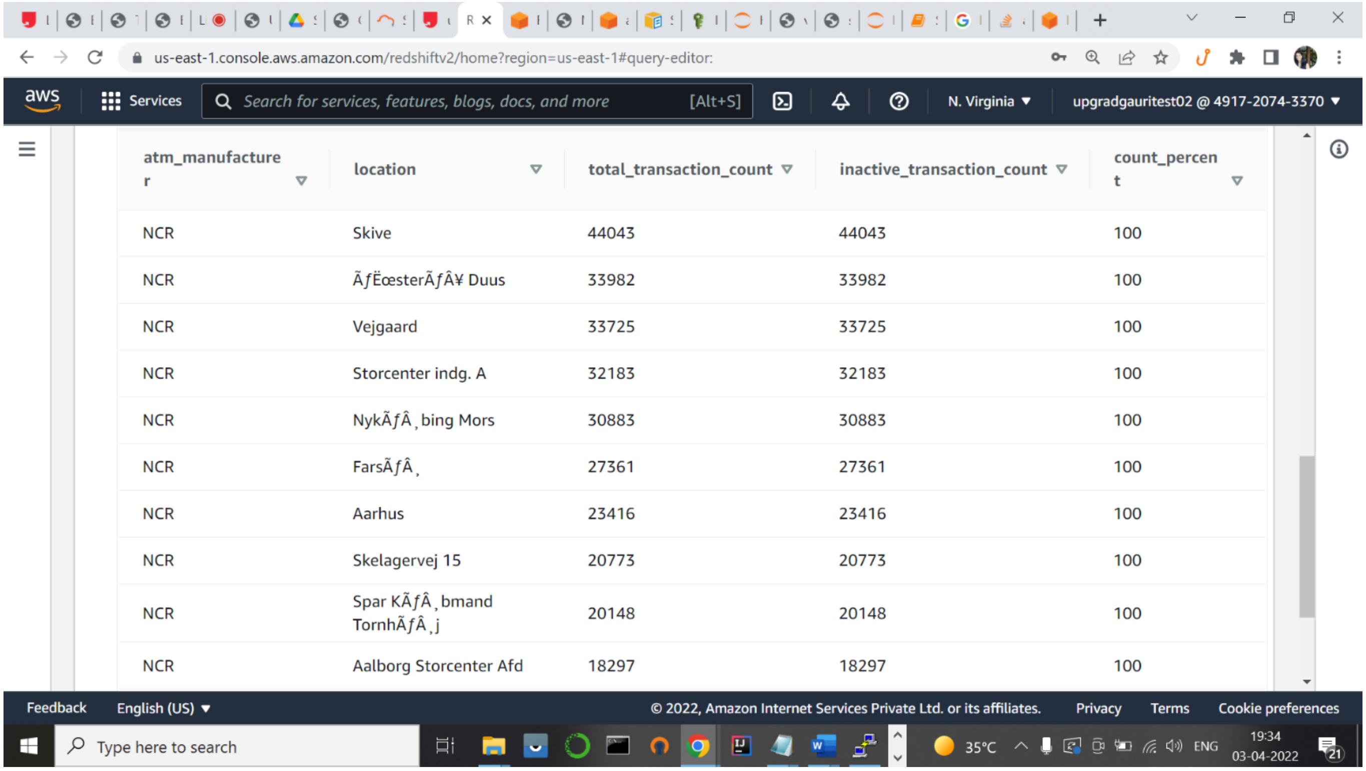
Solving analytical queries on Redshift Cluster

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

Query:

```
select 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 bank_atm_data.fact_atm_trans f, bank_atm_data.dim_atm a,bank_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;
```

Screenshot of the resultant table:



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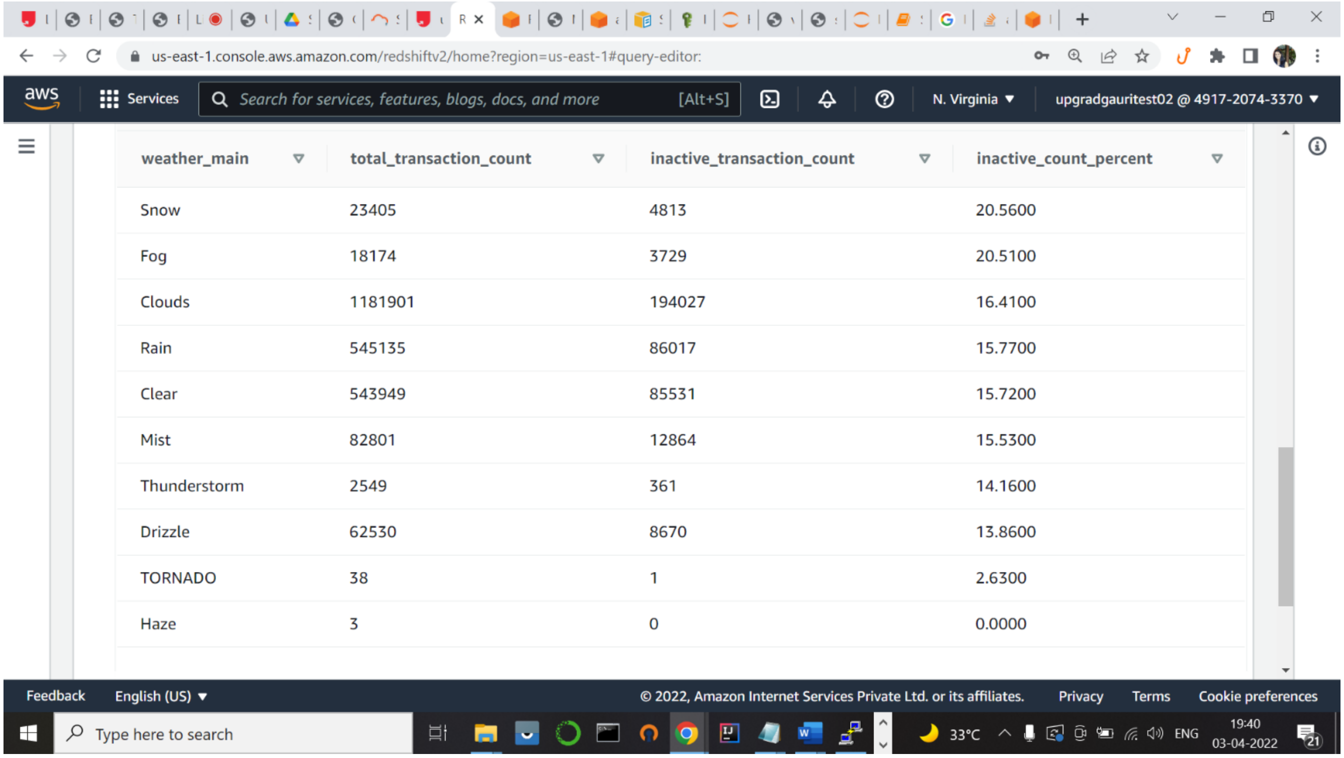
atm_manufacturer	location	total_transaction_count	inactive_transaction_count	count_percent
NCR	Skive	44043	44043	100
NCR	ÃƒËœsterÃƒÂ¥ Duus	33982	33982	100
NCR	Vejgaard	33725	33725	100
NCR	Storcenter indg. A	32183	32183	100
NCR	NykÃƒÂ¸bing Mors	30883	30883	100
NCR	FarsÃƒÂ¸	27361	27361	100
NCR	Aarhus	23416	23416	100
NCR	Skelagervej 15	20773	20773	100
NCR	Spar KÃƒÂ¸bmand TornhÃƒÂ¸j	20148	20148	100
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:

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

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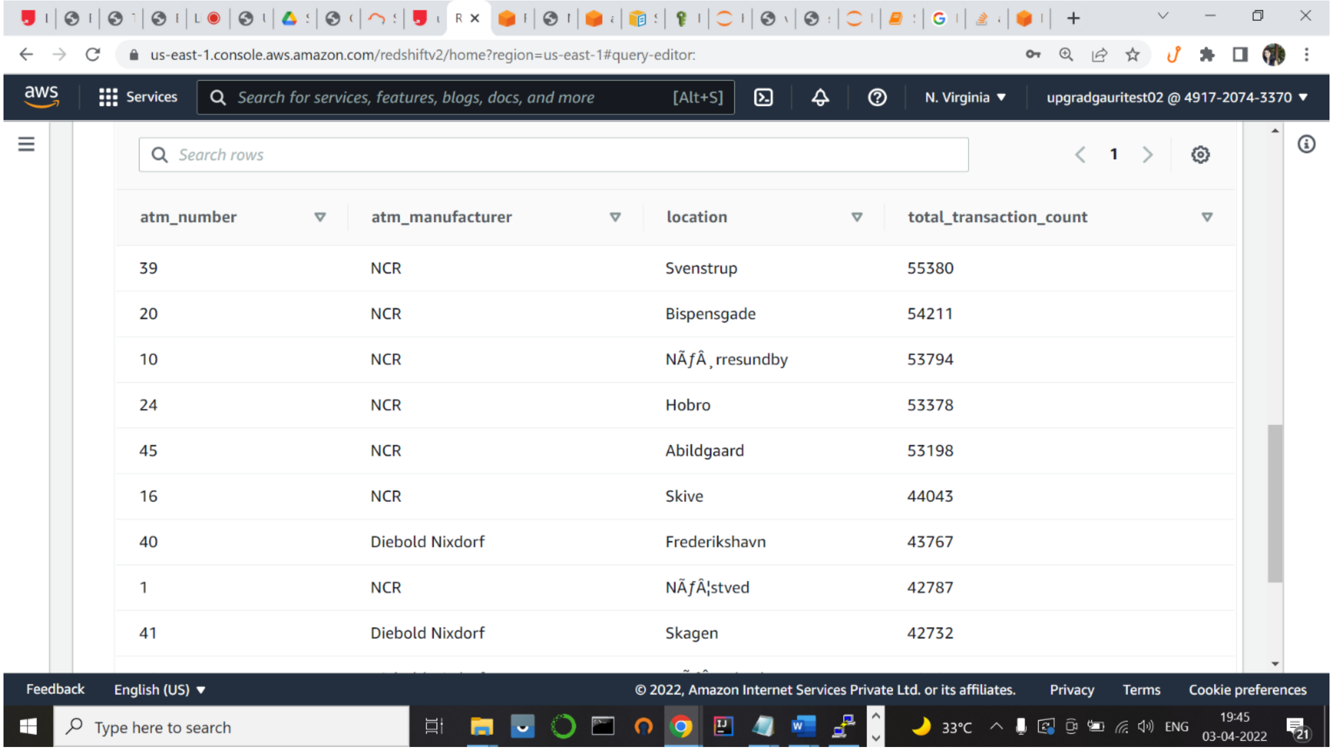
weather_main	total_transaction_count	inactive_transaction_count	inactive_count_percent
Snow	23405	4813	20.5600
Fog	18174	3729	20.5100
Clouds	1181901	194027	16.4100
Rain	545135	86017	15.7700
Clear	543949	85531	15.7200
Mist	82801	12864	15.5300
Thunderstorm	2549	361	14.1600
Drizzle	62530	8670	13.8600
TORNADO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

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

Query:

```
select a.atm_number, a.atm_manufacturer, l.location, count(trans_id) as total_transaction_count
from bank_atm_data.fact_atm_trans f, bank_atm_data.dim_atm a, bank_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;
```

Screenshot of the resultant table: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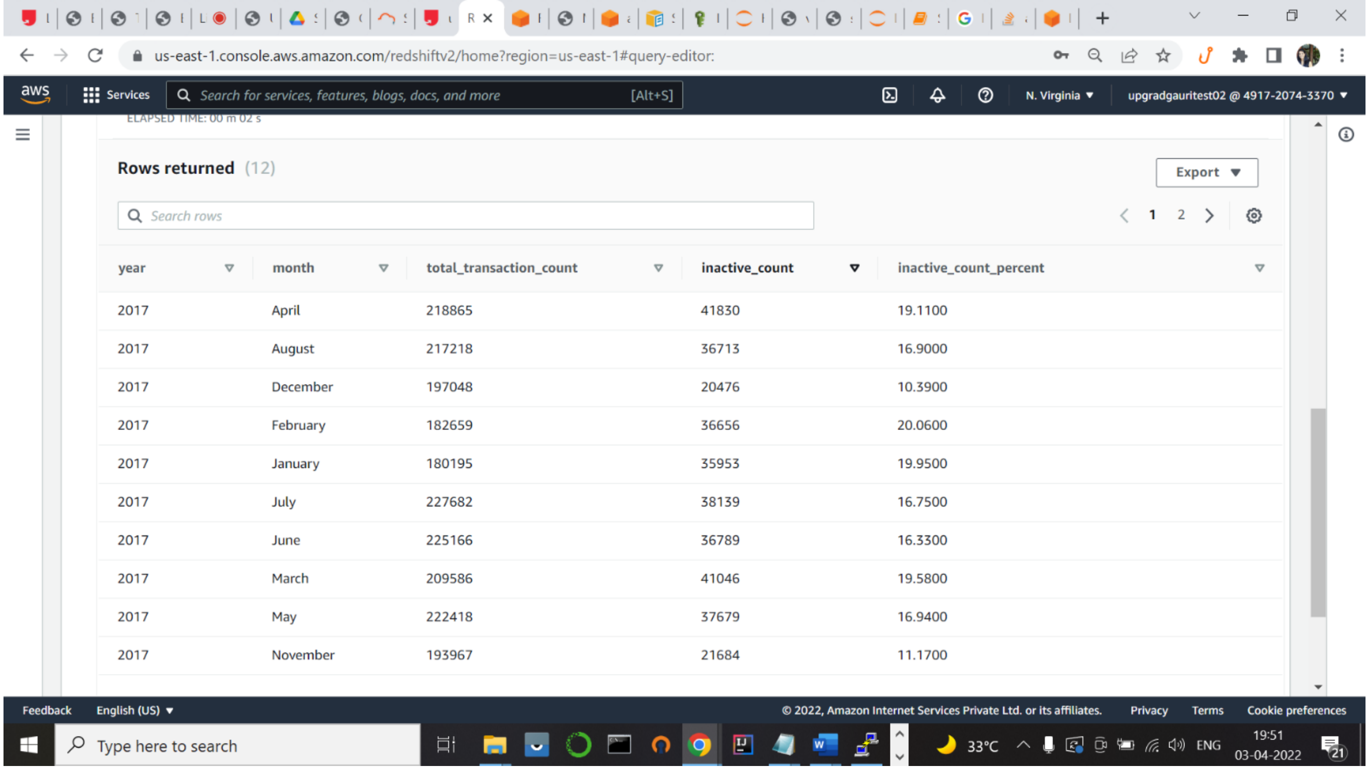
atm_number	atm_manufacturer	location	total_transaction_count
39	NCR	Svenstrup	55380
20	NCR	Bispensgade	54211
10	NCR	NÃƒÂ¸rresundby	53794
24	NCR	Hobro	53378
45	NCR	Abildgaard	53198
16	NCR	Skive	44043
40	Diebold Nixdorf	Frederikshavn	43767
1	NCR	NÃƒÂ¦stved	42787
41	Diebold Nixdorf	Skagen	42732

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

Query:

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

Screenshot of the resultant table:



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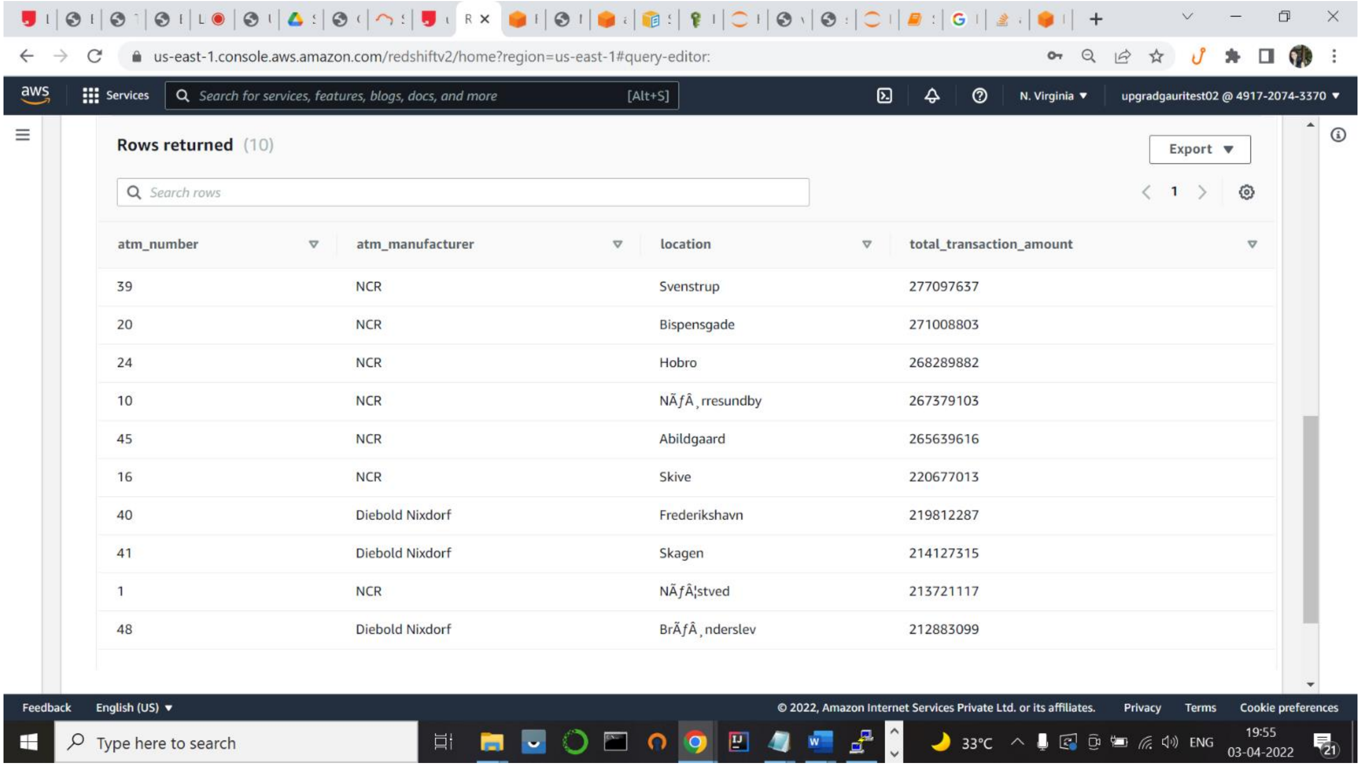
year	month	total_transaction_count	inactive_count	inactive_count_percent
2017	April	218865	41830	19.1100
2017	August	217218	36713	16.9000
2017	December	197048	20476	10.3900
2017	February	182659	36656	20.0600
2017	January	180195	35953	19.9500
2017	July	227682	38139	16.7500
2017	June	225166	36789	16.3300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

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

Query:

```
select a.atm_number, a.atm_manufacturer, l.location,
sum(transaction_amount) as total_transaction_amount
from bank_atm_data.fact_atm_trans f, bank_atm_data.dim_atm a, bank_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;
```

Screenshot of the resultant table:



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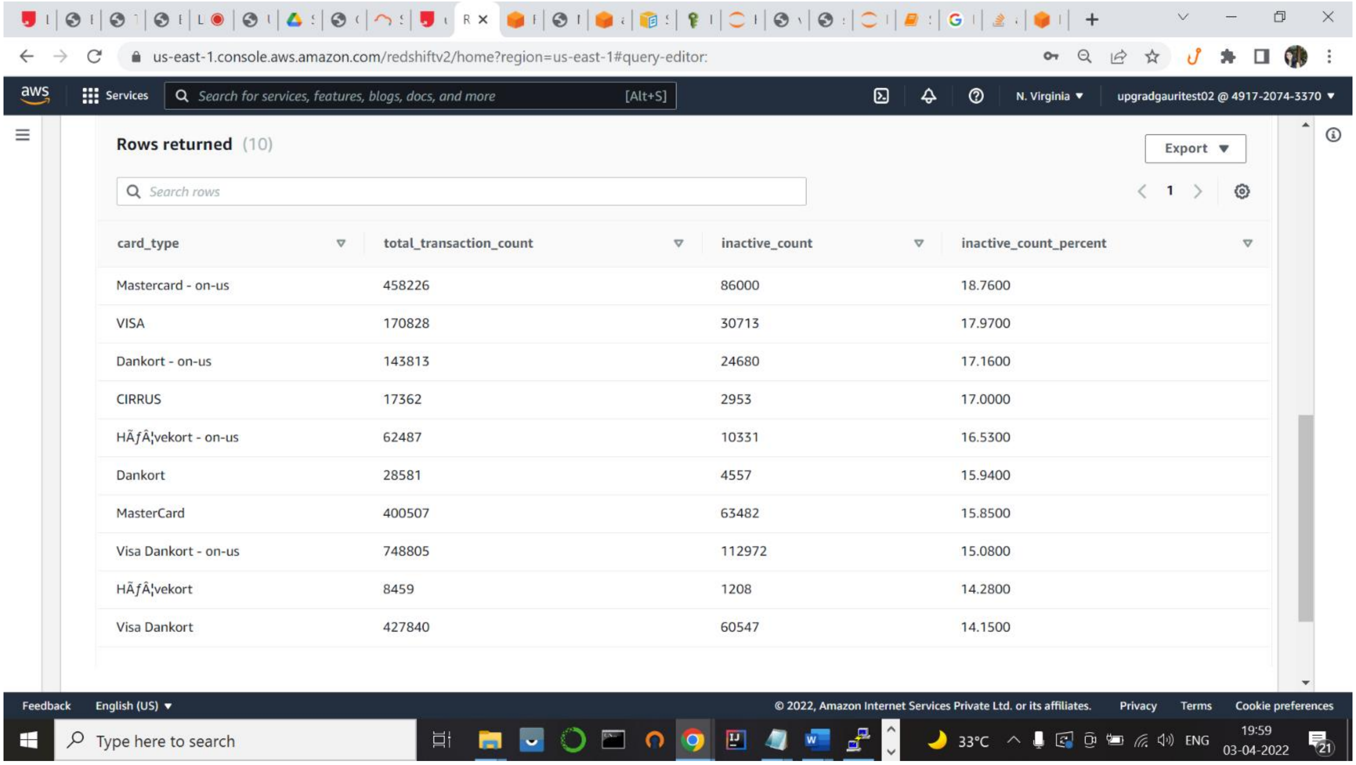
atm_number	atm_manufacturer	location	total_transaction_amount
39	NCR	Svenstrup	277097637
20	NCR	Bispensgade	271008803
24	NCR	Hobro	268289882
10	NCR	NÃƒÂ¸rresundby	267379103
45	NCR	Abildgaard	265639616
16	NCR	Skive	220677013
40	Diebold Nixdorf	Frederikshavn	219812287
41	Diebold Nixdorf	Skagen	214127315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

6. Number of failed ATM transactions across various card types

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,
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 bank_atm_data.fact_atm_trans f, bank_atm_data.dim_card_type ct
where f.card_type_id=ct.card_type_id
group by ct.card_type
order by inactive_count_percent desc
limit 10;
```

Screenshot of the resultant table:



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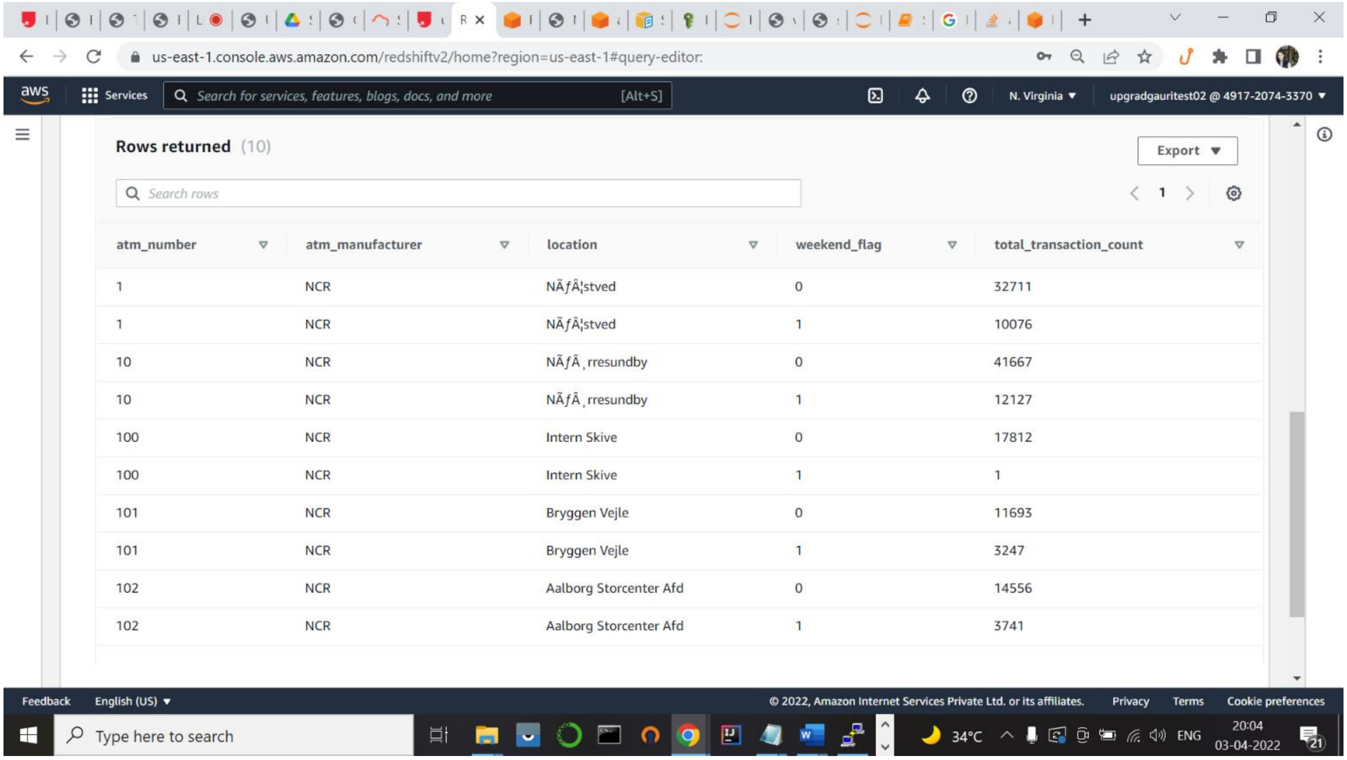
card_type	total_transaction_count	inactive_count	inactive_count_percent
Mastercard - on-us	458226	86000	18.7600
VISA	170828	30713	17.9700
Dankort - on-us	143813	24680	17.1600
CIRRUS	17362	2953	17.0000
HÃƒÂ¦vekort - on-us	62487	10331	16.5300
Dankort	28581	4557	15.9400
MasterCard	400507	63482	15.8500
Visa 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**

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(trans_id) as total_transaction_count
from bank_atm_data.fact_atm_trans f, bank_atm_data.dim_atm a, bank_atm_data.dim_location
l, bank_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;
```

Screenshot of the resultant table: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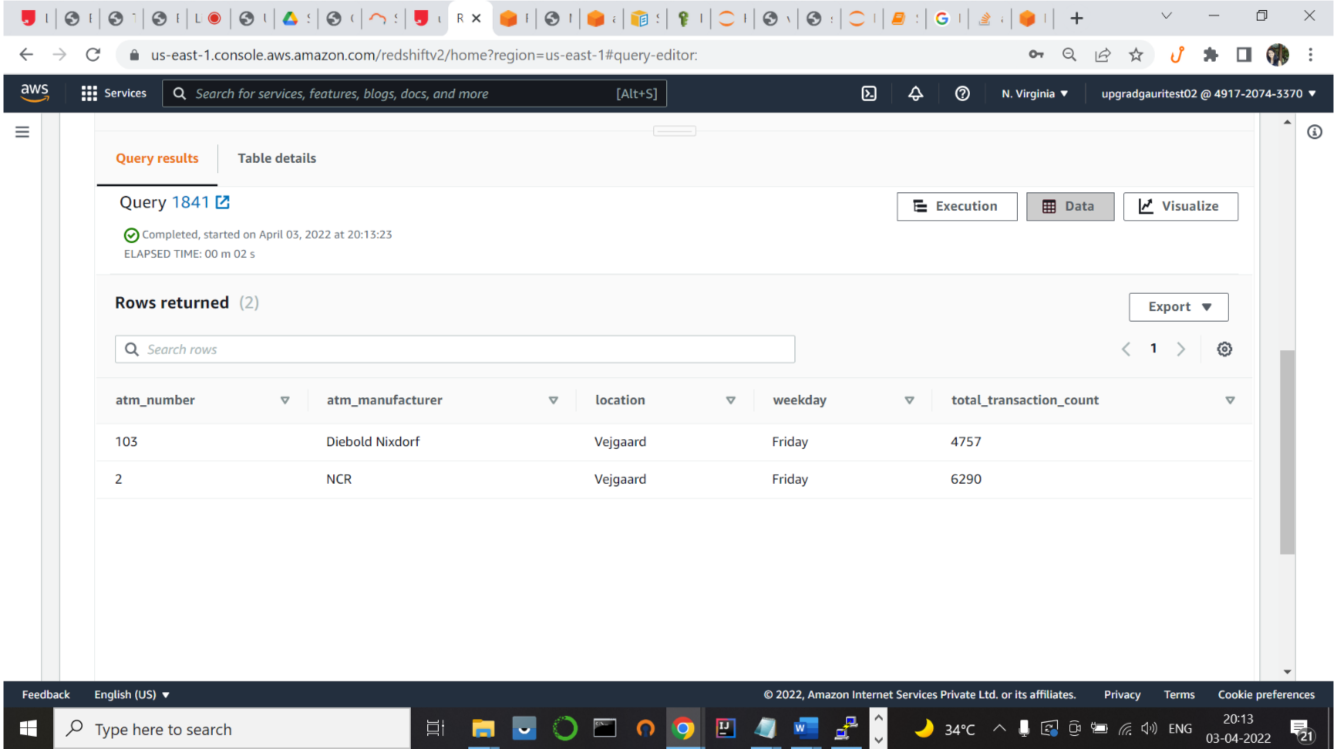
atm_number	atm_manufacturer	location	weekend_flag	total_transaction_count
1	NCR	NÃƒÂ¦stved	0	32711
1	NCR	NÃƒÂ¦stved	1	10076
10	NCR	NÃƒÂ¸rresundby	0	41667
10	NCR	NÃƒÂ¸rresundby	1	12127
100	NCR	Intern Skive	0	17812
100	NCR	Intern Skive	1	1
101	NCR	Bryggen Vejle	0	11693
101	NCR	Bryggen Vejle	1	3247
102	NCR	Aalborg Storcenter Afd	0	14556
102	NCR	Aalborg Storcenter Afd	1	3741

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

Query:

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

Screenshot of the resultant table: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Rows returned (2)

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