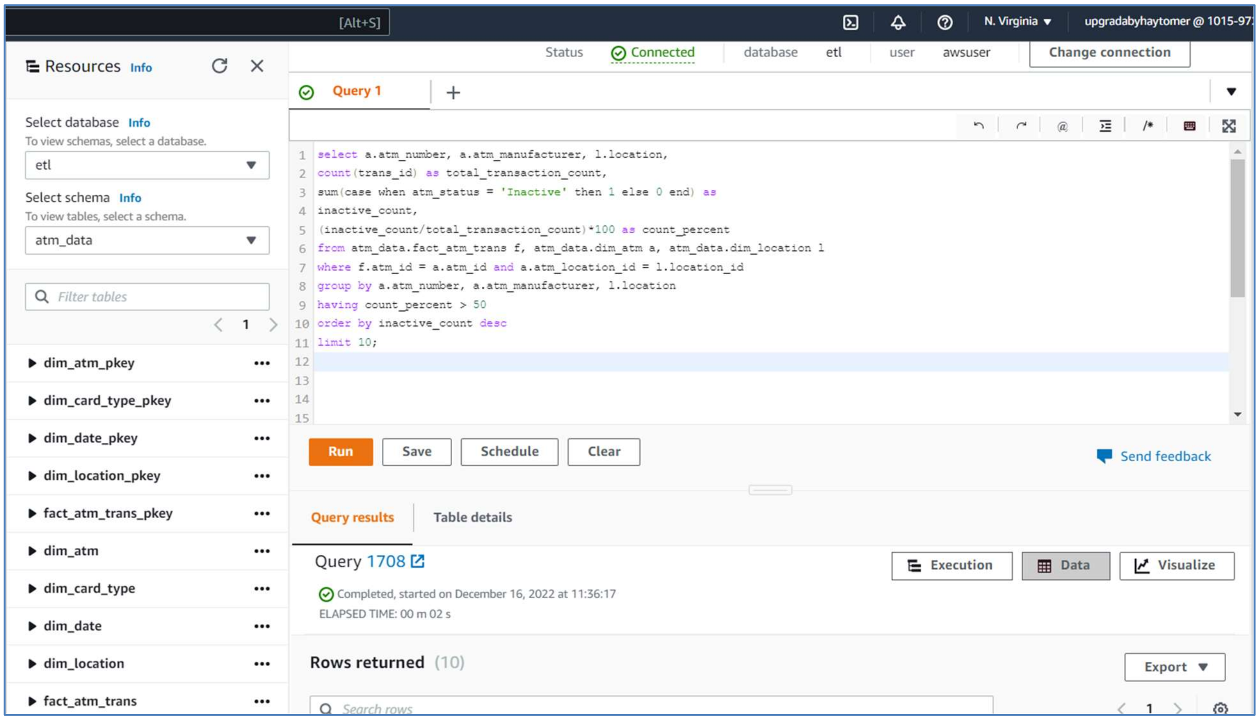
Solving analytical queries on Redshift Cluster

Here, are the queries 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_count,
(inactive_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_count desc
limit 10;
```



Status Connected database etl user awsuser

Select database Info
To view schemas, select a database.
etl

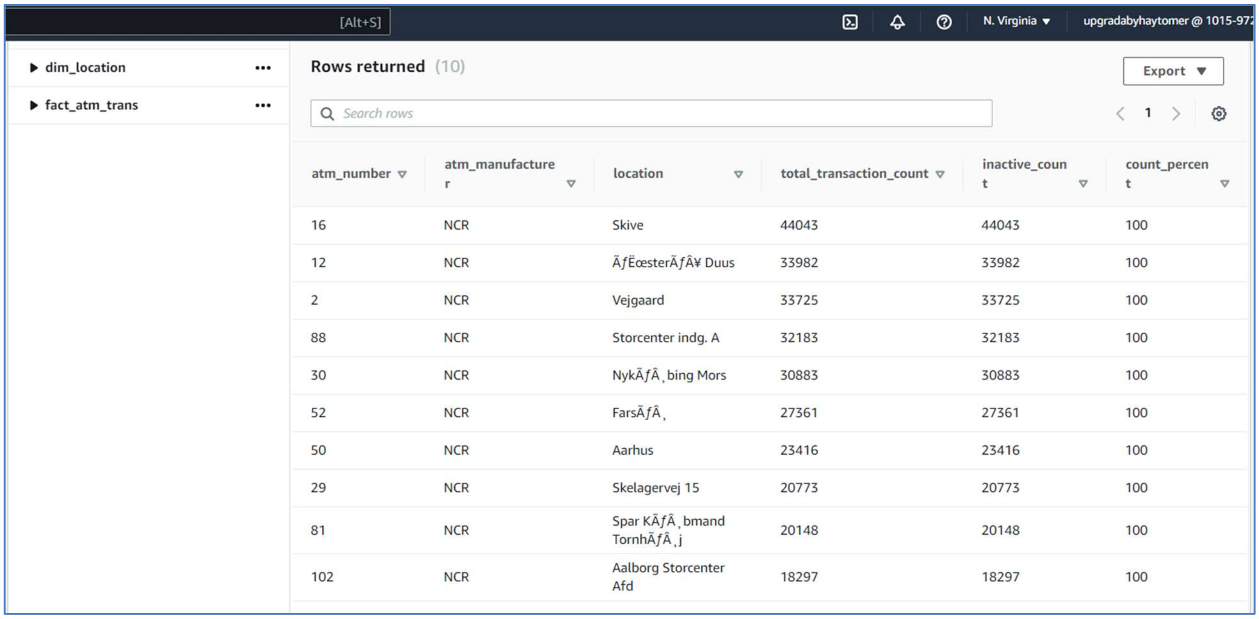
Select schema Info
To view tables, select a schema.
atm_data

▶ dim_atm_pkey
▶ dim_card_type_pkey
▶ dim_date_pkey
▶ dim_location_pkey
▶ fact_atm_trans_pkey
▶ dim_atm
▶ dim_card_type
▶ dim_date
▶ dim_location
▶ fact_atm_trans

```
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_count,
(inactive_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_count desc
limit 10;
```

Query 1708
Completed, started on December 16, 2022 at 11:36:17
ELAPSED TIME: 00 m 02 s

Rows returned (10)

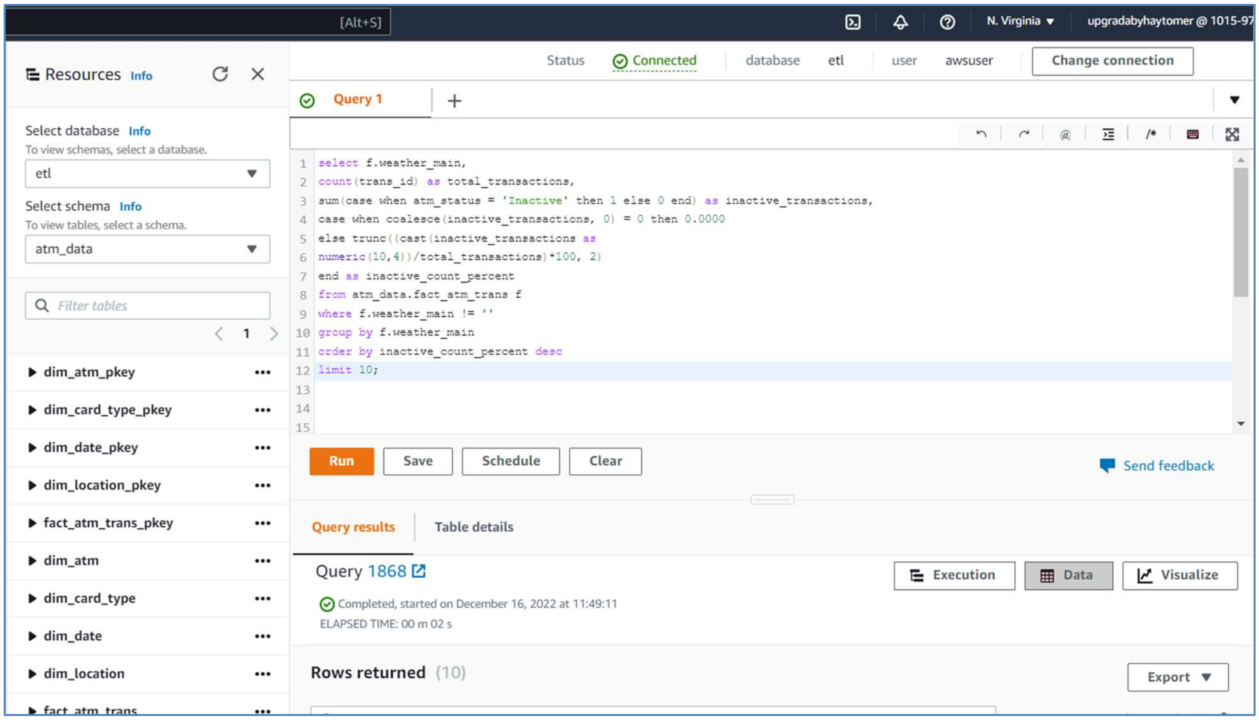


Rows returned (10)

atm_number	atm_manufacturer	location	total_transaction_count	inactive_count	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 TornhÃƒÂ¸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_transactions,
sum(case when atm_status = 'Inactive' then 1 else 0 end) as inactive_transactions,
case when coalesce(inactive_transactions, 0) = 0 then 0.0000
else trunc((cast(inactive_transactions as
numeric(10,4))/total_transactions)*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;
```



Status: Connected | database: etl | user: awsuser | Change connection

Select database: etl

Select schema: atm_data

Tables: dim_atm_pkey, dim_card_type_pkey, dim_date_pkey, dim_location_pkey, fact_atm_trans_pkey, dim_atm, dim_card_type, dim_date, dim_location, fact_atm_trans

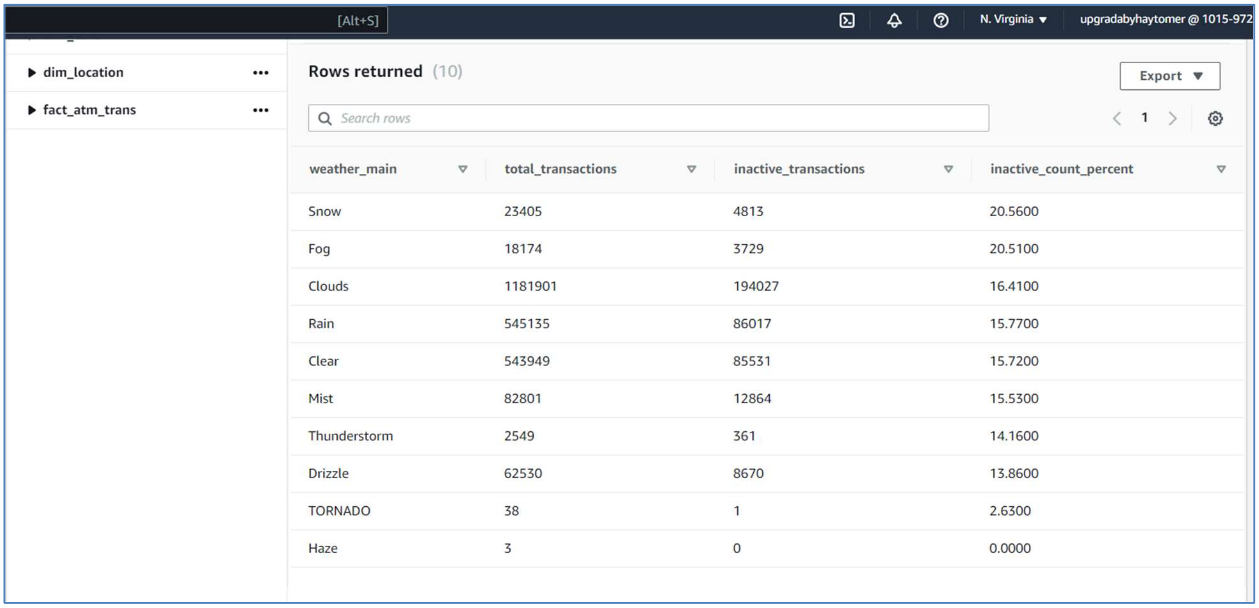
```
select f.weather_main,
count(trans_id) as total_transactions,
sum(case when atm_status = 'Inactive' then 1 else 0 end) as inactive_transactions,
case when coalesce(inactive_transactions, 0) = 0 then 0.0000
else trunc((cast(inactive_transactions as
numeric(10,4))/total_transactions)*100, 2)
end as 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;
```

Query 1868

Completed, started on December 16, 2022 at 11:49:11

ELAPSED TIME: 00 m 02 s

Rows returned (10)

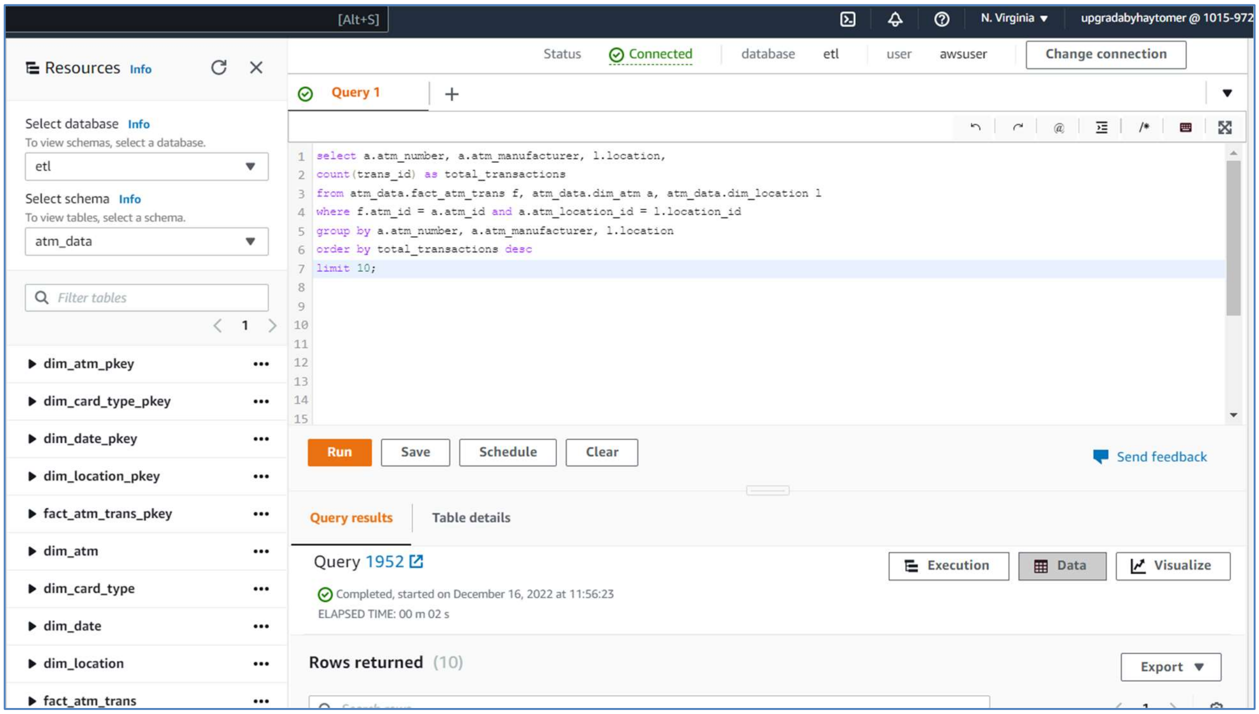


Rows returned (10)

weather_main	total_transactions	inactive_transactions	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_transactions
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_transactions desc
limit 10;
```



Select database Info
To view schemas, select a database.
etl

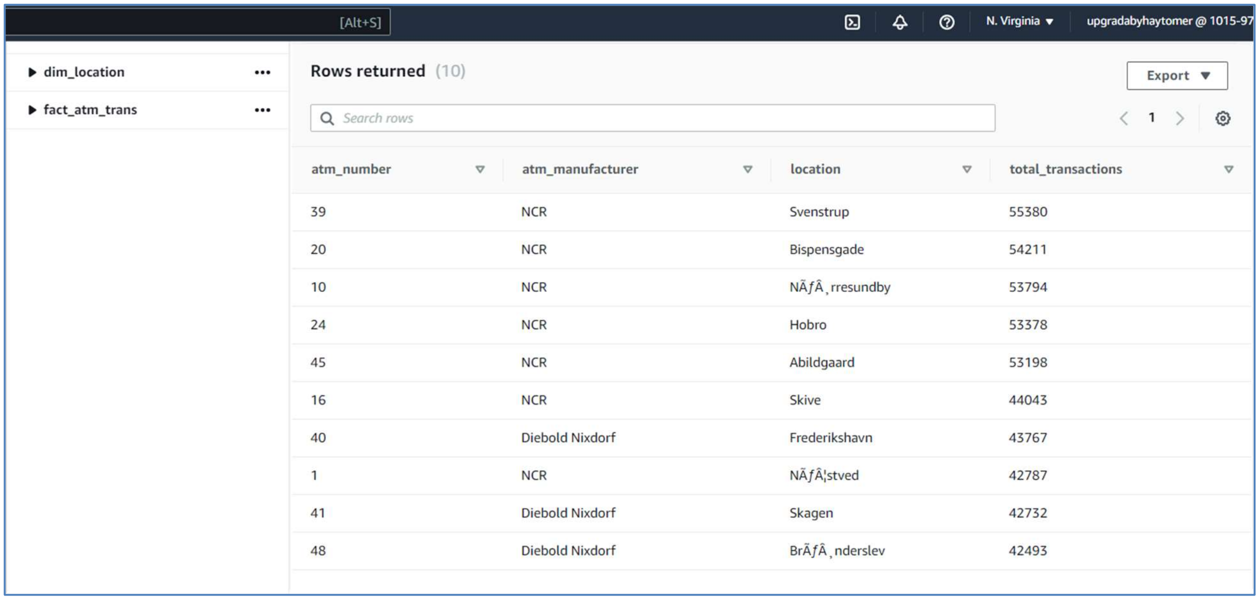
Select schema Info
To view tables, select a schema.
atm_data

```
select a.atm_number, a.atm_manufacturer, l.location,
count(trans_id) as total_transactions
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_transactions desc
limit 10;
```

Query 1952

✓ Completed, started on December 16, 2022 at 11:56:23
ELAPSED TIME: 00 m 02 s

Rows returned (10)

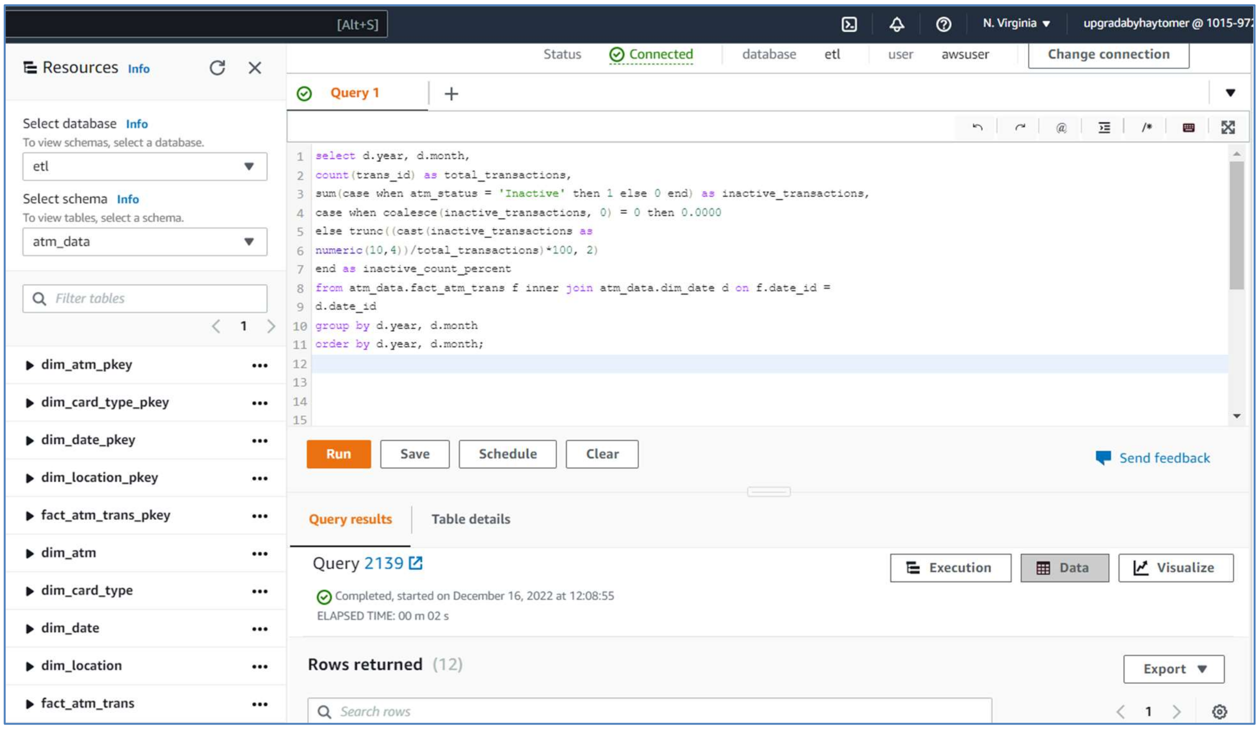


Rows returned (10)

atm_number	atm_manufacturer	location	total_transactions
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

```
select d.year, d.month,
count(trans_id) as total_transactions,
sum(case when atm_status = 'Inactive' then 1 else 0 end) as inactive_transactions,
case when coalesce(inactive_transactions, 0) = 0 then 0.0000
else trunc((cast(inactive_transactions as
numeric(10,4))/total_transactions)*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;
```



Status Connected database etl user awsuser

Select database: etl

Select schema: atm_data

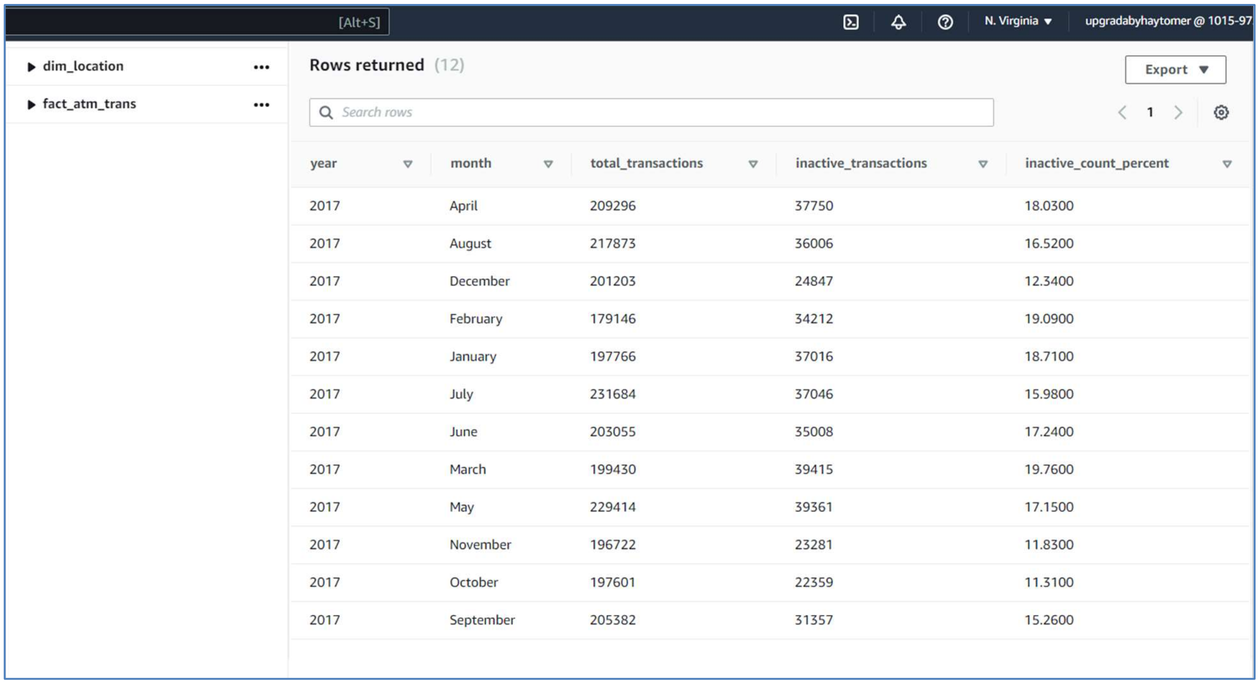
```
select d.year, d.month,
count(trans_id) as total_transactions,
sum(case when atm_status = 'Inactive' then 1 else 0 end) as inactive_transactions,
case when coalesce(inactive_transactions, 0) = 0 then 0.0000
else trunc((cast(inactive_transactions as
numeric(10,4))/total_transactions)*100, 2)
end as 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 2139

Completed, started on December 16, 2022 at 12:08:55

ELAPSED TIME: 00 m 02 s

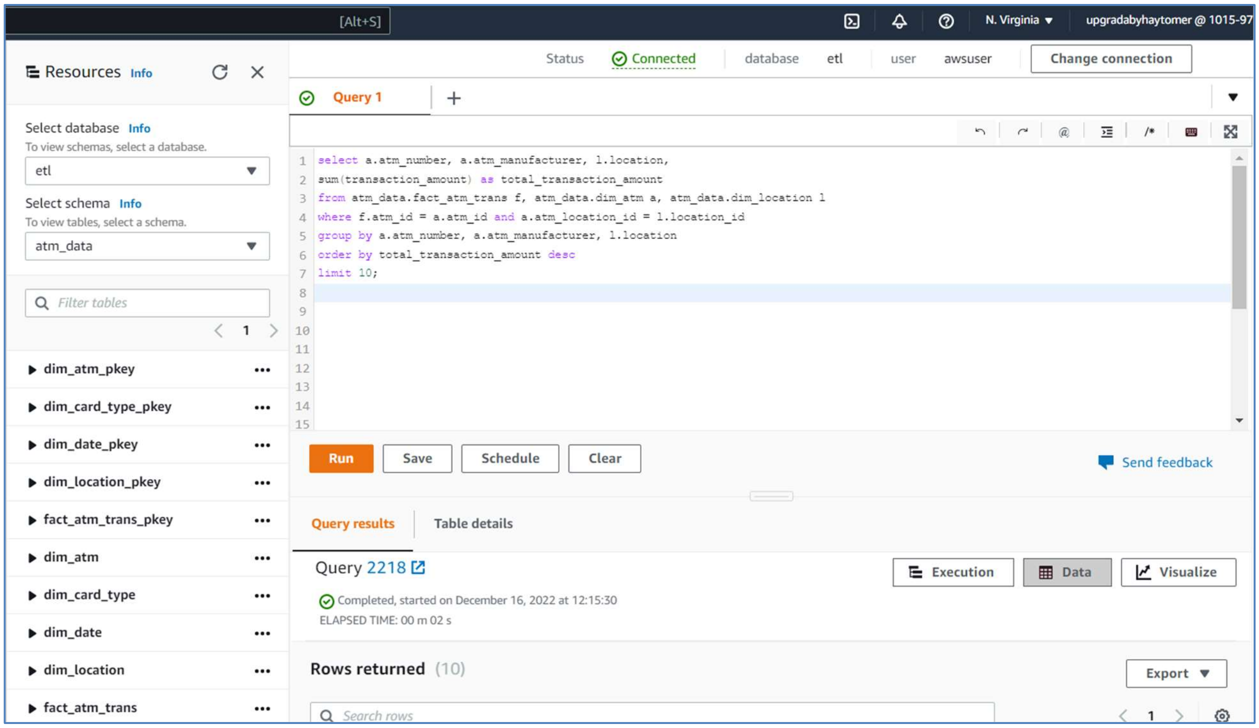
Rows returned (12)



year	month	total_transactions	inactive_transactions	inactive_count_percent
2017	April	209296	37750	18.0300
2017	August	217873	36006	16.5200
2017	December	201203	24847	12.3400
2017	February	179146	34212	19.0900
2017	January	197766	37016	18.7100
2017	July	231684	37046	15.9800
2017	June	203055	35008	17.2400
2017	March	199430	39415	19.7600
2017	May	229414	39361	17.1500
2017	November	196722	23281	11.8300
2017	October	197601	22359	11.3100
2017	September	205382	31357	15.2600

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_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;
```



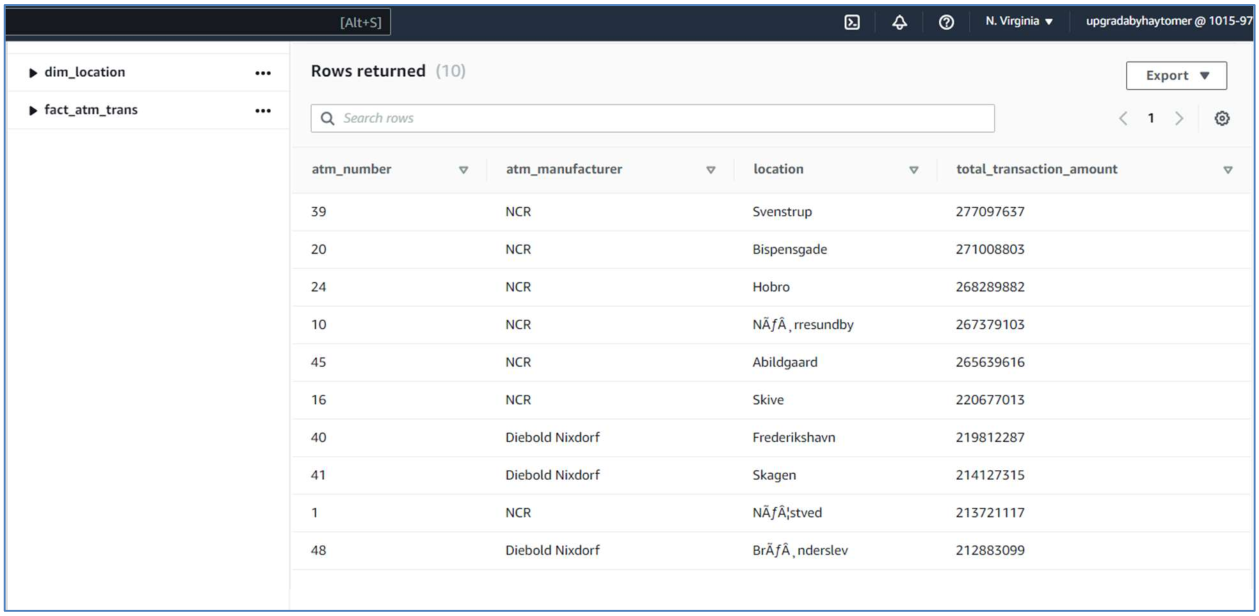
```
select a.atm_number, a.atm_manufacturer, l.location,
sum(transaction_amount) as total_transaction_amount
from atm_data.fact_atm_trans f, atm_data.dim_atm a, atm_data.dim_location l
where f.atm_id = a.atm_id and a.atm_location_id = l.location_id
group by a.atm_number, a.atm_manufacturer, l.location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

Query 2218

Completed, started on December 16, 2022 at 12:15:30

ELAPSED TIME: 00 m 02 s

Rows returned (10)

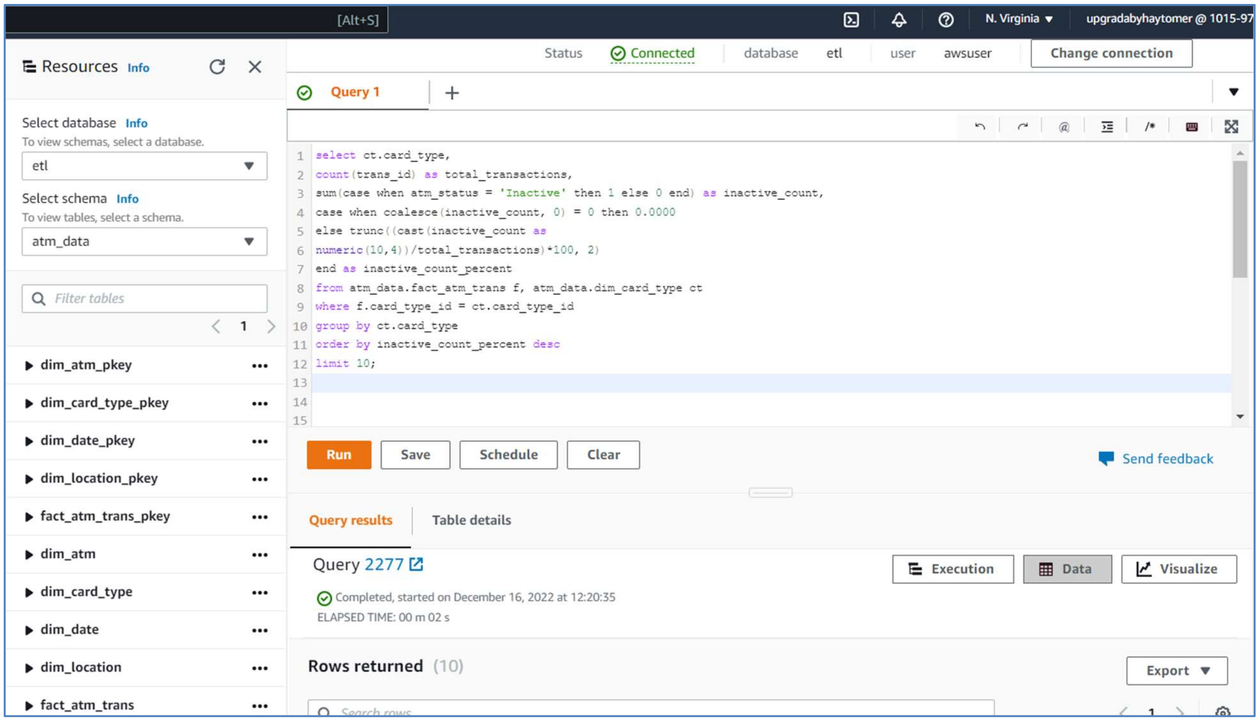


Rows returned (10)

atm_number	atm_manufacturer	location	total_transaction_amount
39	NCR	Svenstrup	277097637
20	NCR	Bispensgade	271008803
24	NCR	Hobro	268289882
10	NCR	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

```
select ct.card_type,
count(trans_id) as total_transactions,
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_transactions)*100, 2)
end as inactive_count_percent
from atm_data.fact_atm_trans f, 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;
```



Status ✓ Connected database etl user awsuser

Select database Info
To view schemas, select a database.
etl

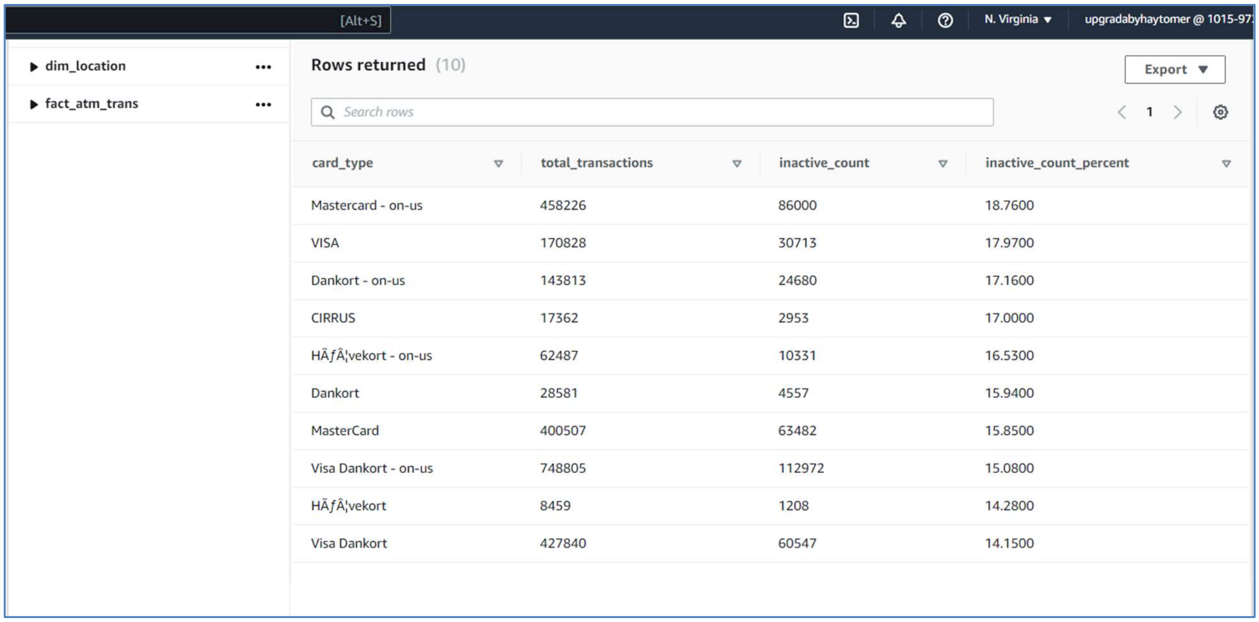
Select schema Info
To view tables, select a schema.
atm_data

```
select ct.card_type,
count(trans_id) as total_transactions,
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_transactions)*100, 2)
end as inactive_count_percent
from atm_data.fact_atm_trans f, 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;
```

Query 2277

✓ Completed, started on December 16, 2022 at 12:20:35
ELAPSED TIME: 00 m 02 s

Rows returned (10)

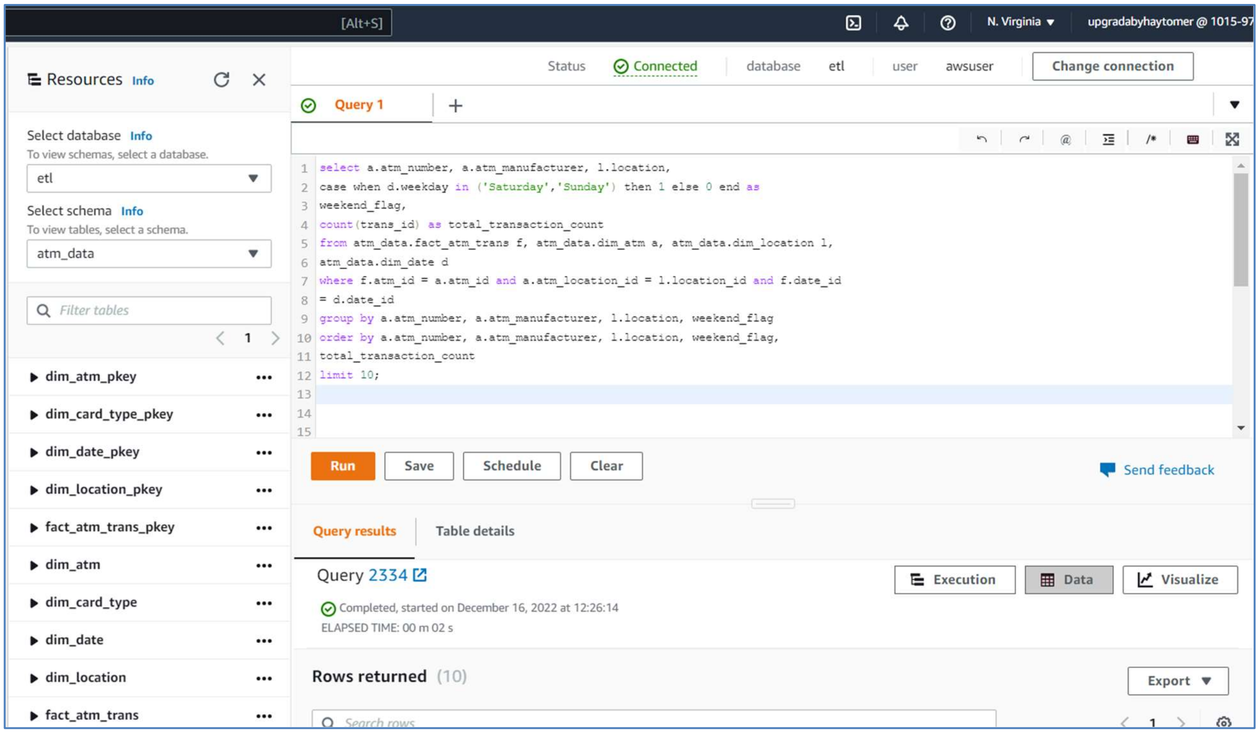


Rows returned (10)

card_type	total_transactions	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. **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_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;
```



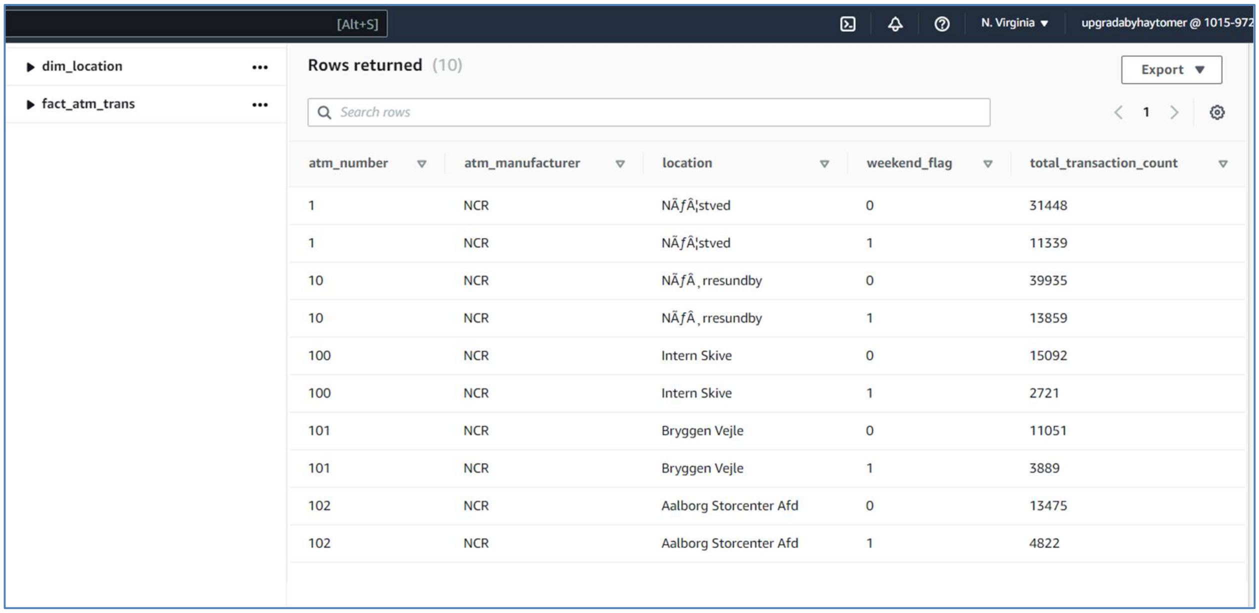
```sql
select a.atm_number, a.atm_manufacturer, l.location,
case when d.weekday in ('Saturday','Sunday') then 1 else 0 end as
weekend_flag,
count(trans_id) as total_transaction_count
from atm_data.fact_atm_trans f, atm_data.dim_atm a, atm_data.dim_location l,
atm_data.dim_date d
where f.atm_id = a.atm_id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

Query 2334

Completed, started on December 16, 2022 at 12:26:14

ELAPSED TIME: 00 m 02 s

Rows returned (10)

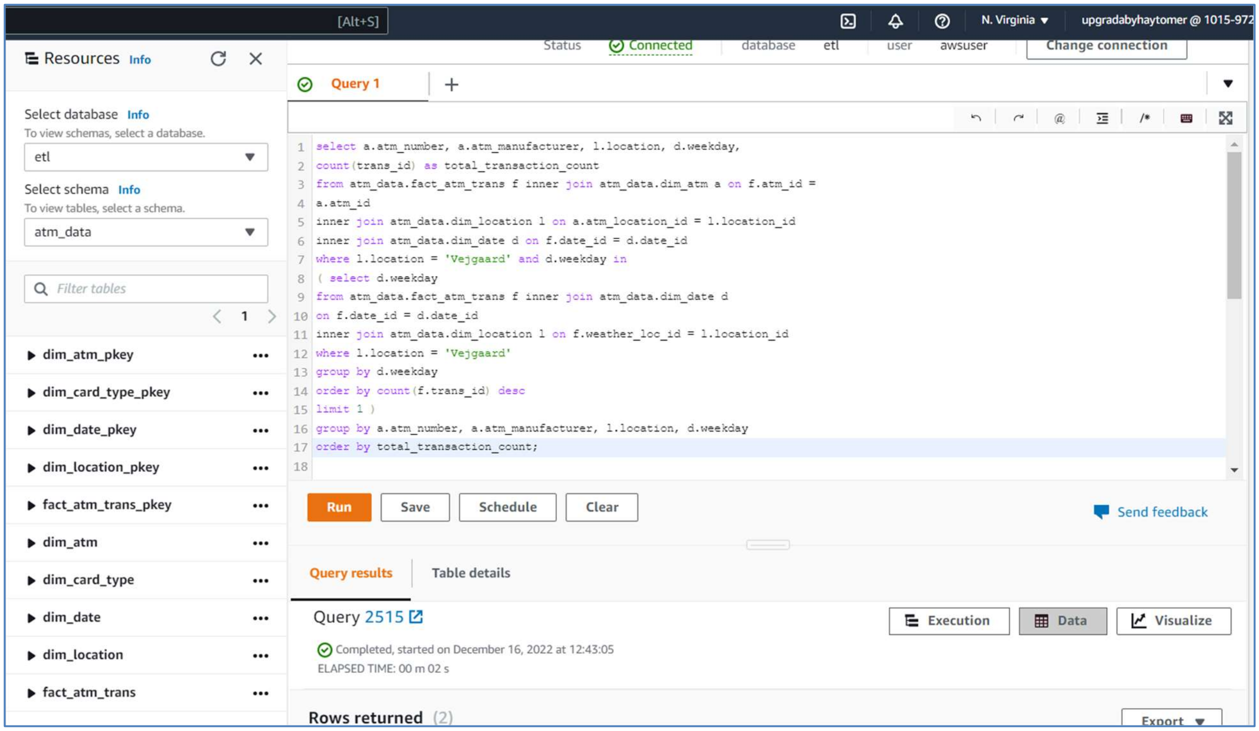


Rows returned (10)

atm_number	atm_manufacturer	location	weekend_flag	total_transaction_count
1	NCR	NÃƒÂ¦stved	0	31448
1	NCR	NÃƒÂ¦stved	1	11339
10	NCR	NÃƒÂ¸resundby	0	39935
10	NCR	NÃƒÂ¸resundby	1	13859
100	NCR	Intern Skive	0	15092
100	NCR	Intern Skive	1	2721
101	NCR	Bryggen Vejle	0	11051
101	NCR	Bryggen Vejle	1	3889
102	NCR	Aalborg Storcenter Afd	0	13475
102	NCR	Aalborg Storcenter Afd	1	4822

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.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;
```



Status ✓ Connected database etl user awsuser Change connection

Select database Info
To view schemas, select a database.
etl

Select schema Info
To view tables, select a schema.
atm_data

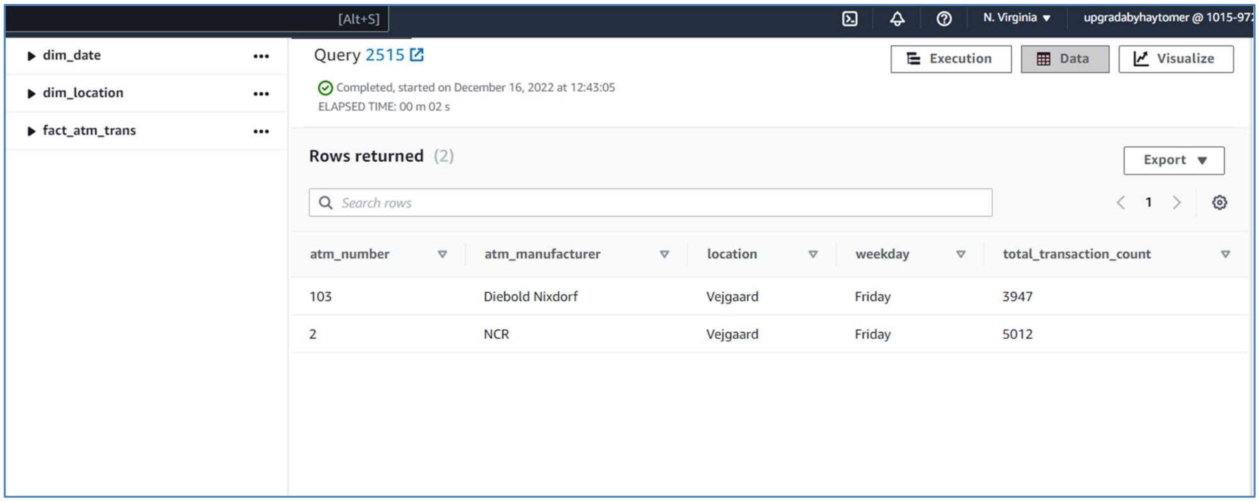
Filter tables

```
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.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;
```

Query 2515

✓ Completed, started on December 16, 2022 at 12:43:05
ELAPSED TIME: 00 m 02 s

Rows returned (2)



Query 2515

Completed, started on December 16, 2022 at 12:43:05
ELAPSED TIME: 00 m 02 s

Rows returned (2)

atm_number	atm_manufacturer	location	weekday	total_transaction_count
103	Diebold Nixdorf	Vejgaard	Friday	3947
2	NCR	Vejgaard	Friday	5012