id) AS total_transaction_count
FROM atm_data.fact_atm_trans tr
        INNER JOIN atm_data.dim_atm atm ON tr.atm_id = atm.atm_id
        INNER JOIN atm_data.dim_location loc ON atm.atm_location_id = loc.location_id
        INNER JOIN atm_data.dim_date dt ON tr.date_id = dt.date_id
GROUP BY
        atm_number,
        atm_manufacturer,
        location,
        weekend_flag
ORDER BY
        atm_number,
        atm_manufacturer,
        location,
        weekend_flag,
        total_transaction_count
LIMIT 10;
```

<Screenshot of the resultant table>



atm_number	atm_manufacturer	location	weekend_flag	total_transaction_count
10	NCR	NÃƒÂ¸resundby	0	41667
10	NCR	NÃƒÂ¸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
103	Diebold Nixdorf	Vejgaard	0	18570
103	Diebold Nixdorf	Vejgaard	1	2607

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

<Query>

```
WITH Vejgaard_ATMtrans AS (
SELECT
        atm_number,
        atm_manufacturer,
        location,
        weekday,
        COUNT(trans_id) AS total_transaction_count
FROM atm_data.fact_atm_trans tr
        INNER JOIN atm_data.dim_atm atm ON tr.atm_id = atm.atm_id
        INNER JOIN atm_data.dim_location loc ON atm.atm_location_id = loc.location_id
        INNER JOIN atm_data.dim_date dt ON tr.date_id = dt.date_id
WHERE location = 'Vejgaard'
GROUP BY
        atm_number,
        atm_manufacturer,
        location,
        weekday
),
Vejgaard_activeday_ATMwise AS (
SELECT
        atm_number,
        atm_manufacturer,
```

```
        location,
        weekday,
        total_transaction_count,
        RANK() OVER(PARTITION BY atm_number ,atm_manufacturer,location ORDER BY
        total_transaction_count DESC) AS RNK
FROM Vejgaard_ATMtrans
)
SELECT *
FROM Vejgaard_activeday_ATMwise
WHERE RNK=1
ORDER BY atm_number;
```

<Screenshot of the resultant table>