Solving analytical queries on Redshift Cluster

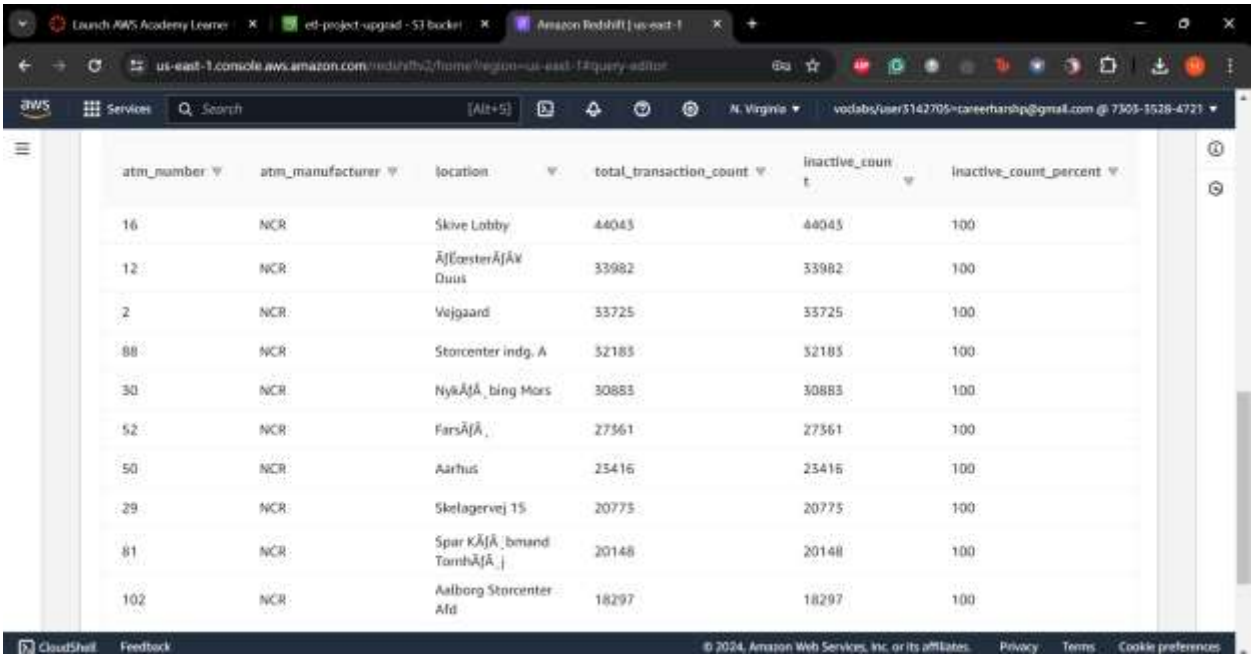
Here, you have to write the query used for solving the question and the screenshots of the table which is outputted after the query is run on the AWS Redshift Query editor UI.

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

<Query>

```
SELECT
        a.atm_number,
        a.atm_manufacturer,
        l.location,
        count(f.trans_id) as total_transaction_count,
        SUM(CASE WHEN f.atm_status = 'Inactive'
        THEN 1
        ELSE 0
         END) as inactive_count,
        (inactive_count/total_transaction_count)*100 as inactive_count_percent
FROM
        etl_atm_data.DIM_ATM as a,
        etl_atm_data.FACT_ATM_TRANS as f,
        etl_atm_data.DIM_LOCATION as l
WHERE
        a.atm_id = f.atm_id AND a.atm_location_id = l.location_id
GROUP BY
        a.atm_number,
        a.atm_manufacturer,
        l.location
ORDER BY
        inactive_count DESC
LIMIT 10;
```

<Screenshot of the resultant table>



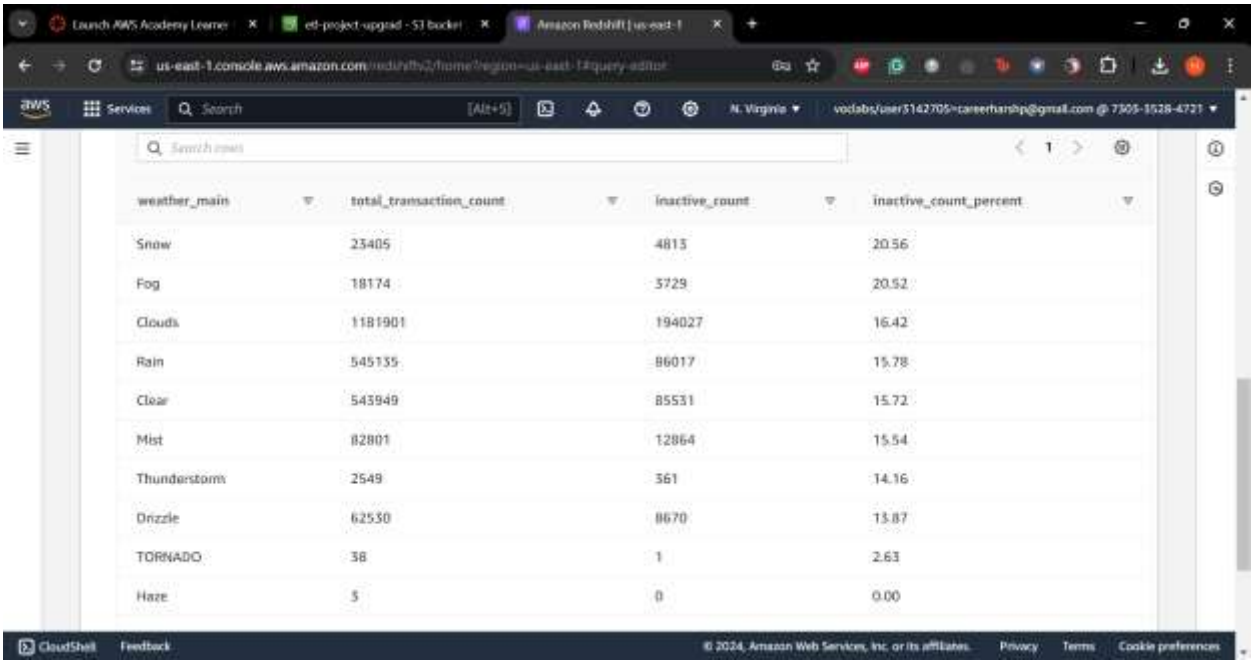
atm_number	atm_manufacturer	location	total_transaction_count	inactive_count	inactive_count_percent
16	NCR	Skive Lobby	44043	44043	100
12	NCR	ÃƒÆ’EcesterÃƒÂ¥ Duus	33982	33982	100
2	NCR	Vejgaard	33725	33725	100
88	NCR	Storcenter indg. A	32183	32183	100
30	NCR	NykÃƒÂ¸bing Mors	30883	30883	100
52	NCR	FarsÃƒÂ¸	27361	27361	100
50	NCR	Aarhus	25416	25416	100
29	NCR	Skelagervej 15	20775	20775	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**

<Query>

```
WITH failed_atm 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
      etl_atm_data.FACT_ATM_TRANS
  WHERE
      weather_main != ' '
  GROUP BY
      weather_main)
SELECT *,
          ROUND(CAST(inactive_count AS numeric(10,2))/ total_transaction_count*100,2) AS
          inactive_count_percent
FROM
          failed_atm
ORDER BY
    inactive_count_percent DESC;
```

<Screenshot of the resultant table>



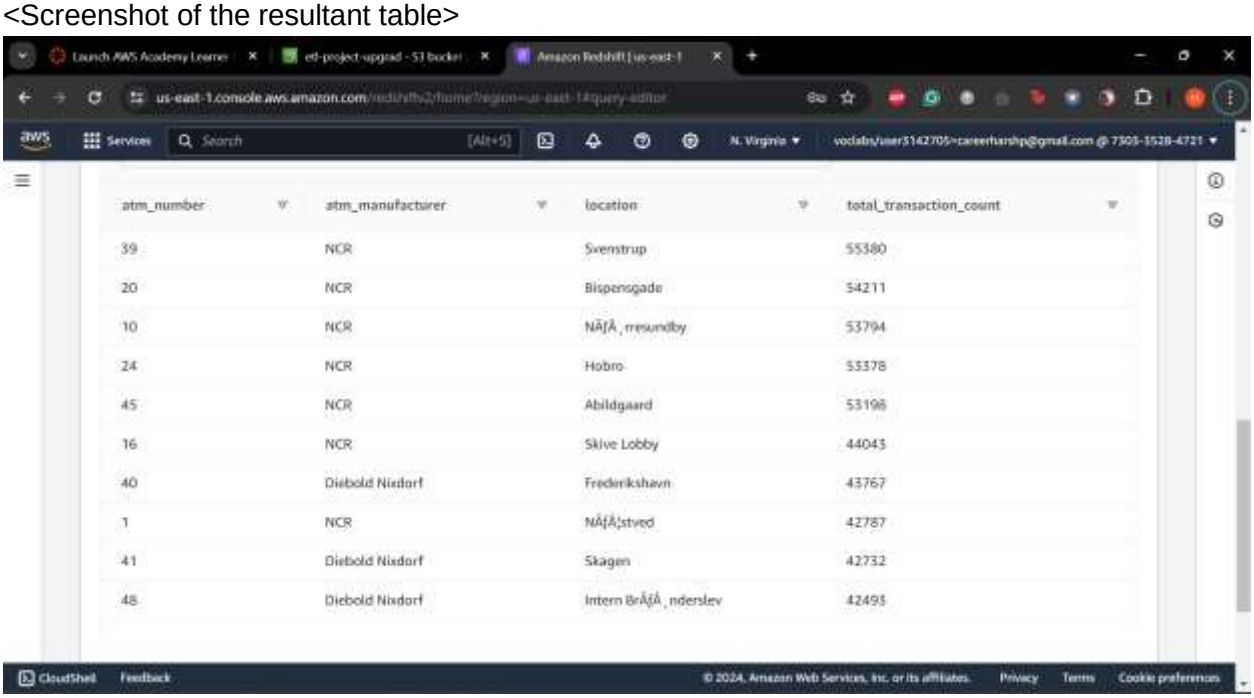
weather_main	total_transaction_count	inactive_count	inactive_count_percent
Snow	23405	4813	20.56
Fog	18174	3729	20.52
Clouds	1181901	194027	16.42
Rain	545135	86017	15.78
Clear	543949	85531	15.72
Mist	82801	12864	15.54
Thunderstorm	2549	361	14.16
Drizzle	62530	8670	13.87
TORNADO	38	1	2.63
Haze	5	0	0.00

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

<Query>

```
SELECT
        a.atm_number,
        a.atm_manufacturer,
        l.location,
   count(f.trans_id) as total_transaction_count
FROM
        etl_atm_data.DIM_ATM as a,
        etl_atm_data.FACT_ATM_TRANS as f,
        etl_atm_data.DIM_LOCATION as l
WHERE
        a.atm_id = f.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>



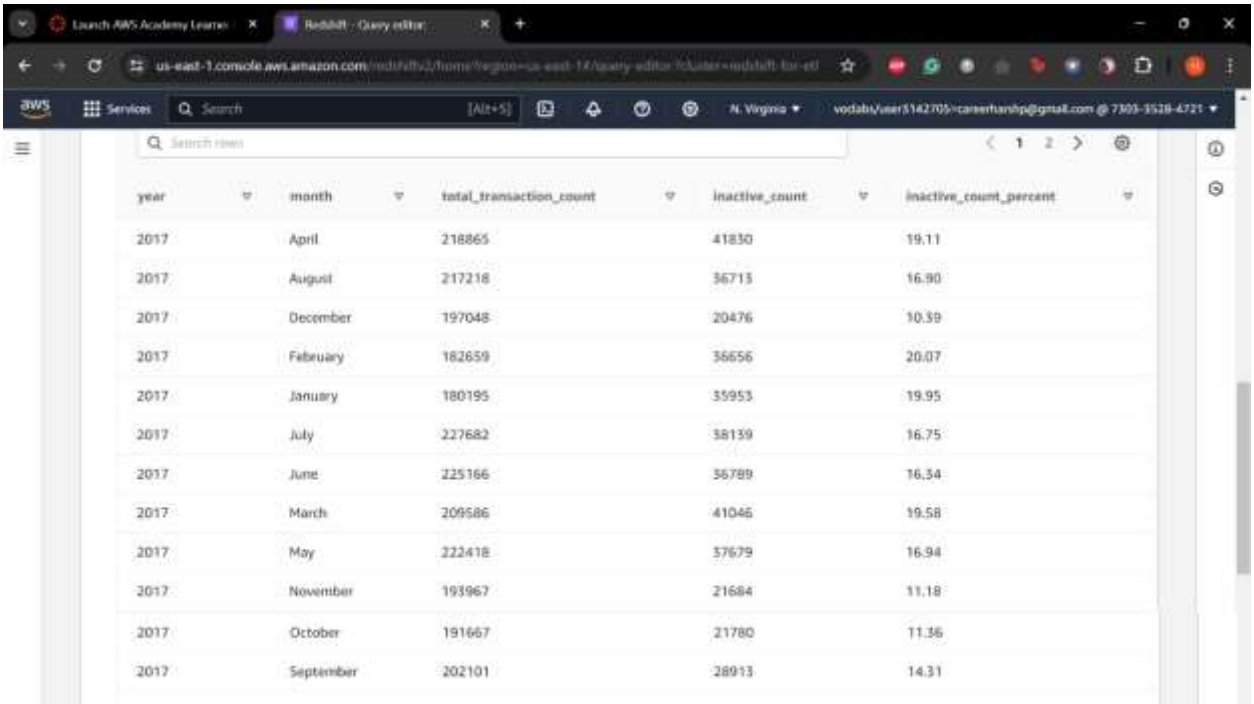
atm_number	atm_manufacturer	location	total_transaction_count
39	NCR	Svenstrup	55380
20	NCR	Bispensgade	54211
10	NCR	NÃ¦Å , mesundby	53794
24	NCR	Hobro	53378
45	NCR	Abildgaard	53198
16	NCR	Skive Lobby	44043
40	Diebold Nixdorf	Frederikshavn	43767
1	NCR	NÃ¦Å¦stved	42787
41	Diebold Nixdorf	Skagen	42732
48	Diebold Nixdorf	Intern BrÃ¦Å , nderslev	42493

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

<Query>

```
WITH failed_atm_monthly AS (
     SELECT
       d.year,
       d.month,
       count(f.trans_id) as total_transaction_count,
       SUM(CASE WHEN f.atm_status = 'Inactive'
          THEN 1
          ELSE 0
          END) as inactive_count
   FROM
      etl_atm_data.FACT_ATM_TRANS as f,
      etl_atm_data.DIM_DATE as d
   WHERE
      f.date_id = d.date_id
   GROUP BY
      d.year,
      d.month)
SELECT *,
      ROUND(CAST(inactive_count AS numeric(10,2))/ total_transaction_count*100,2) AS
inactive_count_percent
FROM
      failed_atm_monthly
ORDER BY
      month;
```

<Screenshot of the resultant table>



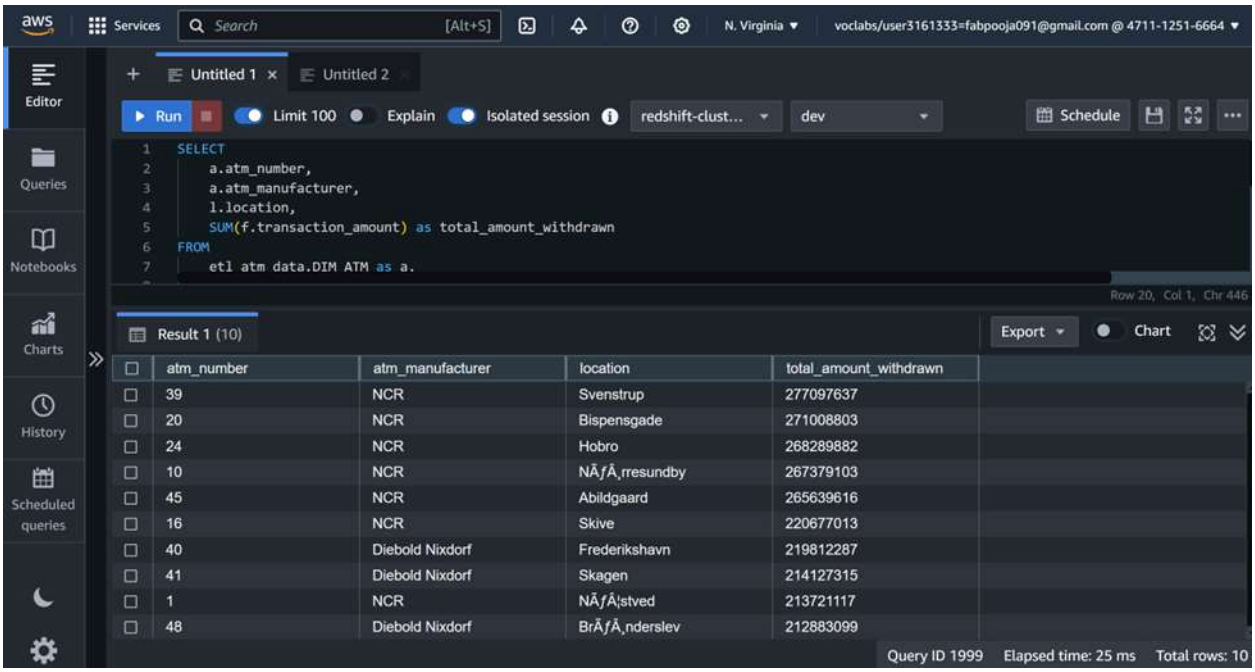
year	month	total_transaction_count	inactive_count	inactive_count_percent
2017	April	218865	41830	19.11
2017	August	217218	36713	16.90
2017	December	197048	20476	10.39
2017	February	182659	36656	20.07
2017	January	180195	35953	19.95
2017	July	227682	38139	16.75
2017	June	225166	36789	16.34
2017	March	209586	41046	19.58
2017	May	222418	37679	16.94
2017	November	193967	21684	11.18
2017	October	191667	21780	11.36
2017	September	202101	28913	14.31

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

<Query>

```
SELECT
    a.atm_number,
    a.atm_manufacturer,
    l.location,
    SUM(f.transaction_amount) as total_amount_withdrawn
FROM
    etl_atm_data.DIM_ATM as a,
    etl_atm_data.FACT_ATM_TRANS as f,
    etl_atm_data.DIM_LOCATION as l
WHERE
    a.atm_id = f.atm_id
    AND a.atm_location_id = l.location_id
GROUP BY
    a.atm_number,
    a.atm_manufacturer,
    l.location
ORDER BY
    total_amount_withdrawn DESC
LIMIT 10;
```

<Screenshot of the resultant table>



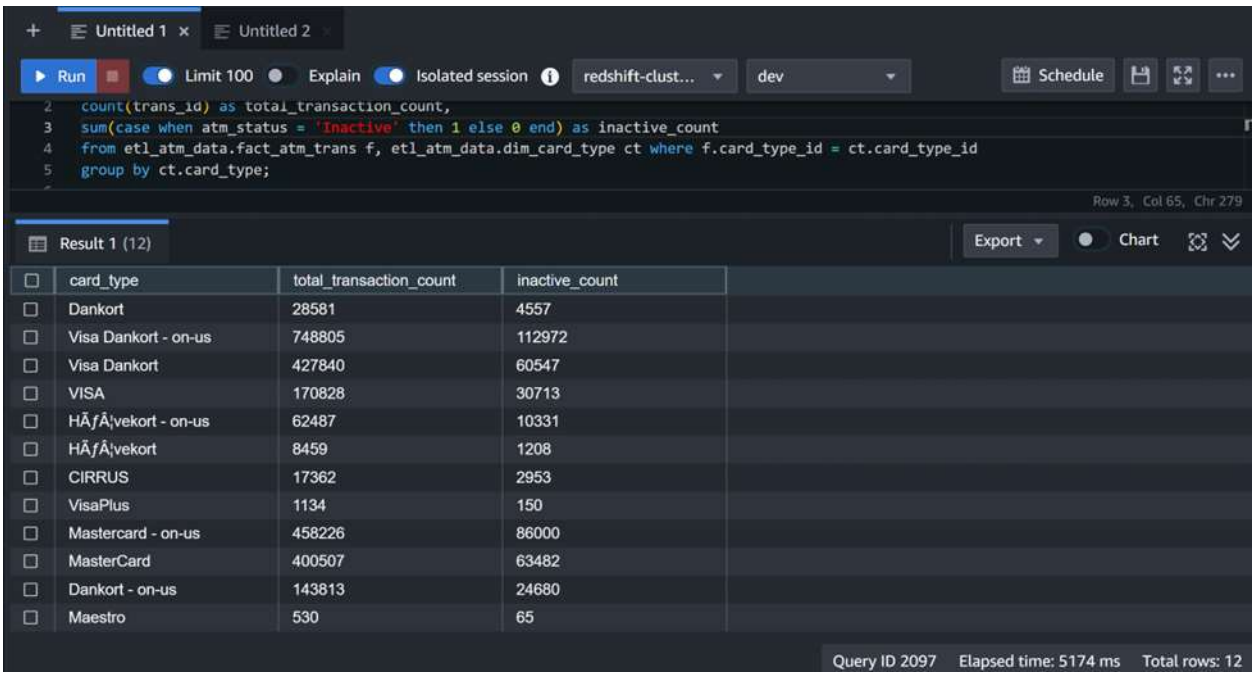
atm_number	atm_manufacturer	location	total_amount_withdrawn
39	NCR	Svenstrup	277097637
20	NCR	Bispensgade	271008803
24	NCR	Hobro	268289882
10	NCR	NÃƒÂ‚rresundby	267379103
45	NCR	Abildgaard	265639616
16	NCR	Skive	220677013
40	Diebold Nixdorf	Frederikshavn	219812287
41	Diebold Nixdorf	Skagen	214127315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

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

<Query>

```
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
FROM etl_atm_data.fact_atm_trans f, etl_atm_data.dim_card_type ct
WHERE  f.card_type_id = ct.card_type_id
GROUP BY ct.card_type;
```

<Screenshot of the resultant table>



card_type	total_transaction_count	inactive_count
Dankort	28581	4557
Visa Dankort - on-us	748805	112972
Visa Dankort	427840	60547
VISA	170828	30713
HÃƒÂ¦vekort - on-us	62487	10331
HÃƒÂ¦vekort	8459	1208
CIRRUS	17362	2953
VisaPlus	1134	150
Mastercard - on-us	458226	86000
MasterCard	400507	63482
Dankort - on-us	143813	24680
Maestro	530	65

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
   a.atm_number,
   a.atm_manufacturer,
   l.location,
   CASE
      WHEN d.weekday IN ('Saturday', 'Sunday') THEN 1
      ELSE 0
   END AS weekend_flag,
   COUNT(f.trans_id) AS total_transaction_count
         FROM
   etl_atm_data.fact_atm_trans f
JOIN
   etl_atm_data.dim_atm a ON f.atm_id = a.atm_id
JOIN
   etl_atm_data.dim_location l ON a.atm_location_id = l.location_id
JOIN
   etl_atm_data.dim_date d ON 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 DESC
LIMIT 10;
```

<Screenshot of the resultant table>

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Run Limit 100 Explain Isolated session redshift-clust... dev Schedule

```
SELECT
    a.atm_number,
    a.atm_manufacturer,
    l.location,
    CASE
        WHEN d.weekday IN ('Saturday', 'Sunday') THEN 1
        ELSE 0
```

Result 1 (10) Export Chart

atm_number	atm_manufacturer	location	weekend_flag	total_transaction_count
1	NCR	NÃƒÂ¦stved	0	32711
1	NCR	NÃƒÂ¦stved	1	10076
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

Query ID 2210 Elapsed time: 4508 ms Total rows: 10

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

```
<Query>
    WITH daily_transactions AS (
      SELECT
        a.atm_number,
        a.atm_manufacturer,
        l.location,
        d.weekday,
        COUNT(f.trans_id) AS transaction_count
      FROM
        etl_atm_data.fact_atm_trans f
      INNER JOIN
        etl_atm_data.dim_atm a ON f.atm_id = a.atm_id
      INNER JOIN
        etl_atm_data.dim_location l ON a.atm_location_id = l.location_id
      INNER JOIN
        etl_atm_data.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
    ),
    ranked_transactions AS (
      SELECT
        *,
        ROW_NUMBER() OVER (PARTITION BY atm_number ORDER BY
    transaction_count DESC) AS rank
      FROM
        daily_transactions
    )
    SELECT
      atm_number,
      atm_manufacturer,
      location,
      weekday,
      transaction_count
    FROM
      ranked_transactions
    WHERE
      rank = 1;
```

<Screenshot of the resultant table>