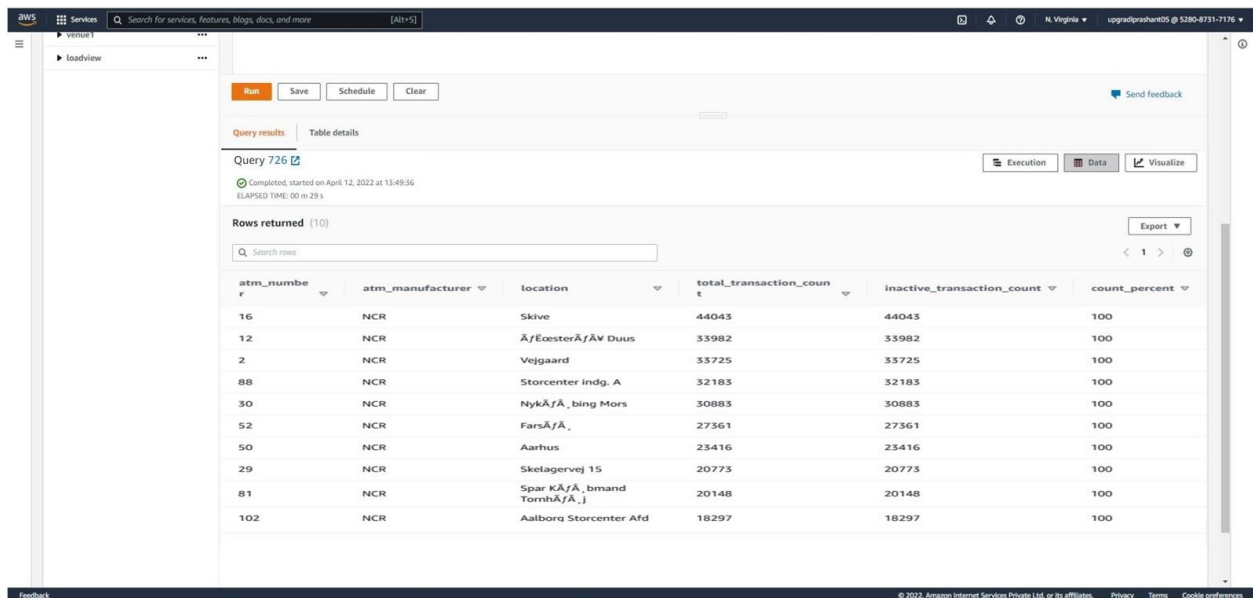


Solving analytical queries on Redshift Cluster

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, a.atm_manufacturer, l.location,
count(trans_id) as total_transaction_count,
sum(case when atm_status = 'Inactive' then 1 else 0 end) as
inactive_transaction_count,
(inactive_transaction_count / total_transaction_count)*100 as count_percent
from atm_data.fact_atm_trans f, atm_data.dim_atm a, atm_data.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
having count_percent > 50
order by inactive_transaction_count desc
limit 10;
```



atm_number	atm_manufacturer	location	total_transaction_count	inactive_transaction_count	count_percent
16	NCR	Skive	44043	44043	100
12	NCR	ÅfEøsterÅfÅV Duus	33982	33982	100
2	NCR	Vejgaard	33725	33725	100
88	NCR	Storcenter indg. A	32183	32183	100
30	NCR	NykÅfÅ ,bing Mors	30883	30883	100
52	NCR	FarsÅfÅ ,	27361	27361	100
50	NCR	Aarhus	23416	23416	100
29	NCR	Skelagervej 15	20773	20773	100
81	NCR	Spar KÅfÅ ,bmand TornhÅfÅ ,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

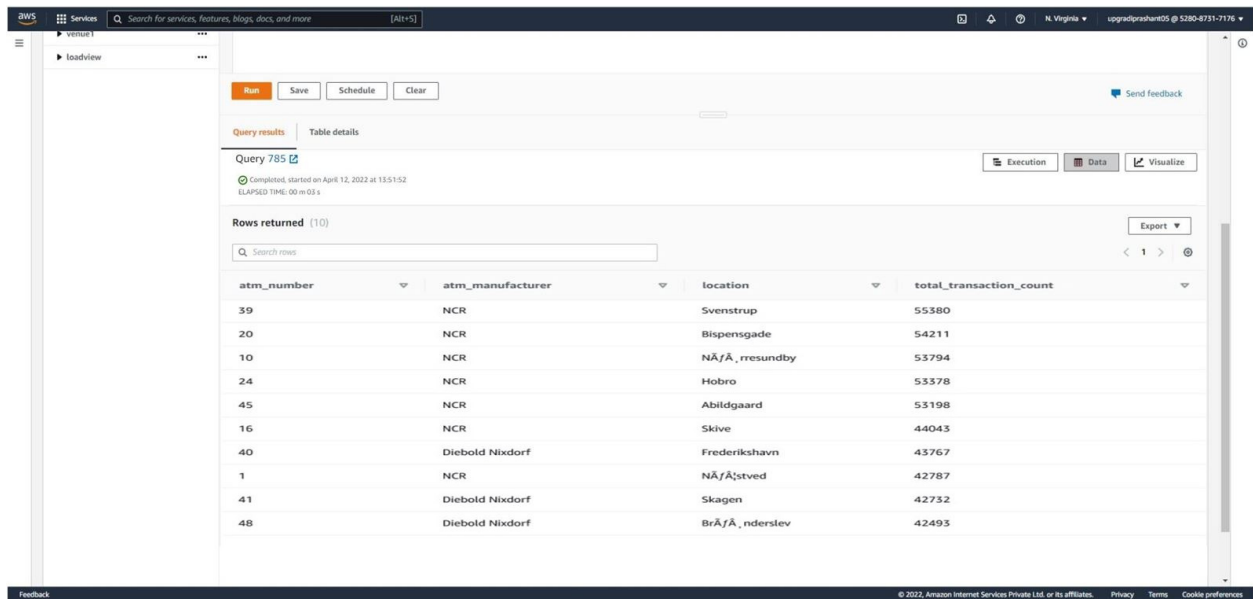
```
select f.weather_main,  
count(trans_id) as total_transaction_count,  
sum(case when atm_status = 'Inactive' then 1 else 0 end) as inactive_count,  
case when coalesce(inactive_count, 0) = 0 then 0.0000  
else trunc((cast(inactive_count as numeric(10,4))/total_transaction_count)*100, 2)  
end as inactive_count_percent  
from atm_data.fact_atm_trans f  
where f.weather_main != ''  
group by f.weather_main  
order by inactive_count_percent desc  
limit 10;
```

The screenshot shows the AWS Athena console interface. At the top, there's a navigation bar with 'AWS' logo, 'Services' menu, a search bar, and user information. Below the navigation bar, there's a left sidebar with 'venue' and 'loadview' links. The main content area displays the results of 'Query 766'. The query status is 'Completed, started on April 12, 2022 at 13:51:03' with an 'ELAPSED TIME: 00 m 02 s'. The results are shown in a table with 4 columns: 'weather_main', 'total_transaction_count', 'inactive_count', and 'inactive_count_percent'. The table lists 10 rows of data for different weather conditions. The 'inactive_count_percent' column is calculated as $\frac{\text{inactive_count}}{\text{total_transaction_count}} \times 100$, rounded to 2 decimal places. The table is sorted by 'inactive_count_percent' in descending order. The bottom of the console shows a footer with 'Feedback' and copyright information for Amazon Internet Services Private Ltd.

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, a.atm_manufacturer, l.location,  
count(trans_id) as total_transaction_count  
from atm_data.fact_atm_trans f, atm_data.dim_atm a, atm_data.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;
```



Query 785

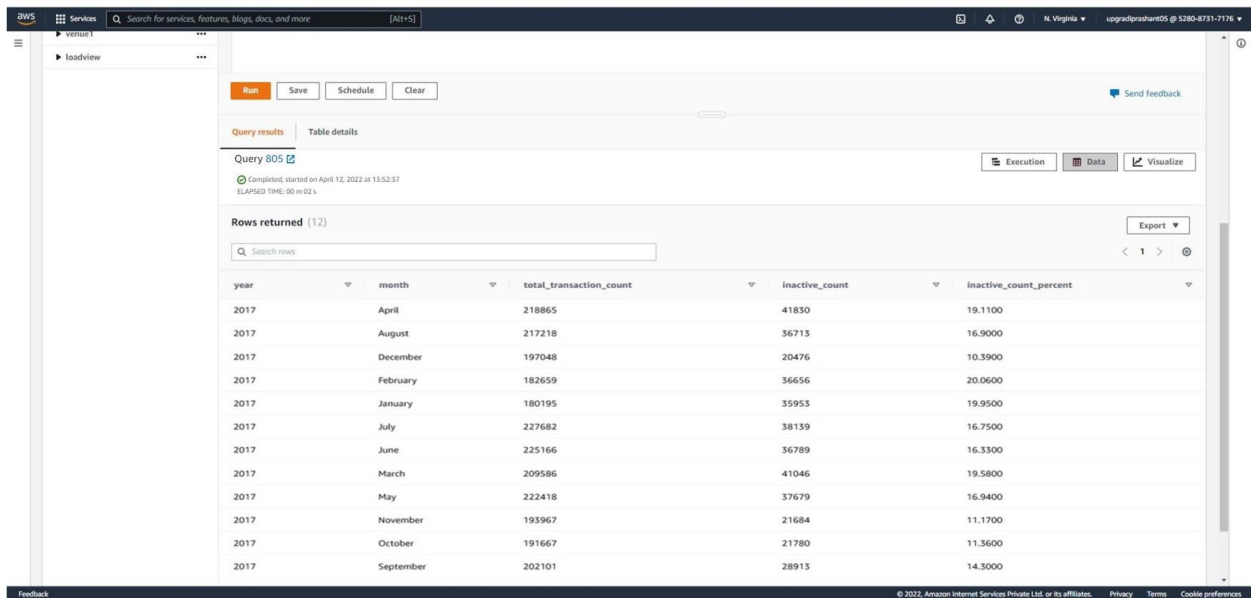
Completed, started on April 12, 2022 at 13:51:52
ELAPSED TIME: 00 m 03 s

Rows returned (10)

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

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,
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 atm_data.fact_atm_trans f inner join atm_data.dim_date d on f.date_id = d.date_id
group by d.year, d.month
order by d.year, d.month
```



Query 805

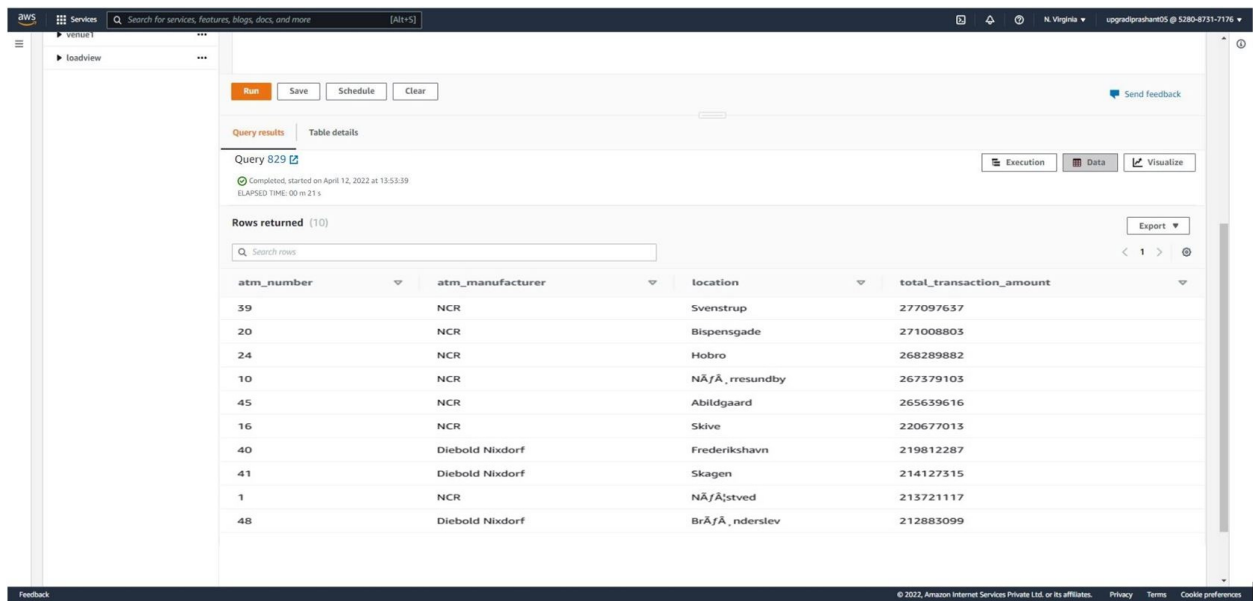
Completed, started on April 12, 2022 at 13:52:37
ELAPSED TIME: 00 m 02 s

Rows returned (12)

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, a.atm_manufacturer, l.location,  
sum(transaction_amount) as total_transaction_amount  
from atm_data.fact_atm_trans f, atm_data.dim_atm a, atm_data.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;
```



Query 829

Completed, started on April 12, 2022 at 13:53:39
ELAPSED TIME: 00 m 21 s

Rows returned (10)

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

6. Number of failed ATM transactions across various card types

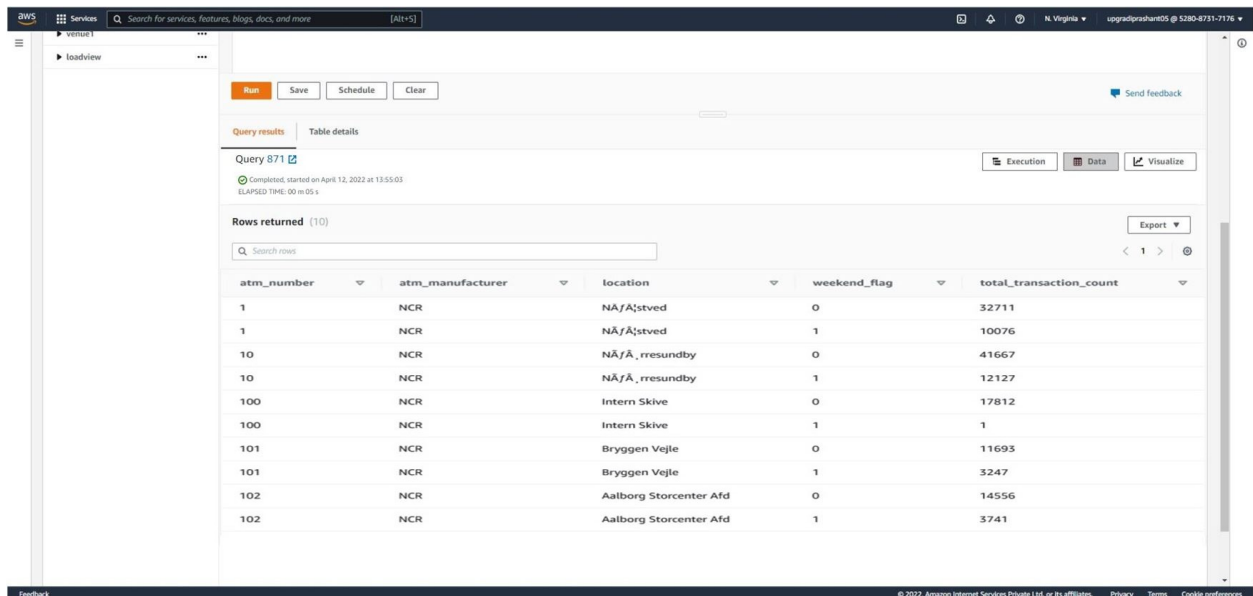
```
select cty.card_type,  
count(trans_id) as total_transaction_count,  
sum(case when atm_status = 'Inactive' then 1 else 0 end) as inactive_count,  
case when coalesce(inactive_count, 0) = 0 then 0.0000  
else trunc((cast(inactive_count as numeric(10,4))/total_transaction_count)*100, 2)  
end as inactive_count_percent  
from atm_data.fact_atm_trans f, atm_data.dim_card_type cty  
where f.card_type_id = cty.card_type_id  
group by cty.card_type  
order by inactive_count_percent desc  
limit 10;
```

The screenshot displays the AWS Redshift Query Editor interface. At the top, there's a navigation bar with 'AWS' and 'Services' tabs, a search bar, and user information. Below this, a sidebar on the left shows a file explorer with 'venize' and 'loadview'. The main area features a query editor with buttons for 'Run', 'Save', 'Schedule', and 'Clear'. Below the editor, the 'Query results' tab is active, showing 'Query 855' which is 'Completed, started on April 12, 2022 at 13:54:16' with an 'ELAPSED TIME: 00:00:02 s'. The results are displayed in a table with 4 columns: 'card_type', 'total_transaction_count', 'inactive_count', and 'inactive_count_percent'. The table shows 10 rows of data for various card types. An 'Export' button is visible in the top right of the results area.

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
HÅ/Å/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
HÅ/Å/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, 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_data.fact_atm_trans f, atm_data.dim_atm a, atm_data.dim_location l,  
atm_data.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  
limit 10;
```

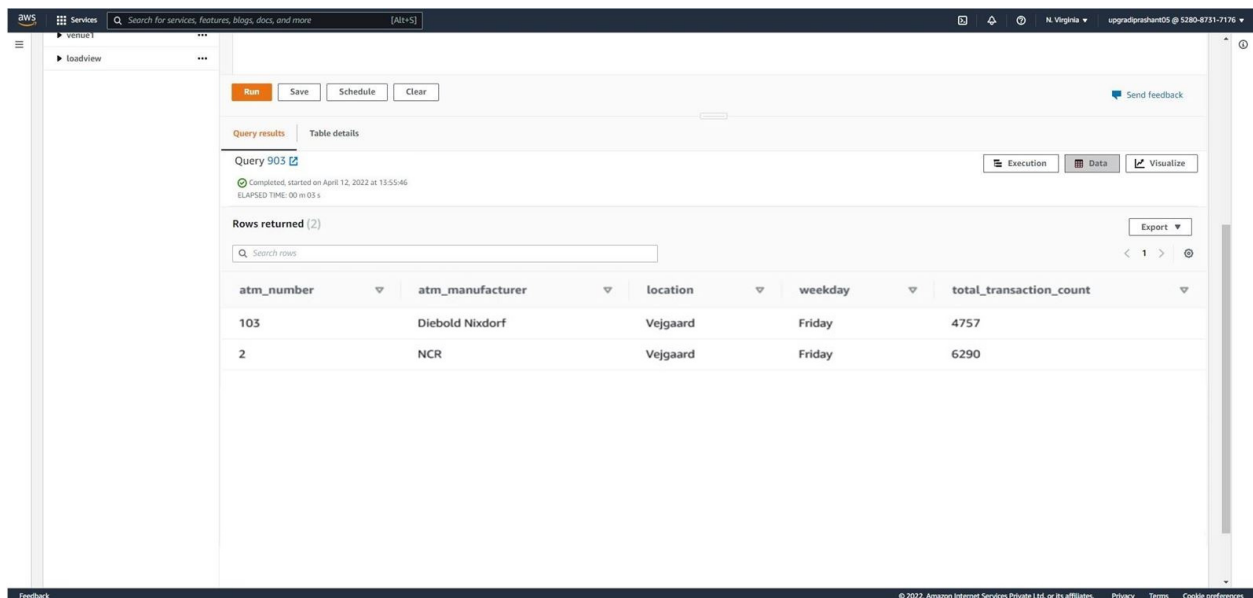


The screenshot displays the AWS Redshift Query Editor interface. At the top, there's a navigation bar with 'RDS' and 'Services' tabs, a search bar, and user information. Below this, a sidebar on the left shows a file explorer with 'venice1' and 'loadview'. The main workspace contains a query editor with buttons for 'Run', 'Save', 'Schedule', and 'Clear'. Below the editor, the 'Query results' tab is active, showing 'Query 871' which is 'Completed, started on April 12, 2022 at 13:55:03' with an 'ELAPSED TIME: 00 m 05 s'. The results section indicates 'Rows returned: (10)' and includes a search bar for rows. The data is presented in a table with the following columns: atm_number, atm_manufacturer, location, weekend_flag, and total_transaction_count. The table contains 10 rows of data, showing transaction counts for various ATM locations and manufacturers, categorized by whether the transaction occurred on a weekend.

atm_number	atm_manufacturer	location	weekend_flag	total_transaction_count
1	NCR	NÄfÄ;stved	0	32711
1	NCR	NÄfÄ;stved	1	10076
10	NCR	NÄfÄ, rresundby	0	41667
10	NCR	NÄfÄ, 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”

```
select a.atm_number, a.atm_manufacturer, l.location, d.weekday,
count(trans_id) as total_transaction_count
from atm_data.fact_atm_trans f inner join atm_data.dim_atm a on f.atm_id = a.atm_id
inner join atm_data.dim_location l on a.atm_location_id = l.location_id
inner join atm_data.dim_date d on f.date_id = d.date_id
where l.location = 'Vejgaard' and d.weekday in
( select d.weekday
from atm_data.fact_atm_trans f inner join atm_data.dim_date d
on f.date_id = d.date_id
inner join atm_data.dim_location l on f.location_id = l.location_id
where l.location = 'Vejgaard'
group by d.weekday
order by count(f.trans_id) desc
limit 1 )
group by a.atm_number, a.atm_manufacturer, l.location, d.weekday
order by total_transaction_count;
```



The screenshot shows the AWS Redshift console interface. The top navigation bar includes the AWS logo, a search bar, and user information. The left sidebar shows the 'loadview' option. The main content area displays the results of 'Query 903', which is a SQL query executed on April 12, 2022, at 13:55:46. The query results are shown in a table with 5 columns: atm_number, atm_manufacturer, location, weekday, and total_transaction_count. The table contains 2 rows of data.

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