Solving analytical queries on Redshift Cluster

Here, you have to write the query 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**

```
--query1
select a.atm_number, a.atm_manufacturer, b.location, count(d.trans_id) as transaction_count,
count(d.atm_status)
from atm_data.DIM_ATM a,atm_data.DIM_LOCATION b,atm_data.FACT_ATM_TRANS d
where d.atm_status='Inactive'
and d.atm_id = a.atm_id
and b.location_id = d.weather_loc_id
group by a.atm_number, a.atm_manufacturer ,b.location
order by transaction_count desc
limit 10;
```

atm_number	atm_manufacturer	location	transaction_count	count
15	NCR	Skive	44043	44043
13	NCR	ÃƒËœesterÃƒÂ¥ Duus	33982	33982
46	NCR	Vejgaard	33725	33725
91	NCR	Storcenter indg. A	32183	32183
7	NCR	NykÃƒÂ¸bing Mors	30883	30883
154	NCR	FarsÃƒÂ¸	27361	27361
4	NCR	Aarhus	23416	23416
29	NCR	Skelagervej 15	20773	20773
68	NCR	Spar KÃƒÂ¸bmand TornhÃƒÂ¸j	20148	20148
1	NCR	Aalborg Storcenter Afd	18297	18297

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

```
--query2
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
atm_data.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
atm_data.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;
```

```sql
--query2
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
atm_data.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
atm_data.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;
```

weather_main	total_transaction_count	total_inactive_count	inactive_count_percent
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

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

```
--query3
select a.atm_id, a.atm_manufacturer, b.location, count(d.trans_id) as transaction_count
from atm_data.DIM_ATM a,atm_data.DIM_LOCATION b,atm_data.FACT_ATM_TRANS d
where d.atm_id = a.atm_id
and b.location_id = d.weather_loc_id
group by a.atm_id, a.atm_manufacturer ,b.location
order by transaction_count desc
limit 10;
```

atm_id	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

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

--query4

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, a.month, count(b.trans_id) as transaction_count from atm_data.DIM_DATE a, atm_data.FACT_ATM_TRANS b where a.date_id = b.date_id
group by a.month, a.year) c left join
(select a.year, a.month, count(b.atm_status) as inactive_count from atm_data.DIM_DATE a, atm_data.FACT_ATM_TRANS b where a.date_id = b.date_id
and b.atm_status='Inactive' group by a.month, a.year)d
on c.year = d.year and c.month = d.month
order by c.year, c.month;

```
--query4

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, a.month, count(b.trans_id) as transaction_count from atm_data.DIM_DATE a, atm_data.FACT_ATM_TRANS b where a.date_id = b.date_id
group by a.month, a.year) c left join
(select a.year, a.month, count(b.atm_status) as inactive_count from atm_data.DIM_DATE a, atm_data.FACT_ATM_TRANS b where a.date_id = b.date_id
and b.atm_status='Inactive' group by a.month, a.year)d
on c.year = d.year and c.month = d.month
order by c.year, c.month;
```

year	month	transaction_count	inactive_count	inactive_count_percent
2017	April	217523	31202	14.3400
2017	August	199378	38125	19.1200
2017	December	227528	37307	16.3900
2017	February	179872	22275	12.3800
2017	January	213980	28289	13.2200
2017	July	199958	36470	18.2300
2017	June	187966	29750	15.8200
2017	March	200850	24023	11.9600
2017	May	215250	33917	15.7500
2017	November	212972	37241	17.4800

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

--query5
select a.atm_id, a.atm_manufacturer, b.location, sum(d.transaction_amount)
as total_transaction_amount
from atm_data.DIM_ATM a, atm_data.DIM_LOCATION b, atm_data.FACT_ATM_TRANS d
where d.atm_id = a.atm_id
and b.location_id = d.weather_loc_id
group by a.atm_id, a.atm_manufacturer, b.location
order by total_transaction_amount desc
limit 10;

```
--query5
select a.atm_id, a.atm_manufacturer, b.location, sum(d.transaction_amount)
as total_transaction_amount
from atm_data.DIM_ATM a, atm_data.DIM_LOCATION b, atm_data.FACT_ATM_TRANS d
where d.atm_id = a.atm_id
and b.location_id = d.weather_loc_id
group by a.atm_id, a.atm_manufacturer, b.location
order by total_transaction_amount desc
limit 10;
```

atm_id	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

--query6

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 atm_data.DIM_CARD_TYPE c,
atm_data.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 atm_data.DIM_CARD_TYPE c,
atm_data.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;

```
--query6

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 atm_data.DIM_CARD_TYPE c,
atm_data.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 atm_data.DIM_CARD_TYPE c, atm_data.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;
```

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

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**

```
--query7
select a.atm_number, a.atm_manufacturer,b.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_amount
from atm_data.DIM_ATM a, atm_data.DIM_LOCATION b, atm_data.DIM_DATE
c,atm_data.FACT_ATM_TRANS d
where d.atm_id = a.atm_id
and b.location_id = d.weather_loc_id
and c.date_id = d.date_id
group by a.atm_number, a.atm_manufacturer, b.location, weekend_flag
order by a.atm_number asc, weekend_flag asc
limit 10;
```

```sql
--query7
select a.atm_number, a.atm_manufacturer,b.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_amount
from atm_data.DIM_ATM a, atm_data.DIM_LOCATION b, atm_data.DIM_DATE c,atm_data.FACT_ATM_TRANS d
where d.atm_id = a.atm_id
and b.location_id = d.weather_loc_id
and c.date_id = d.date_id
group by a.atm_number, a.atm_manufacturer, b.location, weekend_flag
order by a.atm_number asc, weekend_flag asc
limit 10;
```

atm_number	atm_manufacturer	location	weekend_flag	total_transaction_amount
1	NCR	Aalborg Storcenter Afd	0	10658
1	NCR	Aalborg Storcenter Afd	1	7639
10	NCR	Intern HjÃƒÂ¸rring	0	6012
10	NCR	Intern HjÃƒÂ¸rring	1	4518
100	NCR	NÃƒÂ¦stved	0	24975
100	NCR	NÃƒÂ¦stved	1	17812
102	NCR	Intern KÃƒÂ¸benhavn	0	628
102	NCR	Intern KÃƒÂ¸benhavn	1	432
103	NCR	Horsens	0	15327
103	NCR	Horsens	1	11198

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

```
--query8
select atm_id, atm_manufacturer,location,weekday,total_transaction_count
from(
select atm_id,atm_manufacturer,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.location, c.weekday,
count(d.trans_id) as total_transaction_count
from atm_data.DIM_ATM a, atm_data.DIM_LOCATION b, atm_data.DIM_DATE c,
atm_data.FACT_ATM_TRANS d
where d.atm_id =a.atm_id
and b.location_id = d.weather_loc_id
and b.location='Vejgaard'
and c.date_id = d.date_id
group by a.atm_id, a.atm_manufacturer, b.location, c.weekday)c
)t
where total_transaction_count=max_version
```

atm_id	atm_manufacturer	location	weekday	total_transaction_count
2	NCR	Vejgaard	Saturday	5016
103	Diebold Nixdorf	Vejgaard	Sunday	3107