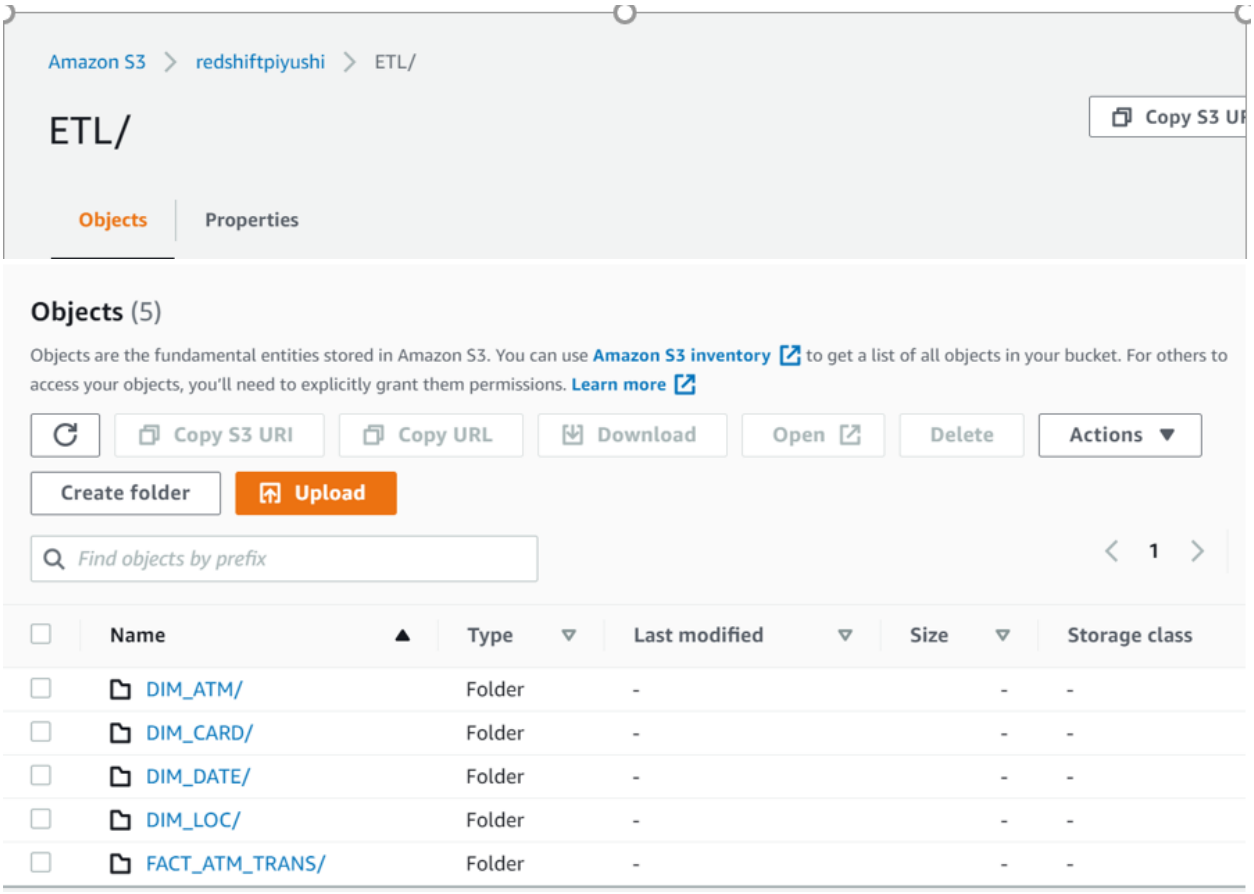
Solving analytical queries on RedShift Cluster



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

```
SELECT a.atm_id as atm_number, a.atm_manufacturer, b.atm_location as location,
count(d.trans_id) as transaction_count,
 count(d.atm_status)
 from etl.atm a, etl.loc b, etl.FACT_ATM_TRANS d
 where d.atm_status = 'Inactive'
 and d.atm_prim_id = a.atm_prim_id
 and b.location_id = d.location_id
 group by a.atm_id, a.atm_manufacturer, b.atm_location
 order by transaction_count desc
 limit 10;
```

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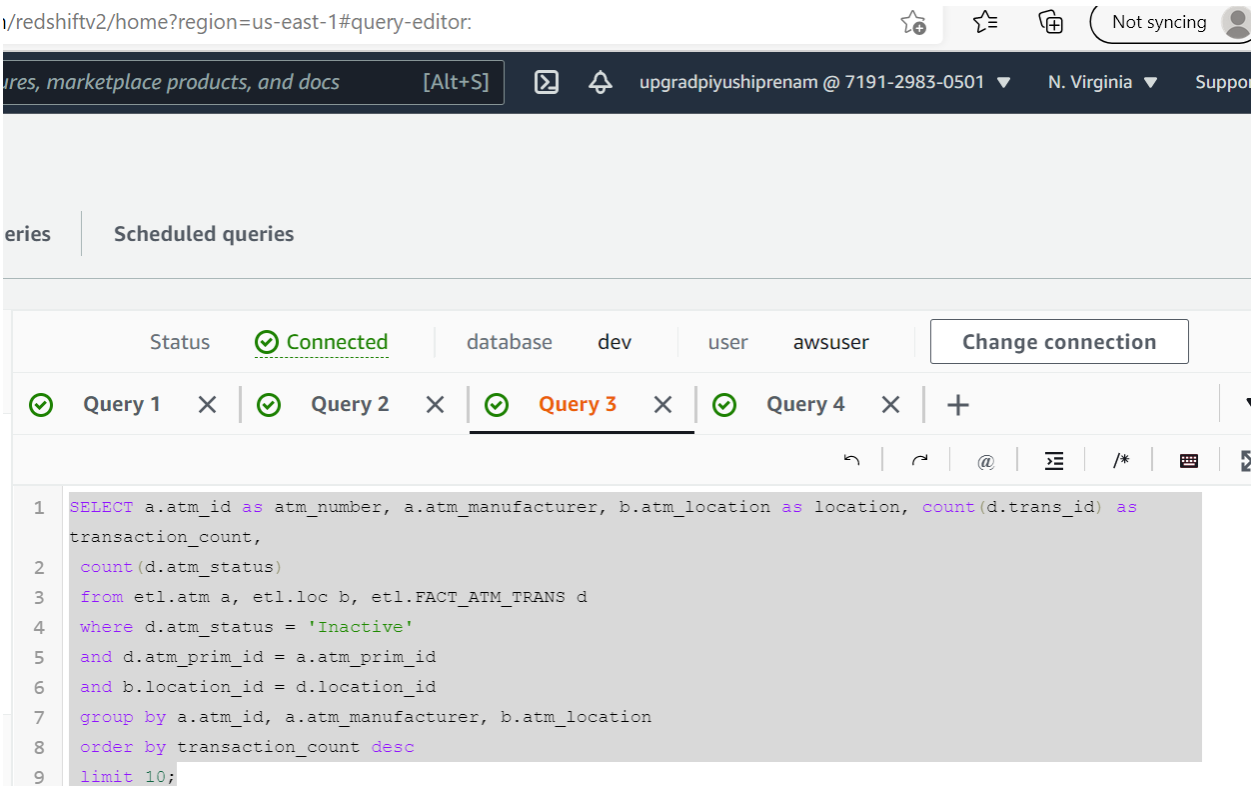

atm_number	atm_manufacturer	location	transaction_count	count
16	NCR	Skive	44043	44043
12	NCR	ÃƒËœsterÃƒÂ¥ Duus	33982	33982
2	NCR	Vejgaard	33725	33725
88	NCR	Storcenter indg. A	32183	32183
30	NCR	NykÃƒÂ¸bing Mors	30883	30883
52	NCR	FarsÃƒÂ¸	27361	27361
50	NCR	Aarhus	23416	23416
29	NCR	Skelagervej 15	20773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

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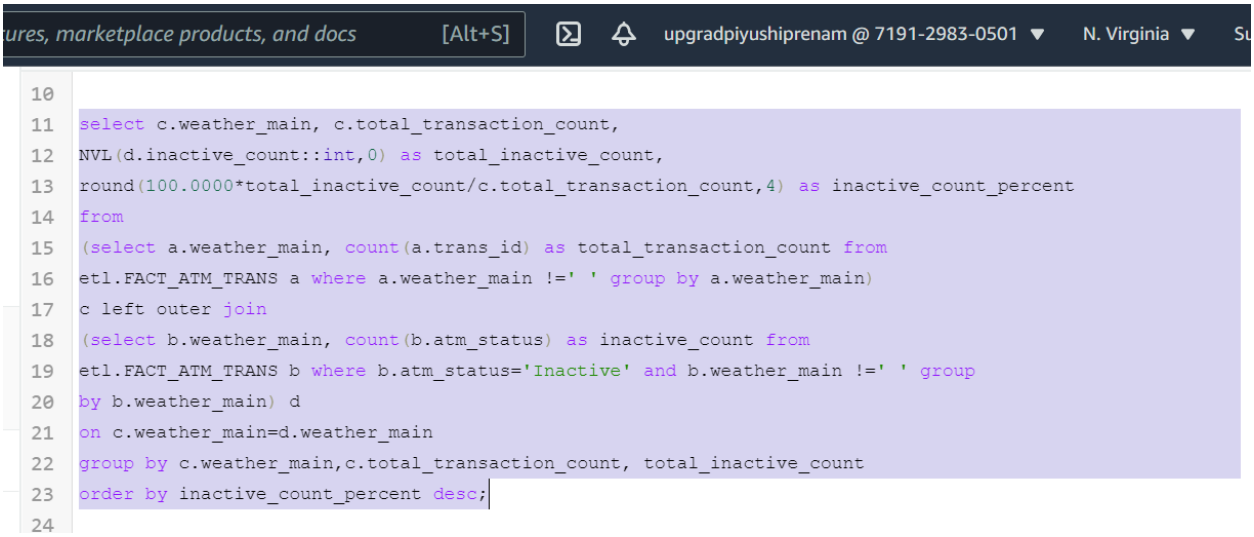
2. **Number of ATM failures corresponding to the different weather conditions recorded at the time of the transactions**

```
select c.weather_main, c.total_transaction_count,
NVL(d.inactive_count::int,0) as total_inactive_count,
round(100.0000*total_inactive_count/c.total_transaction_count,4) as inactive_count_percent
from
(select a.weather_main, count(a.trans_id) as total_transaction_count from
etl.FACT_ATM_TRANS a where a.weather_main !=' ' group by a.weather_main)
c left outer join
(select b.weather_main, count(b.atm_status) as inactive_count from
etl.FACT_ATM_TRANS b where b.atm_status='Inactive' and b.weather_main !=' ' group
by b.weather_main) d
on c.weather_main=d.weather_main
group by c.weather_main,c.total_transaction_count, total_inactive_count
order by inactive_count_percent desc;
```



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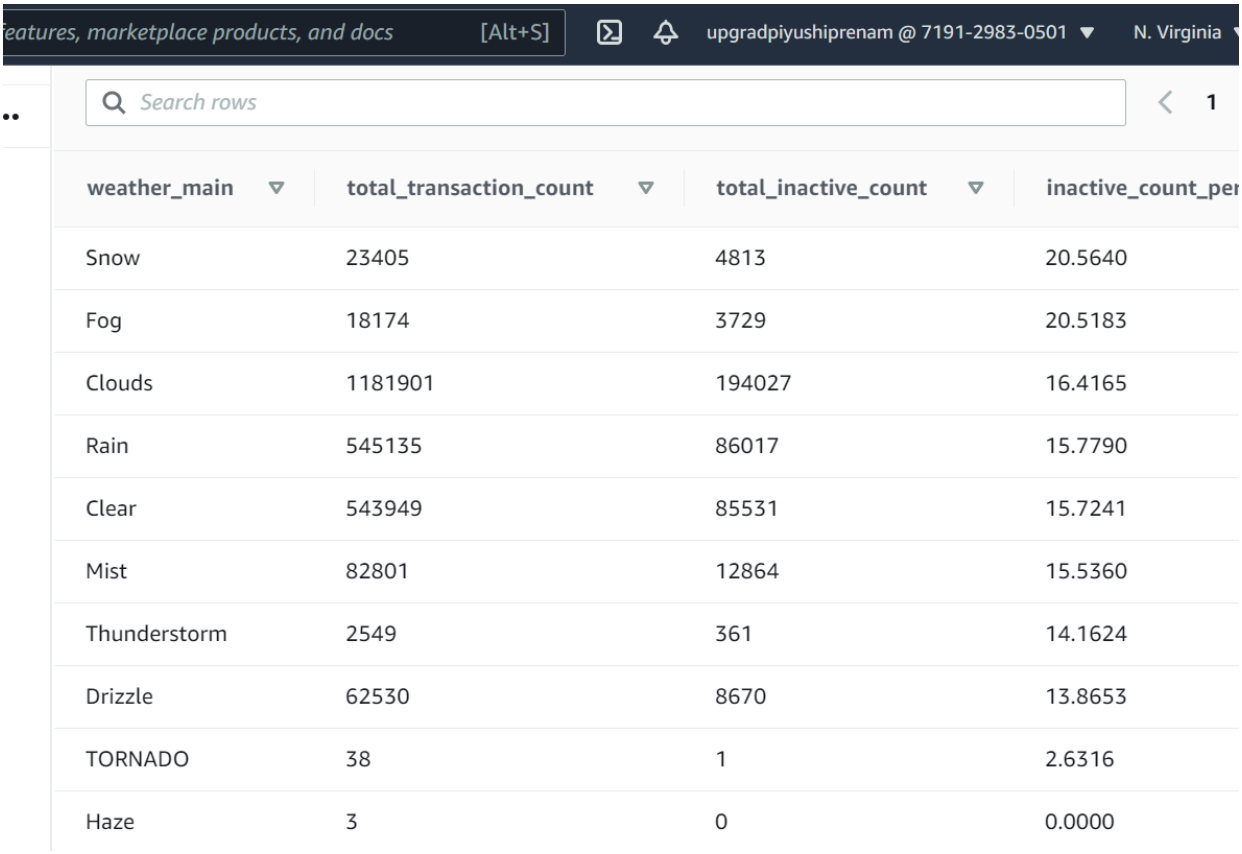

weather_main	total_transaction_count	total_inactive_count	inactive_count_per
Snow	23405	4813	20.5640
Fog	18174	3729	20.5183
Clouds	1181901	194027	16.4165
Rain	545135	86017	15.7790
Clear	543949	85531	15.7241
Mist	82801	12864	15.5360
Thunderstorm	2549	361	14.1624
Drizzle	62530	8670	13.8653
TORNADO	38	1	2.6316
Haze	3	0	0.0000

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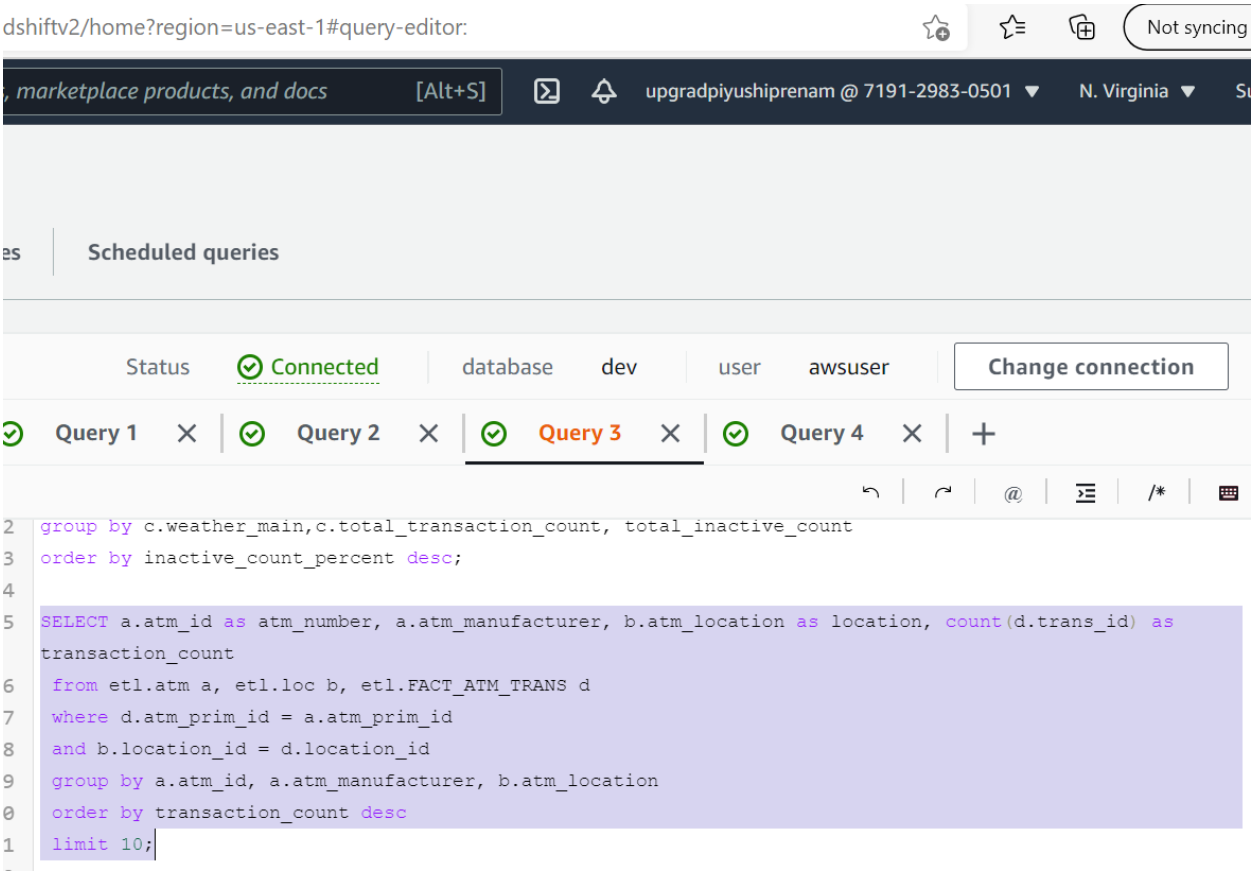
3. Top 10 ATMs with the most number of transactions throughout the year

```
SELECT a.atm_id as atm_number, a.atm_manufacturer, b.atm_location as location,
count(d.trans_id) as transaction_count
 from etl.atm a, etl.loc b, etl.FACT_ATM_TRANS d
 where d.atm_prim_id = a.atm_prim_id
 and b.location_id = d.location_id
 group by a.atm_id, a.atm_manufacturer, b.atm_location
 order by transaction_count desc
 limit 10;
```



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atm_number	atm_manufacturer	location	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

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

```
select c.year, c.month, c.transaction_count, d.inactive_count,
CAST(trunc(100.0*d.inactive_count/c.transaction_count,2) AS NUMERIC(10,4)) as
inactive_count_percent from
(select a.year, DECODE(a.month,'01','January'
                       ,'02','February'
                       ,'03','March'
                       ,'04','April'
                       ,'05','May'
                       ,'06','June'
                       ,'07','July'
                       ,'08','August'
                       ,'09','September'
                       ,'10','October'
                       ,'11','November'
                       ,'12','Decemeber') as month, count(b.trans_id) as transaction_count from
etl.date
a,etl.FACT_ATM_TRANS b where a.date_id = b.date_id group by  a.year,a.month) c left join
(select a.year, DECODE(a.month,'01','January'
                       ,'02','February'
                       ,'03','March'
                       ,'04','April'
                       ,'05','May'
                       ,'06','June'
                       ,'07','July'
                       ,'08','August'
                       ,'09','September'
                       ,'10','October'
                       ,'11','November'
                       ,'12','Decemeber') as month, count(b.atm_status) as inactive_count from
etl.date
a,etl.FACT_ATM_TRANS b where a.date_id = b.date_id and b.atm_status='Inactive'
group by  a.year,a.month) d
on c.year=d.year and c.month=d.month
order by c.month
;
```

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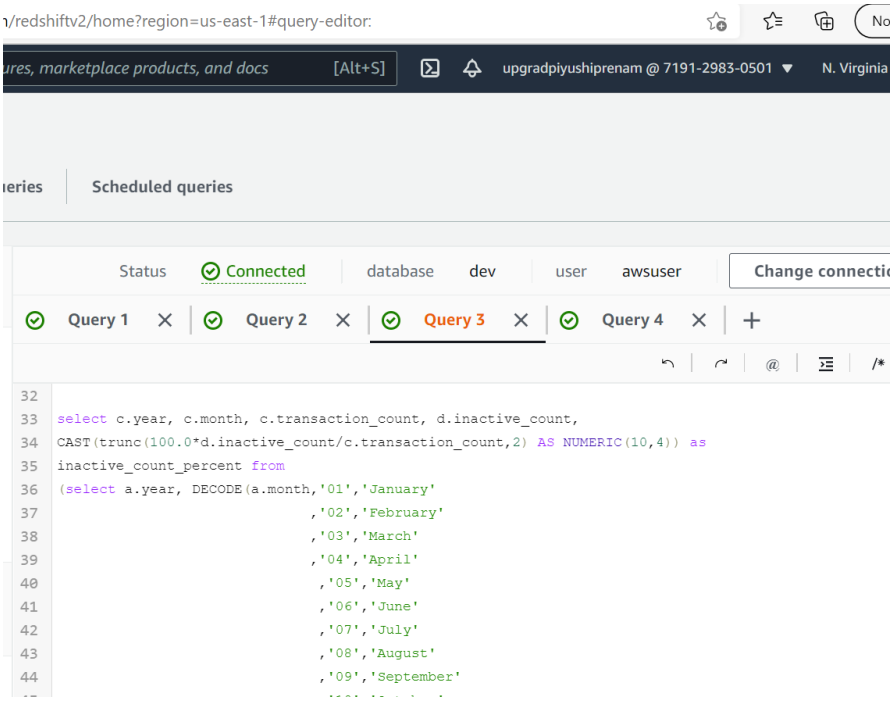

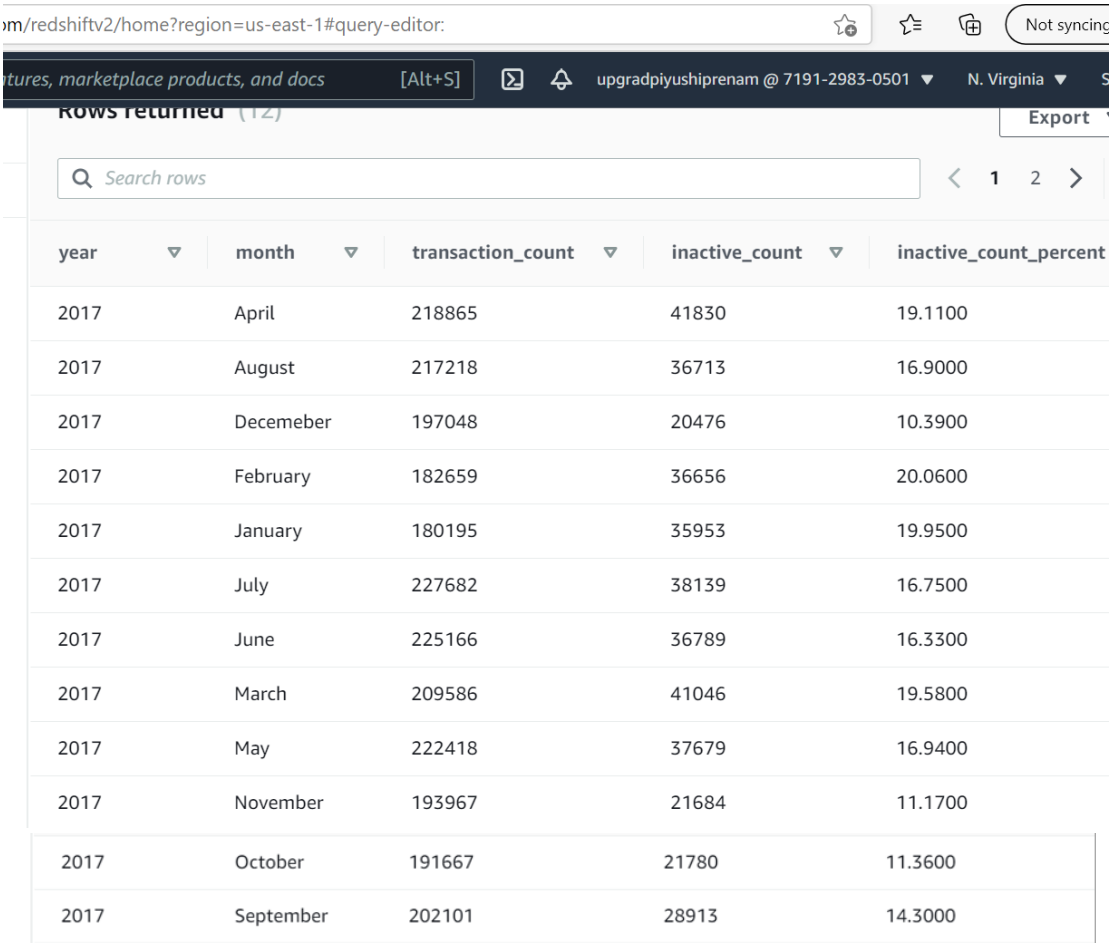

year	month	transaction_count	inactive_count	inactive_count_percent
2017	April	218865	41830	19.1100
2017	August	217218	36713	16.9000
2017	Decemeber	197048	20476	10.3900
2017	February	182659	36656	20.0600
2017	January	180195	35953	19.9500
2017	July	227682	38139	16.7500
2017	June	225166	36789	16.3300
2017	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

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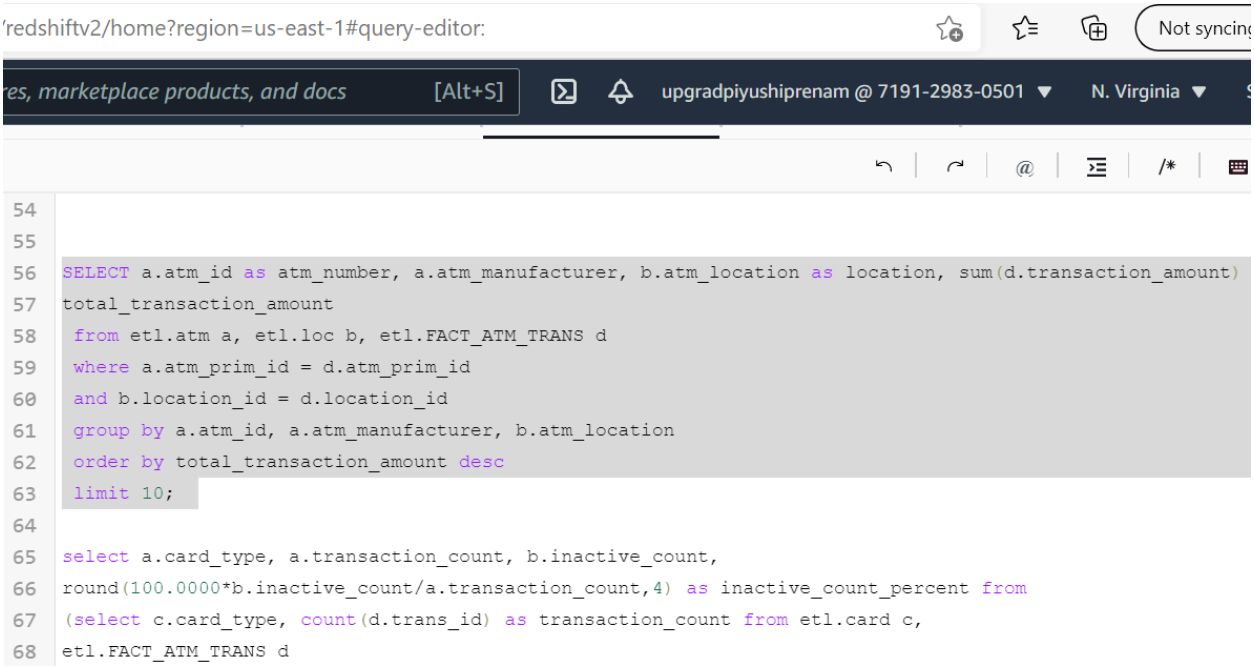
5. **Top 10 ATMs with the highest total withdrawn amount throughout the year**

SELECT a.atm_id as atm_number, a.atm_manufacturer, b.atm_location as location,
sum(d.transaction_amount) as
total_transaction_amount
 from etl.atm a, etl.loc b, etl.FACT_ATM_TRANS d
 where a.atm_prim_id = d.atm_prim_id
 and b.location_id = d.location_id
 group by a.atm_id, a.atm_manufacturer, b.atm_location
 order by total_transaction_amount desc
 limit 10;



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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

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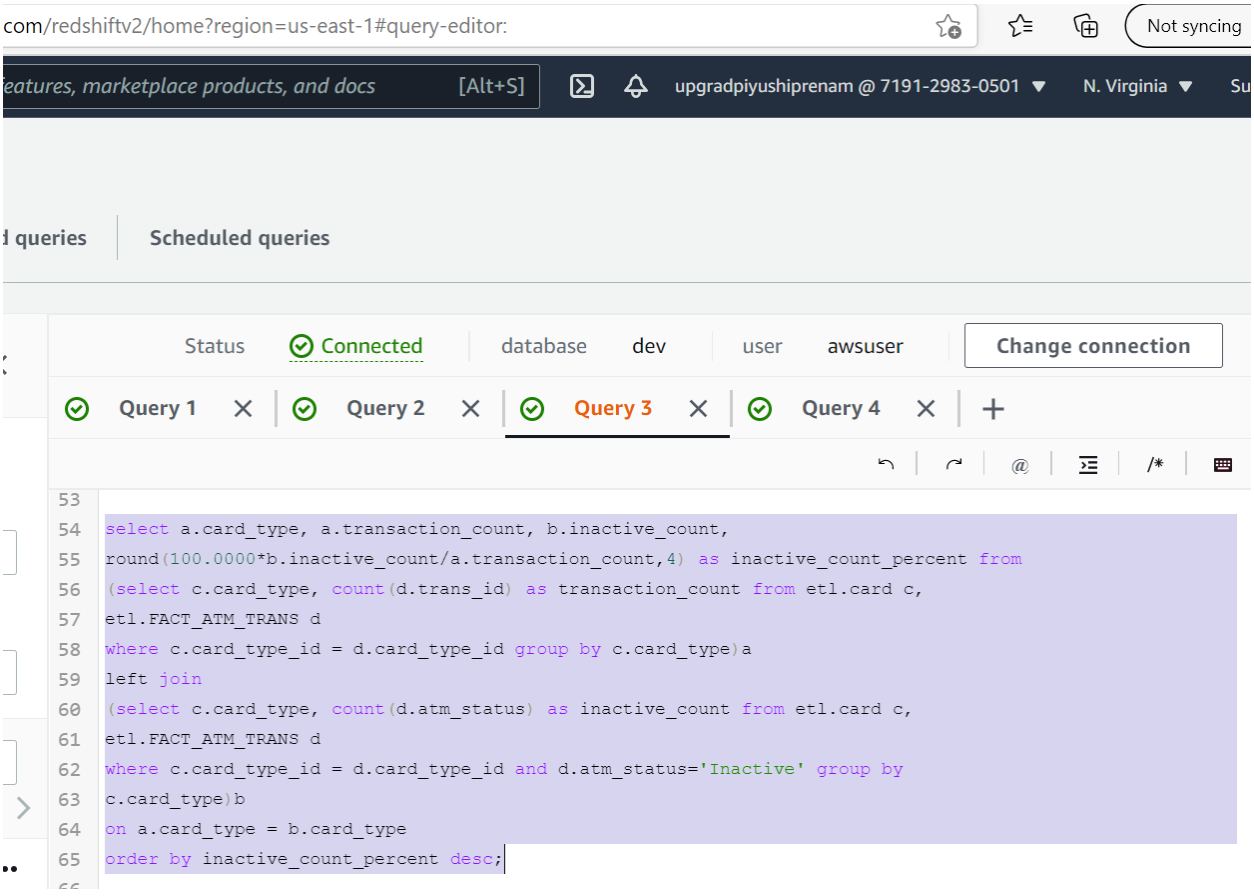
6. Number of failed ATM transactions across various card types

```
select a.card_type, a.transaction_count, b.inactive_count,
round(100.0000*b.inactive_count/a.transaction_count,4) as inactive_count_percent from
(select c.card_type, count(d.trans_id) as transaction_count from etl.card c,
etl.FACT_ATM_TRANS d
where c.card_type_id = d.card_type_id group by c.card_type)a
left join
(select c.card_type, count(d.atm_status) as inactive_count from etl.card c,
etl.FACT_ATM_TRANS d
where c.card_type_id = d.card_type_id and d.atm_status='Inactive' group by
c.card_type)b
on a.card_type = b.card_type
order by inactive_count_percent desc;
```



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card_type	transaction_count	inactive_count	inactive_count_percent
Mastercard - on-us	458226	86000	18.7680
VISA	170828	30713	17.9789
Dankort - on-us	143813	24680	17.1612
CIRRUS	17362	2953	17.0084
HÃƒÂ¦vekort - on-us	62487	10331	16.5330
Dankort	28581	4557	15.9442
MasterCard	400507	63482	15.8504
Visa Dankort - on-us	748805	112972	15.0870
HÃƒÂ¦vekort	8459	1208	14.2806
Visa Dankort	427840	60547	14.1518
VisaPlus	1134	150	13.2275
Maestro	530	65	12.2642

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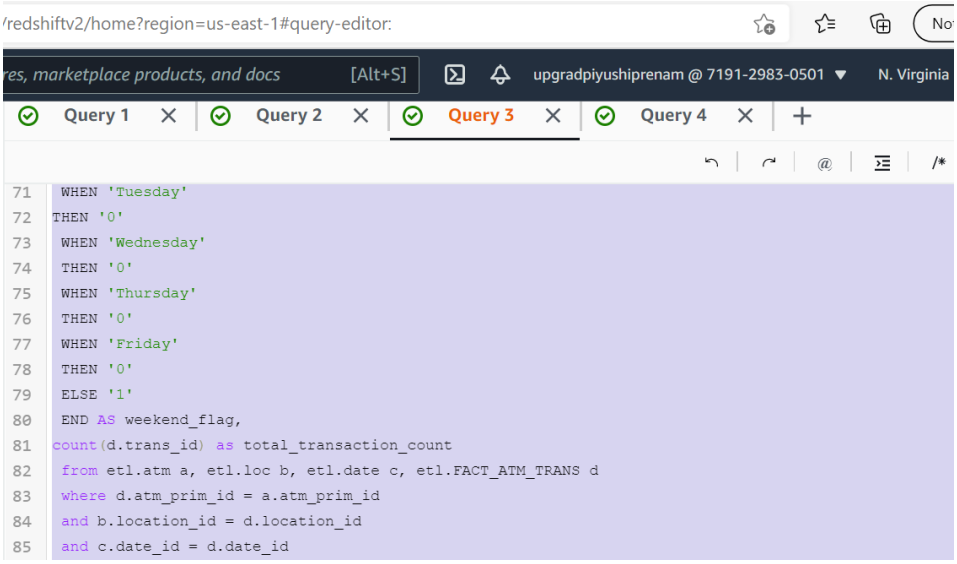
7. **Number of transactions happening on an ATM on weekdays and on weekends throughout the year. Order this by the ATM_number, ATM_manufacturer, location, weekend_flag and then total_transaction_count**

```
SELECT a.atm_id as atm_number, a.atm_manufacturer, b.atm_location as location,
CASE c.weekday
 WHEN 'Monday'
 THEN '0'
 WHEN 'Tuesday'
THEN '0'
 WHEN 'Wednesday'
 THEN '0'
 WHEN 'Thursday'
 THEN '0'
 WHEN 'Friday'
 THEN '0'
 ELSE '1'
 END AS weekend_flag,
count(d.trans_id) as total_transaction_count
 from etl.atm a, etl.loc b, etl.date c, etl.FACT_ATM_TRANS d
 where d.atm_prim_id = a.atm_prim_id
 and b.location_id = d.location_id
 and c.date_id = d.date_id
 group by a.atm_id, a.atm_manufacturer, b.atm_location, weekend_flag
 order by a.atm_id asc, weekend_flag asc
 limit 10;
```



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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

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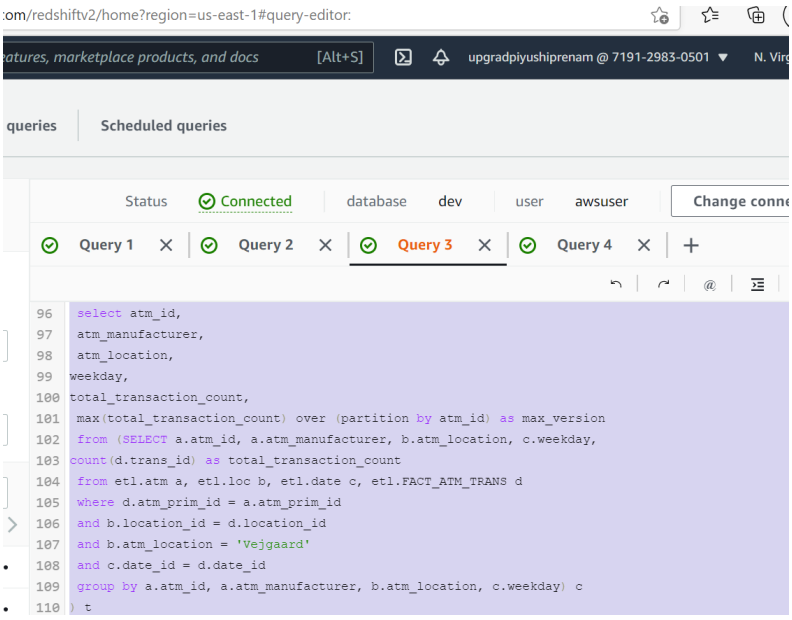
8. **Most active day in each ATMs from location "Vejgaard"**

```
SELECT atm_id,
 atm_manufacturer,
 atm_location,
weekday,
total_transaction_count
FROM (
 select atm_id,
 atm_manufacturer,
 atm_location,
weekday,
total_transaction_count,
 max(total_transaction_count) over (partition by atm_id) as max_version
 from (SELECT a.atm_id, a.atm_manufacturer, b.atm_location, c.weekday,
count(d.trans_id) as total_transaction_count
 from etl.atm a, etl.loc b, etl.date c, etl.FACT_ATM_TRANS d
 where d.atm_prim_id = a.atm_prim_id
 and b.location_id = d.location_id
 and b.atm_location = 'Vejgaard'
 and c.date_id = d.date_id
 group by a.atm_id, a.atm_manufacturer, b.atm_location, c.weekday) c
) t
where total_transaction_count = max_version
order by total_transaction_count;
```



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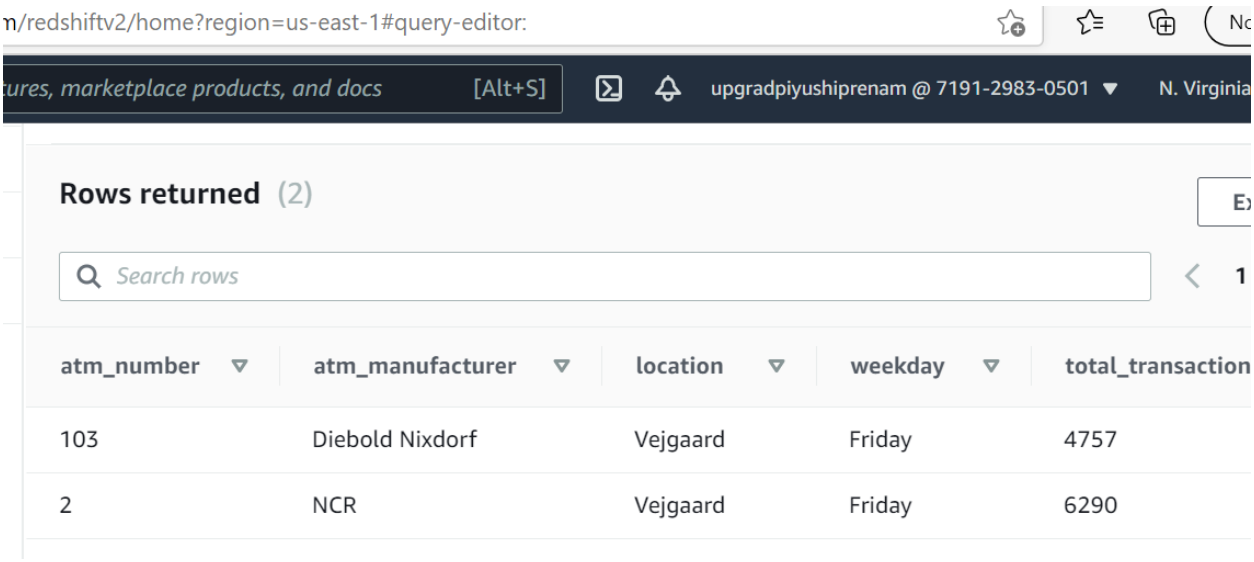

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