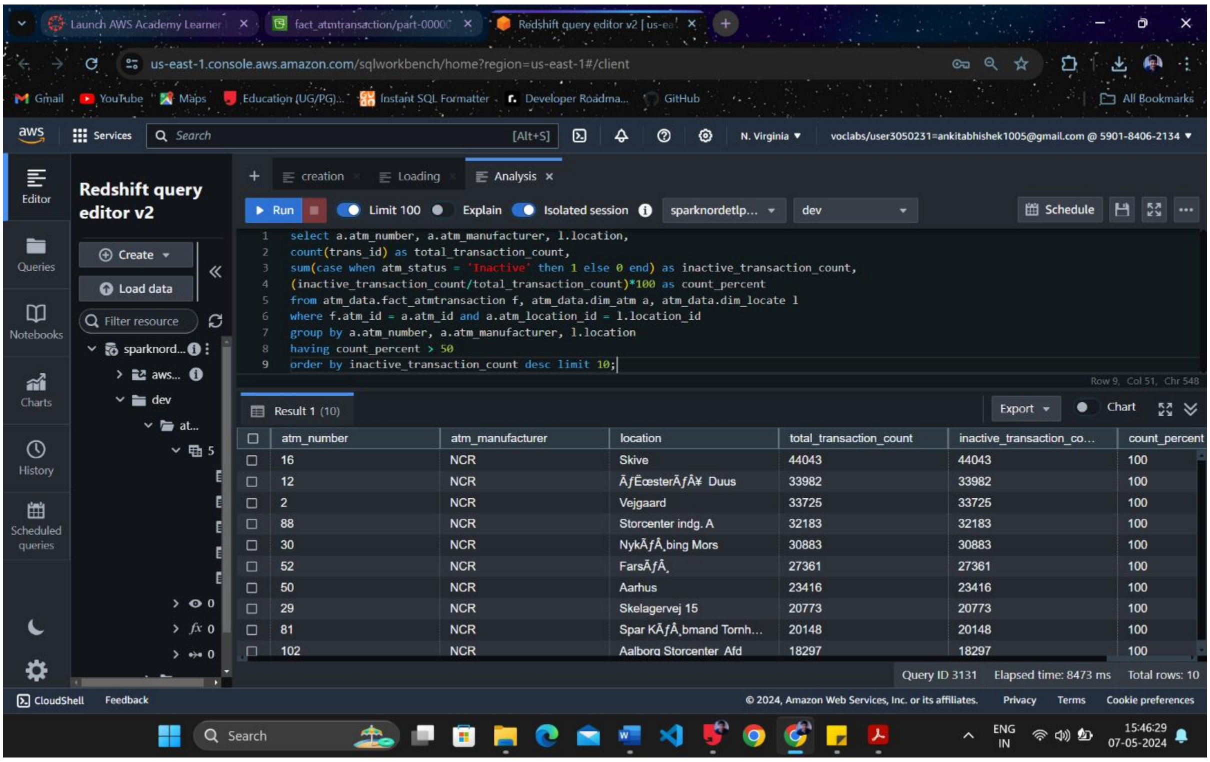
ANALYTICAL QUERIES ON REDSHIFT CLUSTER

Queries used for solving the question and the screenshots of the output table 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_atmtransaction f, atm_data.dim_atm a, atm_data.dim_locate 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;
```



```
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_atmtransaction f, atm_data.dim_atm a, atm_data.dim_locate 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;
```

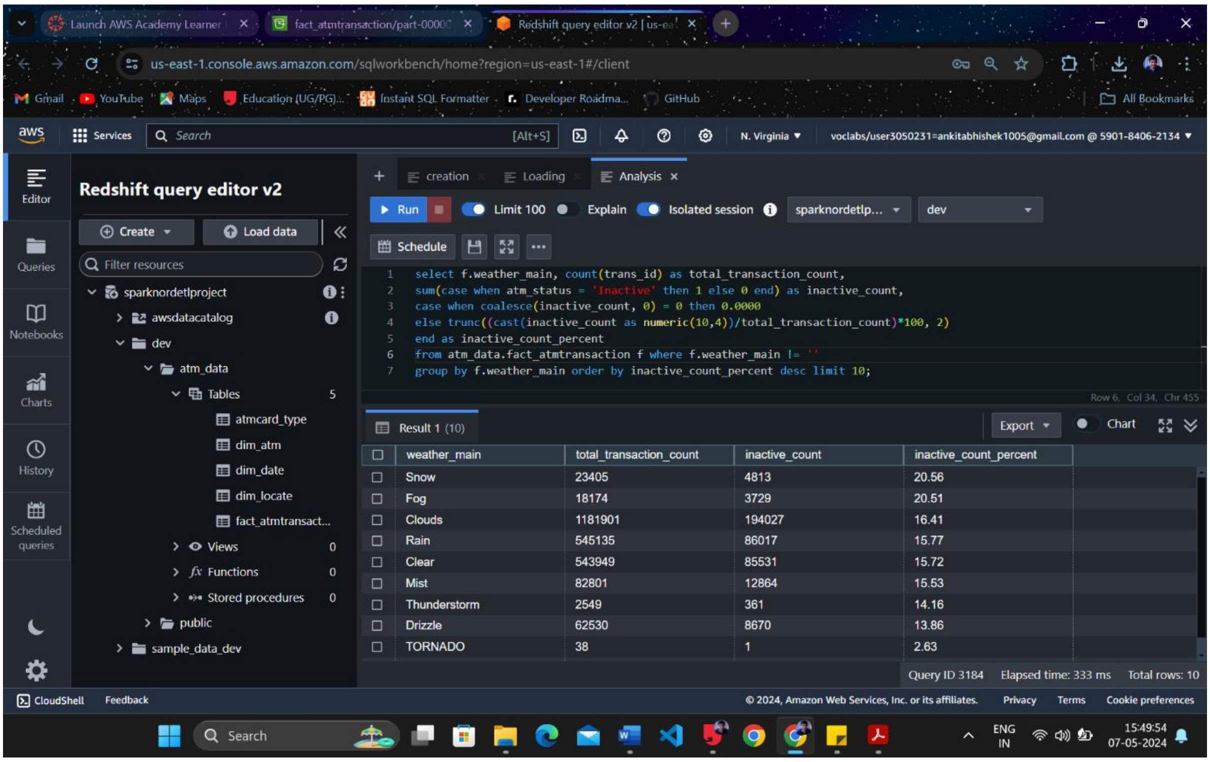
Result 1 (10)

atm_number	atm_manufacturer	location	total_transaction_count	inactive_transaction_co...	count_percent
16	NCR	Skive	44043	44043	100
12	NCR	ÃƒËœsterÃƒÂ¥ 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	23416	23416	100
29	NCR	Skelagervej 15	20773	20773	100
81	NCR	Spar KÃƒÂ¸bmand Tornh...	20148	20148	100
102	NCR	Aalborg Storcenter Afd	18297	18297	100

Query ID 3131 Elapsed time: 8473 ms Total rows: 10

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_atmtransaction f where f.weather_main != ''
group by f.weather_main order by inactive_count_percent desc limit 10;
```



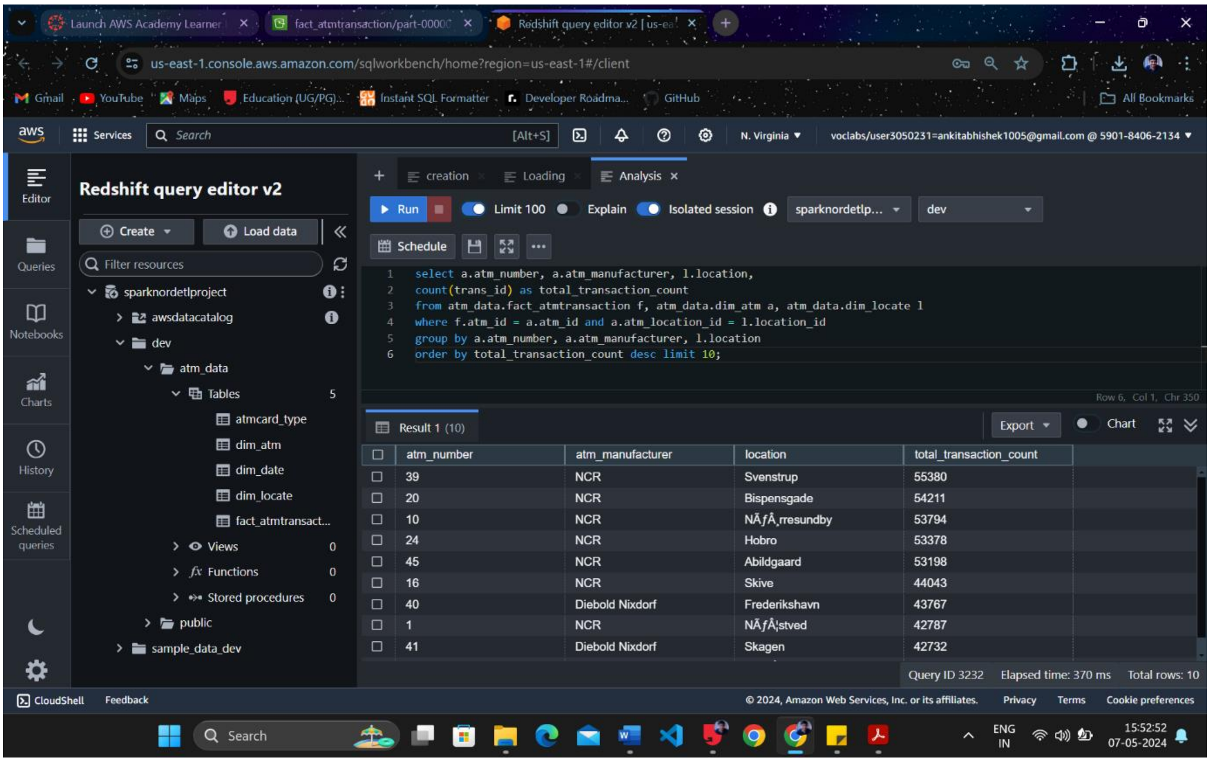
```
select f.weather_main, count(trans_id) as total_transaction_count,
sum(case when atm_status = 'Inactive' then 1 else 0 end) as inactive_count,
case when coalesce(inactive_count, 0) = 0 then 0.0000
else trunc((cast(inactive_count as numeric(10,4))/total_transaction_count)*100, 2)
end as inactive_count_percent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

weather_main	total_transaction_count	inactive_count	inactive_count_percent
Snow	23405	4813	20.56
Fog	18174	3729	20.51
Clouds	1181901	194027	16.41
Rain	545135	86017	15.77
Clear	543949	85531	15.72
Mist	82801	12864	15.53
Thunderstorm	2549	361	14.16
Drizzle	62530	8670	13.86
TORNADO	38	1	2.63

Query ID 3184 Elapsed time: 333 ms Total rows: 10

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_atmtransaction f, atm_data.dim_atm a, atm_data.dim_locate 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;
```



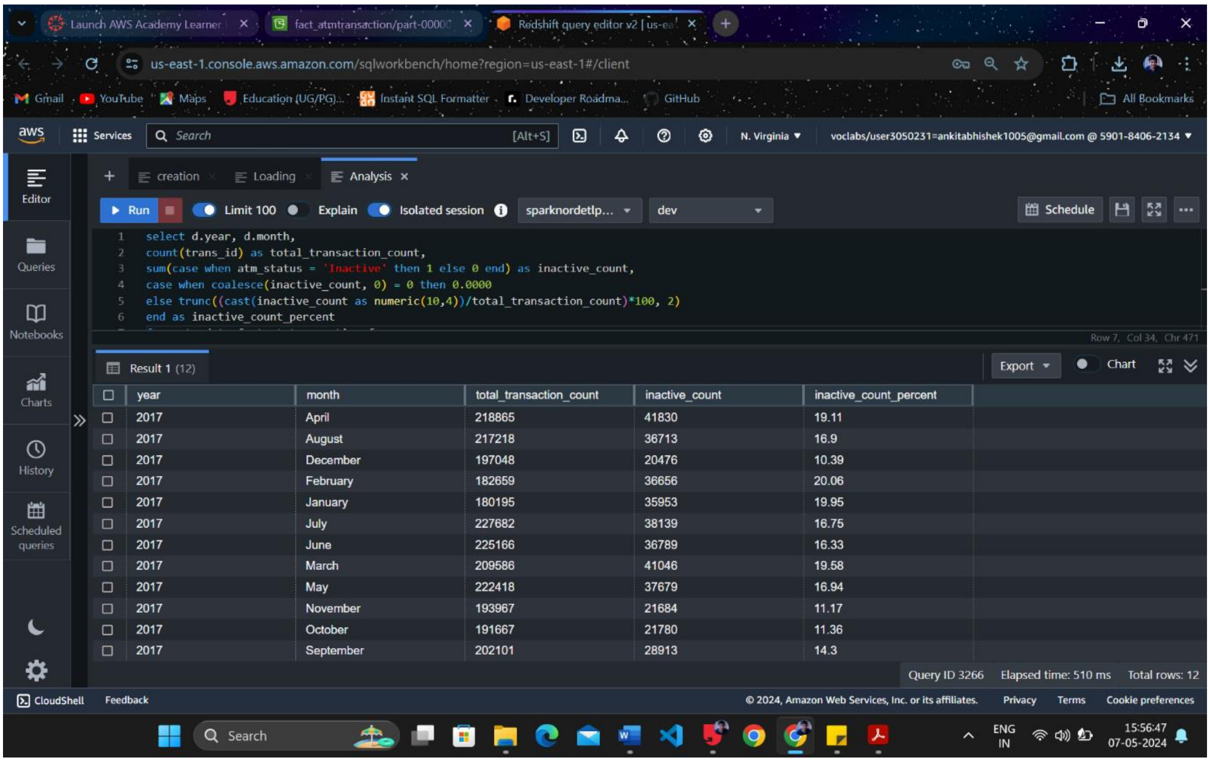
```
select a.atm_number, a.atm_manufacturer, l.location,
count(trans_id) as total_transaction_count
from atm_data.fact_atmtransaction f, atm_data.dim_atm a, atm_data.dim_locate l
where f.atm_id = a.atm_id and a.atm_location_id = l.location_id
group by a.atm_number, a.atm_manufacturer, l.location
order by total_transaction_count desc limit 10;
```

atm_number	atm_manufacturer	location	total_transaction_count
39	NCR	Svenstrup	55380
20	NCR	Bispensgade	54211
10	NCR	NÃƒÂ¸resundby	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

Query ID 3232 Elapsed time: 370 ms Total rows: 10

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_atmtransaction 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;
```



```
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
```

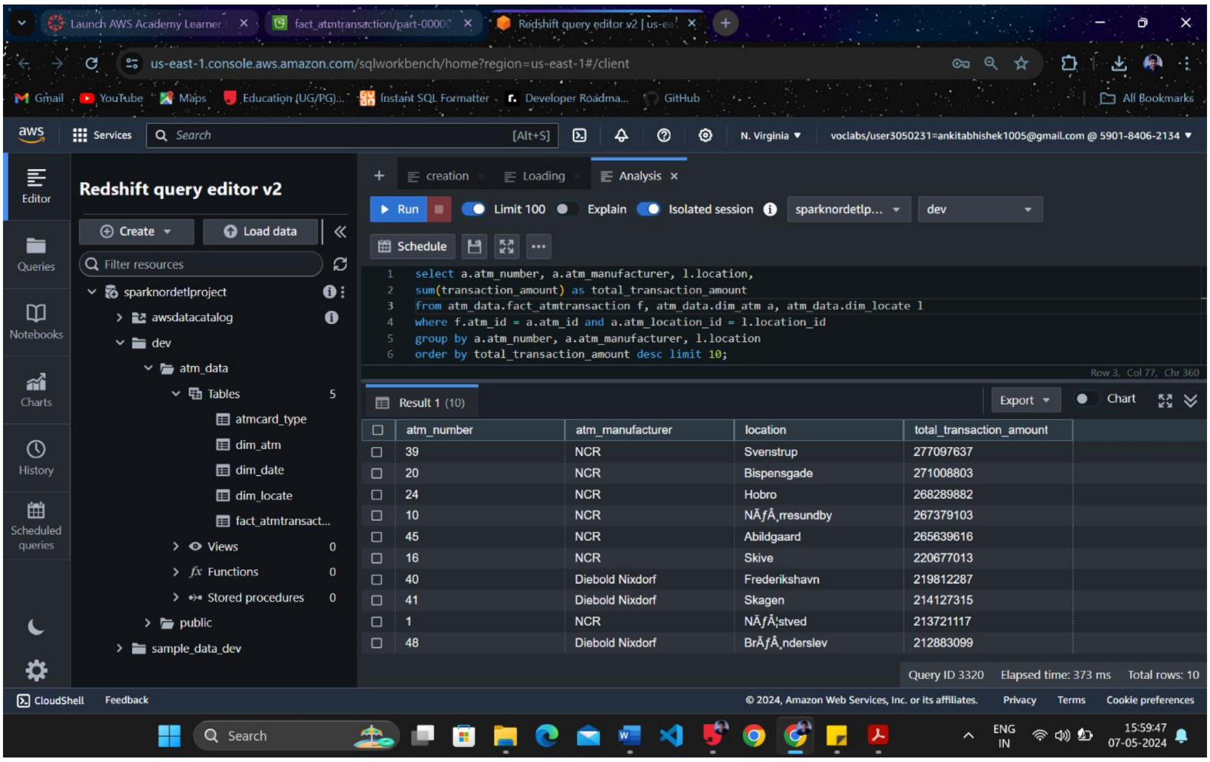
Result 1 (12)

year	month	total_transaction_count	inactive_count	inactive_count_percent
2017	April	218865	41830	19.11
2017	August	217218	36713	16.9
2017	December	197048	20476	10.39
2017	February	182659	36656	20.06
2017	January	180195	35953	19.95
2017	July	227682	38139	16.75
2017	June	225166	36789	16.33
2017	March	209586	41046	19.58
2017	May	222418	37679	16.94
2017	November	193967	21684	11.17
2017	October	191667	21780	11.36
2017	September	202101	28913	14.3

Query ID 3266 Elapsed time: 510 ms Total rows: 12

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

select a.atm_number, a.atm_manufacturer, l.location,
sum(transaction_amount) as total_transaction_amount
from atm_data.fact_atmtransaction f, atm_data.dim_atm a, atm_data.dim_locate 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;



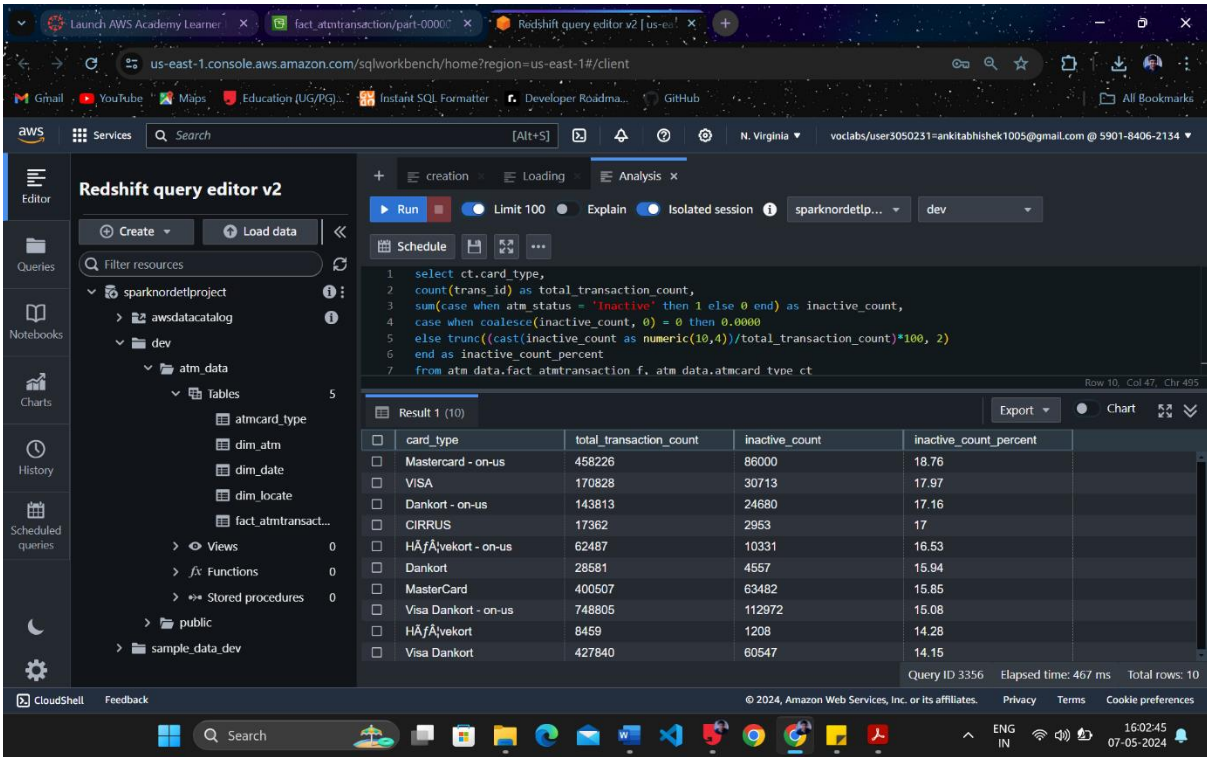
```
select a.atm_number, a.atm_manufacturer, l.location,
sum(transaction_amount) as total_transaction_amount
from atm_data.fact_atmtransaction f, atm_data.dim_atm a, atm_data.dim_locate l
where f.atm_id = a.atm_id and a.atm_location_id = l.location_id
group by a.atm_number, a.atm_manufacturer, l.location
order by total_transaction_amount desc limit 10;
```

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

Query ID 3320 Elapsed time: 373 ms Total rows: 10

6. Number of failed ATM transactions across various card types

```
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 atm_data.fact_atmtransaction f, atm_data.atmcard_type ct
where f.card_type_id = ct.card_type_id
group by ct.card_type
order by inactive_count_percent desc limit 10;
```



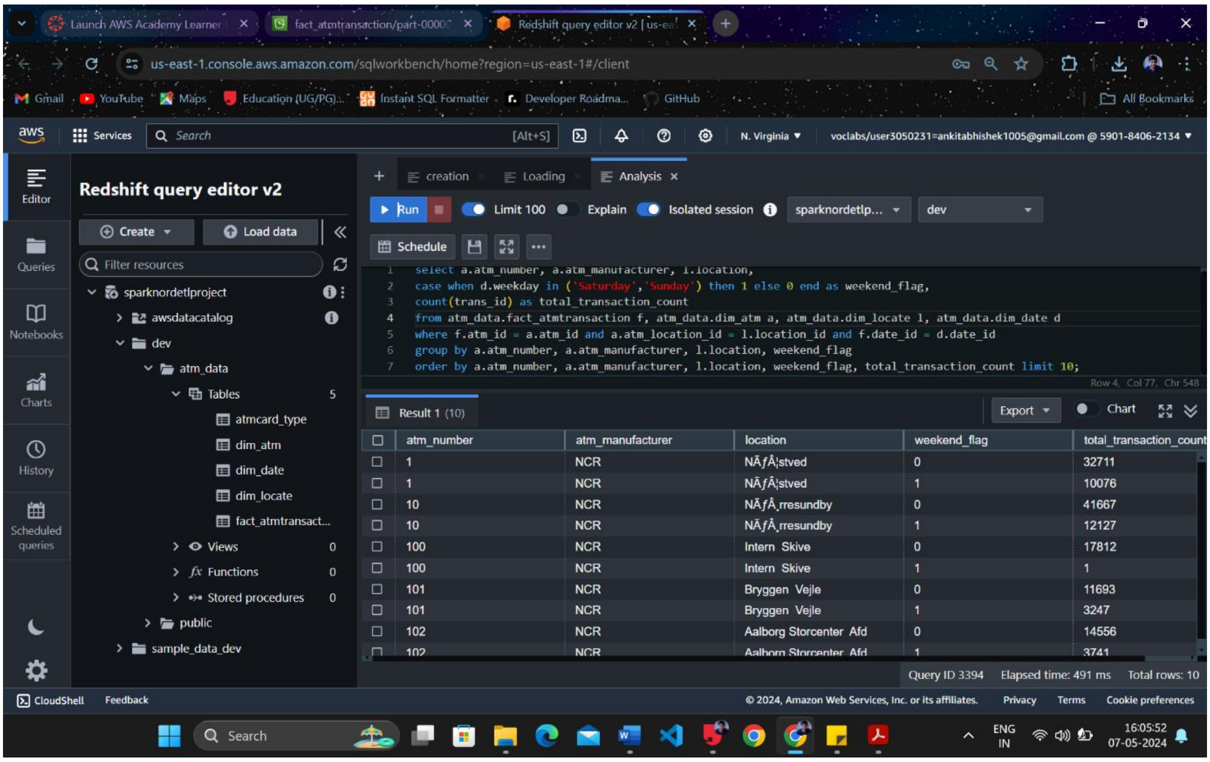
```
select ct.card_type,
count(trans_id) as total_transaction_count,
sum(case when atm_status = 'Inactive' then 1 else 0 end) as inactive_count,
case when coalesce(inactive_count, 0) = 0 then 0.0000
else trunc((cast(inactive_count as numeric(10,4))/total_transaction_count)*100, 2)
end as inactive_count_percent
from atm data.fact atmtransaction f, atm data.atmcard type ct
```

card_type	total_transaction_count	inactive_count	inactive_count_percent
Mastercard - on-us	458226	86000	18.76
VISA	170828	30713	17.97
Dankort - on-us	143813	24680	17.16
CIRRUS	17362	2953	17
HÃƒÂ¦vekort - on-us	62487	10331	16.53
Dankort	28581	4557	15.94
MasterCard	400507	63482	15.85
Visa Dankort - on-us	748805	112972	15.08
HÃƒÂ¦vekort	8459	1208	14.28
Visa Dankort	427840	60547	14.15

Query ID 3356 Elapsed time: 467 ms Total rows: 10

7. Top 10 records with the number of transactions ordered by the ATM_number, ATM_manufacturer, location, weekend_flag and then total_transaction_count, on weekdays and on weekends throughout the year

```
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_atmtransaction f, atm_data.dim_atm a, atm_data.dim_locate 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;
```



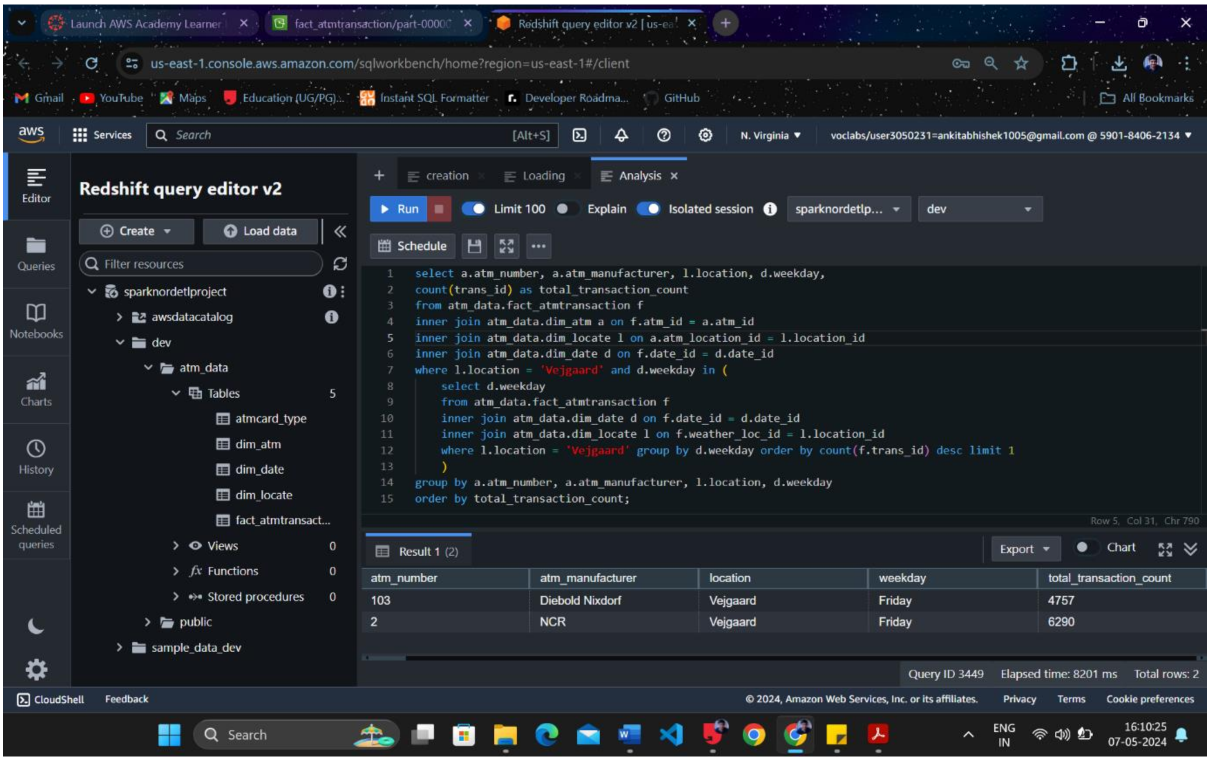
```
select a.atm_number, a.atm_manufacturer, l.location,
case when d.weekday in ('Saturday','Sunday') then 1 else 0 end as weekend_flag,
count(trans_id) as total_transaction_count
from atm_data.fact_atmtransaction f, atm_data.dim_atm a, atm_data.dim_locate l, atm_data.dim_date d
where f.atm_id = a.atm_id 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;
```

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 3394 Elapsed time: 491 ms Total rows: 10

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_atmtransaction f
inner join atm_data.dim_atm a on f.atm_id = a.atm_id
inner join atm_data.dim_locate 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_atmtransaction f
    inner join atm_data.dim_date d on f.date_id = d.date_id
    inner join atm_data.dim_locate 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;
```



```
select a.atm_number, a.atm_manufacturer, l.location, d.weekday,
count(trans_id) as total_transaction_count
from atm_data.fact_atmtransaction f
inner join atm_data.dim_atm a on f.atm_id = a.atm_id
inner join atm_data.dim_locate 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_atmtransaction f
    inner join atm_data.dim_date d on f.date_id = d.date_id
    inner join atm_data.dim_locate 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;
```

Result 1 (2)

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

Query ID 3449 Elapsed time: 8201 ms Total rows: 2