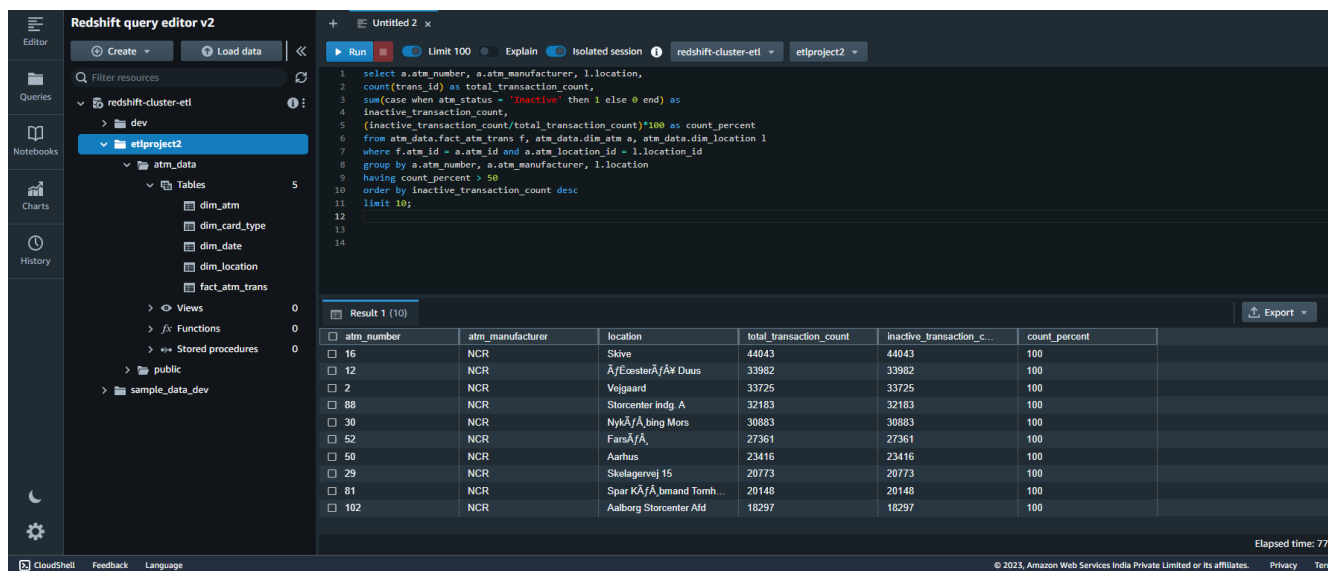


Solving queries on RedShift Cluster

Queries used for solving the question and the screenshots of the table with outputs 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;
```



The screenshot shows the AWS RedShift Query Editor v2 interface. The left sidebar contains a project tree with 'etlproject2' selected. The main editor displays a SQL query. The bottom section shows the query results in a table format.

| atm_number | atm_manufacturer | location | total_transaction_count | inactive_transaction_c... | count_percent |
|------------|------------------|-------------------------|-------------------------|---------------------------|---------------|
| 16 | NCR | Skive | 44043 | 44043 | 100 |
| 12 | NCR | Århus | 33982 | 33982 | 100 |
| 2 | NCR | Veje | 33725 | 33725 | 100 |
| 88 | NCR | Storcenter indg. A | 32183 | 32183 | 100 |
| 30 | NCR | Nykj. Århus | 30883 | 30883 | 100 |
| 52 | NCR | Farsø | 27361 | 27361 | 100 |
| 50 | NCR | Aarhus | 23416 | 23416 | 100 |
| 29 | NCR | Skelagervej 15 | 20773 | 20773 | 100 |
| 81 | NCR | Spar K&A, bmand Tomh... | 20148 | 20148 | 100 |
| 102 | NCR | Aalborg Storcenter Ald | 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 Redshift query editor v2 interface. On the left, a sidebar displays a project tree with folders like 'dev' and 'etlproject2', and tables like 'dim_atm', 'dim_card_type', 'dim_date', 'dim_location', and 'fact_atm_trans'. The main editor area contains a SQL query that calculates the percentage of inactive transactions for different weather conditions. The query is as follows:

```

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

```

The results are displayed in a table with the following data:

| 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 |
| Haze | 3 | 0 | 0 |

The bottom status bar indicates an elapsed time of 5929 ms.

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;

The screenshot shows the Redshift query editor v2 interface. On the left, a sidebar displays a project tree with folders like 'dev' and 'etlproject2', and tables like 'dim_atm', 'dim_card_type', 'dim_date', 'dim_location', and 'fact_atm_trans'. The main editor area contains a SQL query that identifies the top 10 ATMs by transaction count. The query is as follows:

```

1 select a.atm_number, a.atm_manufacturer, l.location,
2 count(trans_id) as total_transaction_count
3 from atm_data.fact_atm_trans f, atm_data.dim_atm a, atm_data.dim_location l
4 where f.atm_id = a.atm_id and a.atm_location_id = l.location_id
5 group by a.atm_number, a.atm_manufacturer, l.location
6 order by total_transaction_count desc
7 limit 10;

```

The results are displayed in a table with the following data:

| atm_number | atm_manufacturer | location | total_transaction_count |
|------------|------------------|---------------|-------------------------|
| 39 | NCR | Svensstrup | 55380 |
| 20 | NCR | Bispensgade | 54211 |
| 10 | NCR | NÅfÅresundby | 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 | BuÅfÅnderslev | 42493 |

The bottom status bar indicates an elapsed time of 5929 ms.

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;

Redshift query editor v2

Filter resources

redshift-cluster-eti

dev

etlproject2

atm_data

Tables

dim_atm

dim_card_type

dim_date

dim_location

fact_atm_trans

Views

Functions

Stored procedures

public

sample_data_dev

Untitled 2

Run

Limit 100

Explain

Isolated session

redshift-cluster-eti

etlproject2

```

1 select d.year, d.month,
2 count(trans_id) as total_transaction_count,
3 sum(case when atm_status = 'Inactive' then 1 else 0 end) as inactive_count,
4 case when coalesce(inactive_count, 0) = 0 then 0.0000
5 else trunc((cast(inactive_count as
6 numeric(10,4))/total_transaction_count)*100, 2)
7 end as inactive_count_percent
8 from atm_data.fact_atm_trans f inner join atm_data.dim_date d on f.date_id =
9 d.date_id
10 group by d.year, d.month
11 order by d.year, d.month;
12
13
14
15
16
17

```

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 |

CloudShell Feedback Language

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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;

Redshift query editor v2

Filter resources

redshift-cluster-eti

dev

etlproject2

atm_data

Tables

dim_atm

dim_card_type

dim_date

dim_location

fact_atm_trans

Views

Functions

Stored procedures

public

sample_data_dev

Untitled 2

Run

Limit 100

Explain

Isolated session

redshift-cluster-eti

etlproject2

```

1 select a.atm_number, a.atm_manufacturer, l.location,
2 sum(transaction_amount) as total_transaction_amount
3 from atm_data.fact_atm_trans f, atm_data.dim_atm a, atm_data.dim_location l
4 where f.atm_id = a.atm_id and a.atm_location_id = l.location_id
5 group by a.atm_number, a.atm_manufacturer, l.location
6 order by total_transaction_amount desc
7 limit 10;
8
9
10
11
12
13
14

```

Result 1 (10)

| atm_number | atm_manufacturer | location | total_transaction_amount |
|------------|------------------|----------------|--------------------------|
| 39 | NCR | Svensrup | 277097637 |
| 20 | NCR | Bispensgade | 271008803 |
| 24 | NCR | Hobro | 268289882 |
| 10 | NCR | NÄrfÄresundby | 267379103 |
| 45 | NCR | Abildgaard | 265639616 |
| 16 | NCR | Skive | 220677013 |
| 40 | Diebold Nixdorf | Frederikshavn | 219812287 |
| 41 | Diebold Nixdorf | Skagen | 214127315 |
| 1 | NCR | NÄrfÄstved | 213721117 |
| 48 | Diebold Nixdorf | BrÄrfÄnderslev | 212883099 |

Shell Feedback Language

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_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;

Redshift query editor v2

Filter resources

redshift-cluster-eti

dev

etlproject2

atm_data

Tables

dim_atm

dim_card_type

dim_date

dim_location

fact_atm_trans

Views

Functions

Stored procedures

public

sample_data_dev

Untitled 2

Run

Limit 100

Explain

Isolated session

redshift-cluster-eti

etlproject2

```

1 select ct.card_type,
2 count(trans_id) as total_transaction_count,
3 sum(case when atm_status = 'inactive' then 1 else 0 end) as inactive_count,
4 case when coalesce(inactive_count, 0) = 0 then 0.0000
5 else trunc((cast(inactive_count as
6 numeric(10,4))/total_transaction_count)*100, 2)
7 end as inactive_count_percent
8 from atm_data.fact_atm_trans f, atm_data.dim_card_type ct
9 where f.card_type_id = ct.card_type_id
10 group by ct.card_type
11 order by inactive_count_percent desc
12 limit 10;

```

Result 1 (10)

| 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 |
| HÅ/Åweekort - on-us | 62487 | 10331 | 16.53 |
| Dankort | 28581 | 4557 | 15.94 |
| MasterCard | 400507 | 63482 | 15.85 |
| Visa Dankort - on-us | 748805 | 112972 | 15.08 |
| HÅ/Åweekort | 8459 | 1208 | 14.28 |
| Visa Dankort | 427840 | 60547 | 14.15 |

Elapsed time: 6571 ms Total rows: 10

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;

Redshift query editor v2

Filter resources

redshift-cluster-eti

dev

etlproject2

atm_data

Tables

dim_atm

dim_card_type

dim_date

dim_location

fact_atm_trans

Views

Functions

Stored procedures

public

sample_data_dev

Untitled 2

Run

Limit 100

Explain

Isolated session

redshift-cluster-eti

etlproject2

```

1 select a.atm_number, a.atm_manufacturer, l.location,
2 case when d.weekday in ('Saturday','Sunday') then 1 else 0 end as
3 weekend_flag,
4 count(trans_id) as total_transaction_count
5 from atm_data.fact_atm_trans f, atm_data.dim_atm a, atm_data.dim_location l,
6 atm_data.dim_date d
7 where f.atm_id = a.atm_id and a.atm_location_id = l.location_id and f.date_id
8 = d.date_id
9 and l.location = 'Vejgaard'
10 group by a.atm_number, a.atm_manufacturer, l.location, weekend_flag
11 order by a.atm_number, a.atm_manufacturer, l.location, weekend_flag,
12 total_transaction_count
13 limit 10;

```

Result 1 (10)

| atm_number | atm_manufacturer | location | weekend_flag | total_transaction_count |
|------------|------------------|------------------------|--------------|-------------------------|
| 1 | NCR | NÅ/Åstved | 0 | 32711 |
| 1 | NCR | NÅ/Åstved | 1 | 10076 |
| 10 | NCR | NÅ/Åresundby | 0 | 41667 |
| 10 | NCR | NÅ/Åresundby | 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 Ald | 0 | 14556 |
| 102 | NCR | Aalborg Storcenter Ald | 1 | 3741 |

Elapsed time: 6571 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_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 order by total_transaction_count desc limit 1) order by a.atm_number, a.atm_manufacturer, l.location, d.weekday, total_transaction_count limit 10;

= l.location_id where l.location = 'Vejsgaard' 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 displays the AWS Redshift Query Editor v2 interface. The left sidebar shows the project structure with a tree view containing 'redshift-cluster-eti', 'dev', 'etlproject2', 'atm_data', 'dim_atm', 'dim_card_type', 'dim_date', 'dim_location', 'fact_atm_trans', 'Views', 'Functions', 'Stored procedures', 'public', and 'sample_data_dev'. The main editor area shows a SQL query in a file named 'Untitled 2'. The query is as follows:

```
1 select a.atm_number, a.atm_manufacturer, l.location, d.weekday,
2 count(trans_id) as total_transaction_count
3 from atm_data.fact_atm_trans f inner join atm_data.dim_atm a on f.atm_id =
4 a.atm_id
5 inner join atm_data.dim_location l on a.atm_location_id = l.location_id
6 inner join atm_data.dim_date d on f.date_id = d.date_id
7 where l.location = 'Vejsgaard' and d.weekday in
8 ( select d.weekday
9 from atm_data.fact_atm_trans f inner join atm_data.dim_date d
10 on f.date_id = d.date_id
11 inner join atm_data.dim_location l on f.weather_loc_id = l.location_id
12 where l.location = 'Vejsgaard'
13 group by d.weekday
14 order by count(f.trans_id) desc
15 limit 1 )
16 group by a.atm_number, a.atm_manufacturer, l.location, d.weekday
17 order by total_transaction_count;
```

The query is executed, and the results are displayed in a table titled 'Result 1 (2)'. The table has five columns: 'atm_number', 'atm_manufacturer', 'location', 'total_transaction_count', and 'weekday'. The results are as follows:

| atm_number | atm_manufacturer | location | total_transaction_count | weekday |
|------------|------------------|-----------|-------------------------|---------|
| 103 | Diebold Nixdorf | Vejsgaard | 4757 | Friday |
| 2 | NCR | Vejsgaard | 6290 | Friday |