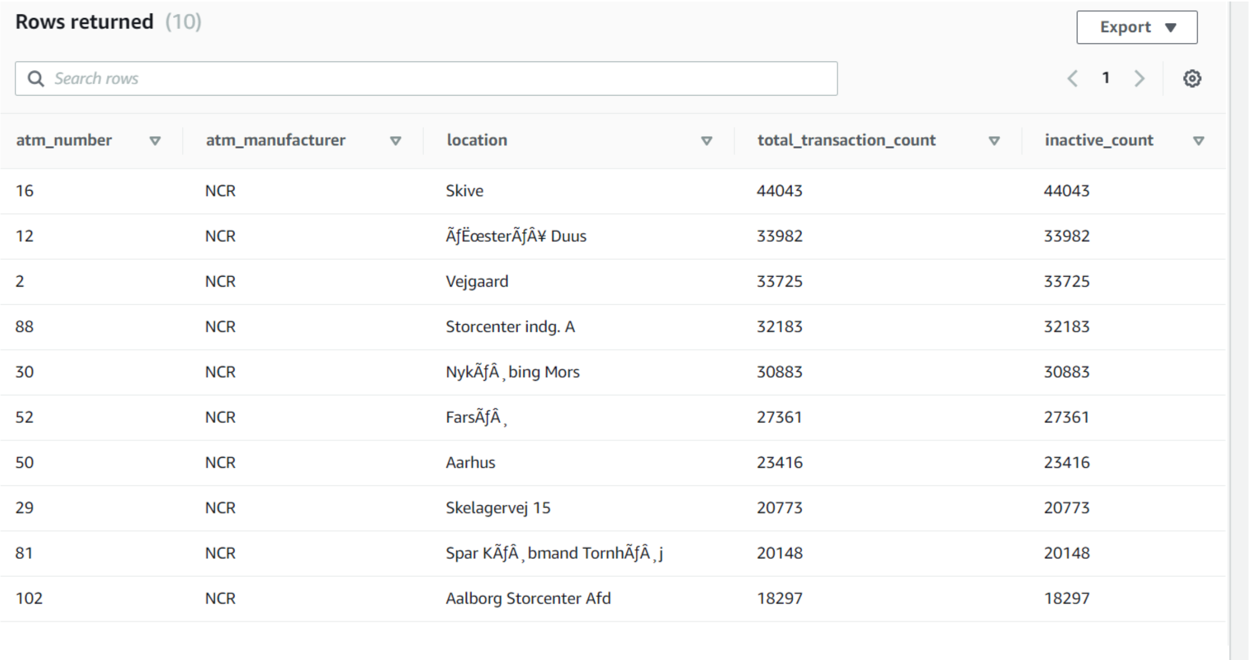
Solving analytical queries on Redshift Cluster

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

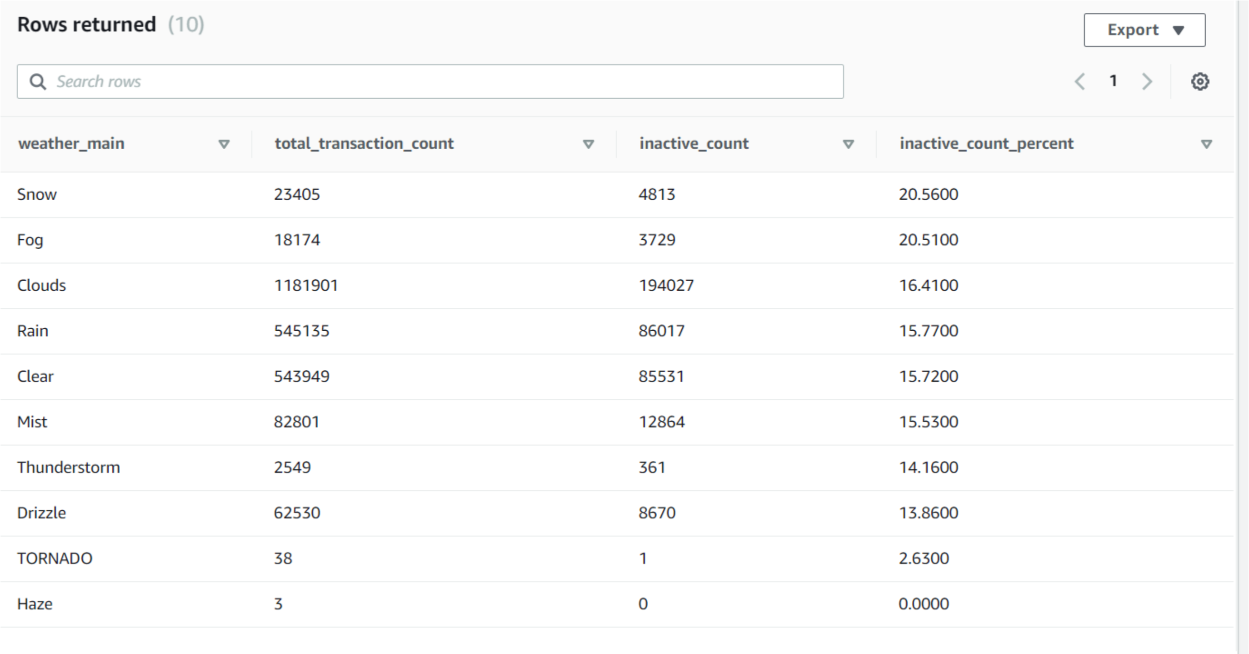
```
SELECT
        a.atm_number AS atm_number,
        a.atm_manufacturer AS atm_manufacturer,
        l.location AS location,
        COUNT(f.trans_id) AS total_transaction_count,
        SUM(CASE WHEN f.atm_status='Inactive' THEN 1 ELSE 0 END) AS inactive_count
FROM
        spar_nord.fact_atm_trans f
        INNER JOIN spar_nord.dim_atm a
                ON f.atm_id = a.atm_id
        INNER JOIN spar_nord.dim_location l
                ON a.atm_location_id = l.location_id
GROUP BY
        a.atm_number,
        a.atm_manufacturer,
        l.location
ORDER BY
        inactive_count DESC
LIMIT 10;
```



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

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

```
WITH weather_atm_failure AS
(
        SELECT
                weather_main,
                COUNT(trans_id) AS total_transaction_count,
                SUM(CASE WHEN f.atm_status='Inactive' THEN 1 ELSE 0 END) AS inactive_count
        FROM
                spar_nord.fact_atm_trans f
        WHERE
                weather_main IS NOT NULL
        GROUP BY
                weather_main
)
SELECT
        weather_main,
        total_transaction_count,
        inactive_count,
        CASE
        WHEN COALESCE(inactive_count, 0) = 0 THEN 0.0000
                ELSE TRUNC((CAST(inactive_count AS NUMERIC(10,4))/total_transaction_count)*100,2)
                END AS inactive_count_percent
FROM
        weather_atm_failure
ORDER BY
        inactive_count_percent DESC;
```

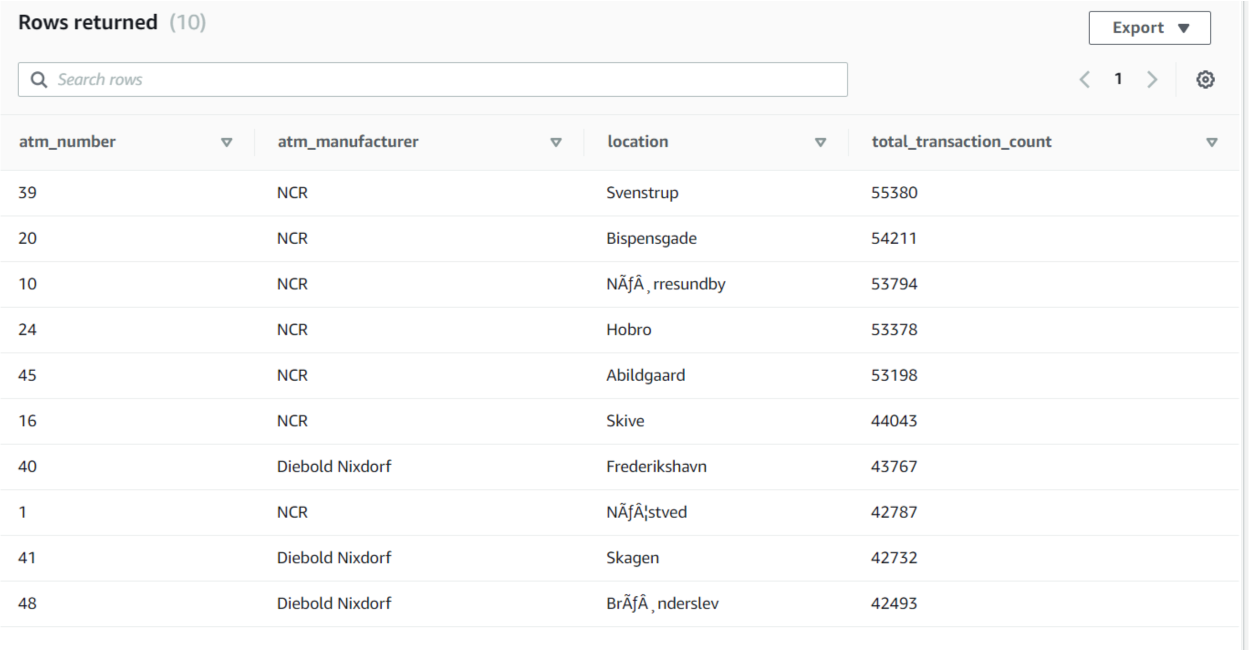


Rows returned (10)

weather_main	total_transaction_count	inactive_count	inactive_count_percent
Snow	23405	4813	20.5600
Fog	18174	3729	20.5100
Clouds	1181901	194027	16.4100
Rain	545135	86017	15.7700
Clear	543949	85531	15.7200
Mist	82801	12864	15.5300
Thunderstorm	2549	361	14.1600
Drizzle	62530	8670	13.8600
TORNADO	38	1	2.6300
Haze	3	0	0.0000

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

```
SELECT
        a.atm_number AS atm_number,
        a.atm_manufacturer AS atm_manufacturer,
        l.location AS location,
        COUNT(f.trans_id) AS total_transaction_count
FROM
        spar_nord.fact_atm_trans f
        INNER JOIN spar_nord.dim_atm a
                ON f.atm_id = a.atm_id
        INNER JOIN spar_nord.dim_location l
                ON 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;
```

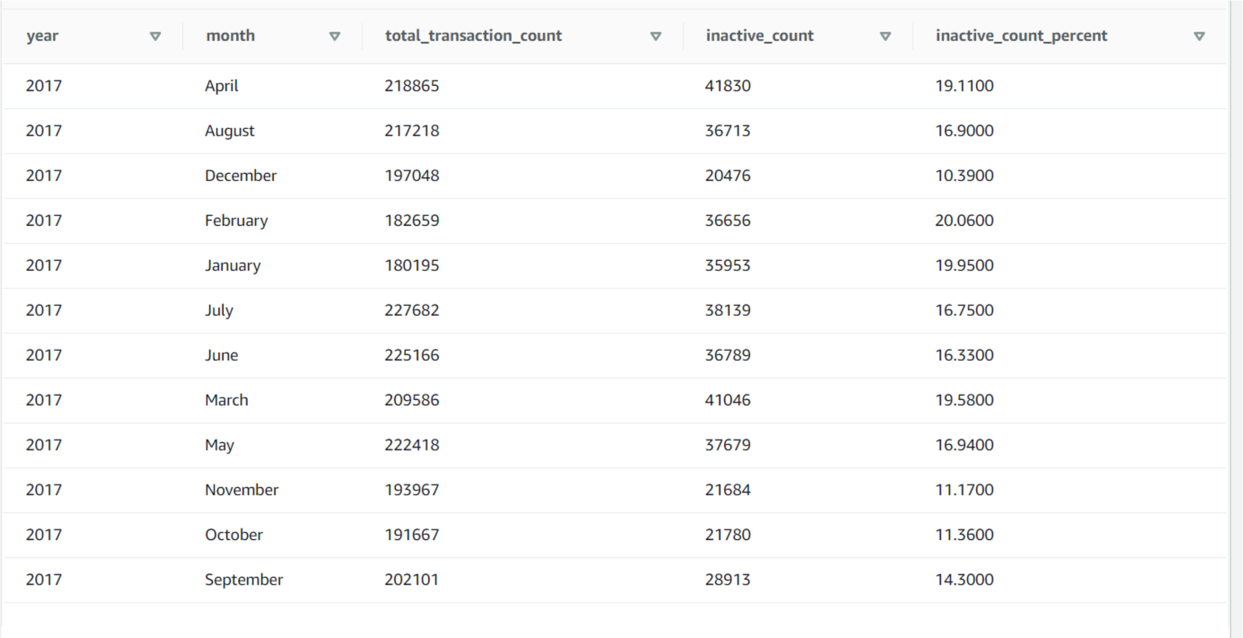


Rows returned (10)

atm_number	atm_manufacturer	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

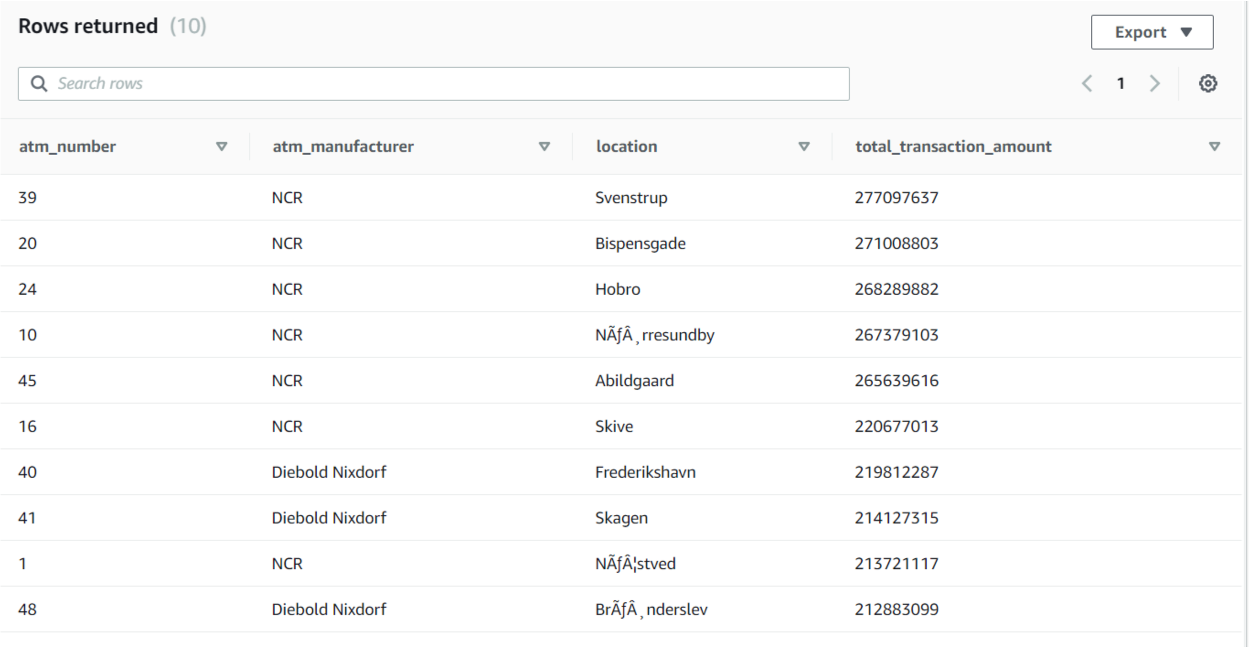
```
WITH month_atm_failure AS
(
        SELECT
                d.year AS year,
                d.month AS month,
                COUNT(f.trans_id) AS total_transaction_count,
                SUM(CASE WHEN f.atm_status='Inactive' THEN 1 ELSE 0 END) AS inactive_count
        FROM
                spar_nord.fact_atm_trans f
                INNER JOIN spar_nord.dim_date d
                        ON f.date_id=d.date_id
        GROUP BY
                d.year,
                d.month
)
SELECT
        year,
        month,
        total_transaction_count,
        inactive_count,
        CASE
                WHEN COALESCE(inactive_count, 0) = 0 THEN 0.0000
                ELSE TRUNC((CAST(inactive_count AS NUMERIC(10,4))/total_transaction_count)*100,2)
                END AS inactive_count_percent
FROM
        month_atm_failure
ORDER BY
        year,
  month;
```



year	month	total_transaction_count	inactive_count	inactive_count_percent
2017	April	218865	41830	19.1100
2017	August	217218	36713	16.9000
2017	December	197048	20476	10.3900
2017	February	182659	36656	20.0600
2017	January	180195	35953	19.9500
2017	July	227682	38139	16.7500
2017	June	225166	36789	16.3300
2017	March	209586	41046	19.5800
2017	May	222418	37679	16.9400
2017	November	193967	21684	11.1700
2017	October	191667	21780	11.3600
2017	September	202101	28913	14.3000

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

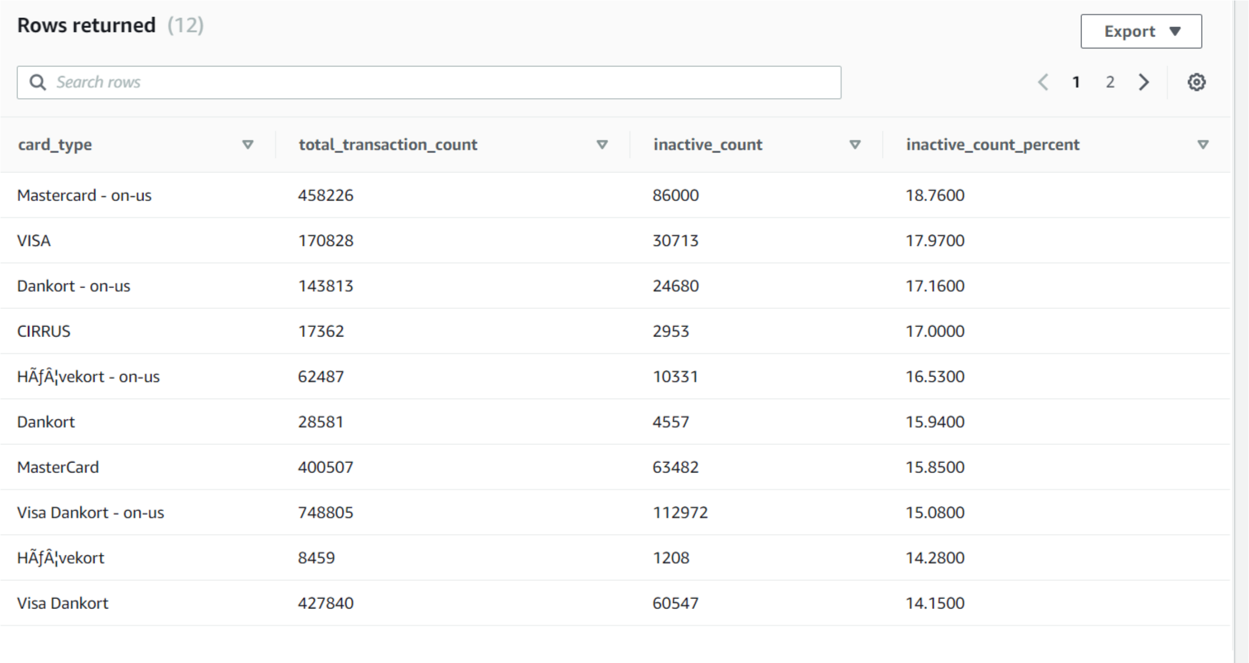
```
SELECT
        a.atm_number AS atm_number,
        a.atm_manufacturer AS atm_manufacturer,
        l.location AS location,
        SUM(f.transaction_amount) AS total_transaction_amount
FROM
        spar_nord.fact_atm_trans f
        INNER JOIN spar_nord.dim_atm a
                ON f.atm_id = a.atm_id
        INNER JOIN spar_nord.dim_location l
                ON 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;
```



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

```
WITH card_type_failure AS
(
        SELECT
                c.card_type,
                COUNT(f.trans_id) AS total_transaction_count,
                SUM(CASE WHEN f.atm_status='Inactive' THEN 1 ELSE 0 END) AS inactive_count
        FROM
                spar_nord.fact_atm_trans f
                INNER JOIN spar_nord.dim_card_type c
                        ON f.card_type_id=c.card_type_id
        GROUP BY
                c.card_type
)
SELECT
        card_type,
        total_transaction_count,
        inactive_count,
        CASE
                WHEN COALESCE(inactive_count, 0) = 0 THEN 0.0000
                ELSE TRUNC((CAST(inactive_count AS NUMERIC(10,4))/total_transaction_count)*100,2)
                END AS inactive_count_percent
FROM
        card_type_failure
ORDER BY
        inactive_count_percent DESC;
```

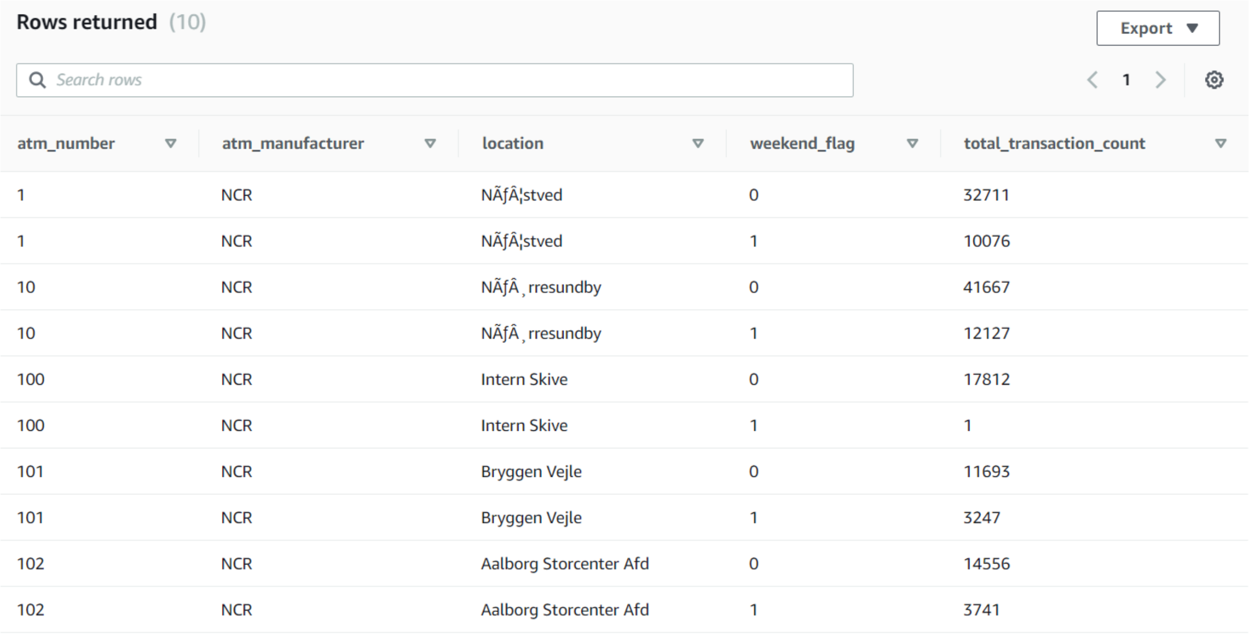


Rows returned (12)

card_type	total_transaction_count	inactive_count	inactive_count_percent
Mastercard - on-us	458226	86000	18.7600
VISA	170828	30713	17.9700
Dankort - on-us	143813	24680	17.1600
CIRRUS	17362	2953	17.0000
HÃƒÂ¦vekort - on-us	62487	10331	16.5300
Dankort	28581	4557	15.9400
MasterCard	400507	63482	15.8500
Visa Dankort - on-us	748805	112972	15.0800
HÃƒÂ¦vekort	8459	1208	14.2800
Visa Dankort	427840	60547	14.1500

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**

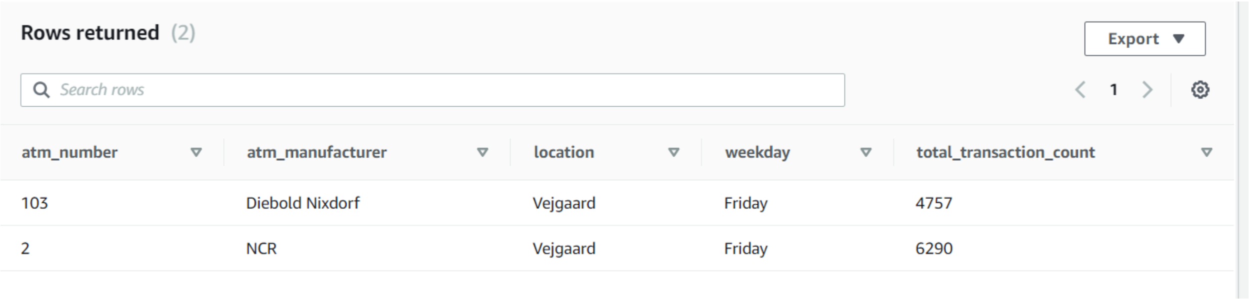
```
SELECT
        a.atm_number AS atm_number,
        a.atm_manufacturer AS atm_manufacturer,
        l.location AS location,
        CASE WHEN d.weekday IN ('Saturday', 'Sunday') THEN 1 ELSE 0 END AS weekend_flag,
        COUNT(f.trans_id) AS total_transaction_count
FROM
        spar_nord.fact_atm_trans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



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¸rresundby	0	41667
10	NCR	NÃƒÂ¸rresundby	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"

```
WITH atm_weekday_details AS
(
    SELECT
        a.atm_number AS atm_number,
        a.atm_manufacturer AS atm_manufacturer,
        l.location AS location,
        d.weekday AS weekday,
        COUNT(f.trans_id) AS total_transaction_count
    FROM
        spar_nord.fact_atm_trans f
        INNER JOIN spar_nord.dim_atm a
            ON f.atm_id = a.atm_id
        INNER JOIN spar_nord.dim_location l
            ON a.atm_location_id = l.location_id
        INNER JOIN spar_nord.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
), max_weekday AS
(
    SELECT
        weekday
    FROM
        atm_weekday_details
    WHERE
        total_transaction_count=(SELECT MAX(total_transaction_count) FROM atm_weekday_details)
    LIMIT 1
)
SELECT
    *
FROM
    atm_weekday_details
WHERE
    weekday=(SELECT weekday FROM max_weekday)
ORDER BY
    total_transaction_count;
```



Rows returned (2)

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