Solving analytical queries on RedShift Cluster

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

```
select da.atm_number, da.atm_manufacturer, dl.location,
count(da.atm_id) as total_transaction_count, count(tf.atm_status)
as inactive_count,
round(inactive_count * 100.0 / count(*), 1) as
inactive_count_percent
from atm_new_trans.transaction_fact tf
join atm_new_trans.dim_atm da on tf.atm_id = da.atm_id
join atm_new_trans.dim_location dl on da.location_id =
dl.location_id
where tf.atm_status = 'Inactive'
group by da.atm_number, da.atm_manufacturer, dl.location
order by inactive_count desc limit 10;
```

atm_number	atm_manufacturer	location	total_transaction_count	inactive_count	inactive_count_percent
16	NCR	Skive	44043	44043	100.0
12	NCR	ÃƒËœesterÃƒÂ¥ Duus	33982	33982	100.0
2	NCR	Vejgaard	33725	33725	100.0
88	NCR	Storcenter indg. A	32183	32183	100.0
30	NCR	NykÃƒÂ¸bing Mors	30883	30883	100.0
52	NCR	FarsÃƒÂ¸	27361	27361	100.0
50	NCR	Aarhus	23416	23416	100.0
29	NCR	Skelagervej 15	20773	20773	100.0
81	NCR	Spar KÃƒÂ¸bmand TornhÃƒÂ¸j	20148	20148	100.0
102	NCR	Aalborg Storcenter Afd	18297	18297	100.0

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

```
select dt1.weather_main, dt1.total_counts,
case
      when dt2.inactive_counts is null then 0 else
dt2.inactive_counts
end as inactive_counts,
case
      when round(dt2.inactive_counts * 100.0 / dt1.total_counts, 4)
is null then 0 else round(dt2.inactive_counts * 100.0 /
dt1.total_counts, 4)
end as inactive_count_percent
from (select weather_main, count(*) as total_counts from
atm_new_trans.transaction_fact where weather_main <> '' group by
weather_main) dt1
left join (select weather_main, count(*) as inactive_counts
from atm_new_trans.transaction_fact where atm_status = 'Inactive'
and weather_main <> ''
group by weather_main) dt2 on dt1.weather_main = dt2.weather_main
order by inactive_count_percent desc;
```

weather_main	total_counts	inactive_counts	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

```
select da.atm_id, da.atm_manufacturer, dl.location, count(*) as
transaction_count from atm_new_trans.transaction_fact tf
join atm_new_trans.dim_atm da on tf.atm_id = da.atm_id
join atm_new_trans.dim_location dl on dl.location_id =
da.location_id
group by da.atm_id, da.atm_manufacturer, dl.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

```
select dd.year, dd.month, count(*) as total_transaction_count,
count(case
      when tf.atm_status = 'Inactive' then 1
end) as inactive_count,
round(inactive_count * 100.0 / total_transaction_count, 4) as
inactive_count_percent
from atm_new_trans.transaction_fact tf
join atm_new_trans.dim_atm da on da.atm_id = tf.atm_id
join atm_new_trans.dim_date dd on tf.date_id = dd.date_id
group by dd.year, dd.month
order by dd.month;
```

year	month	total_transaction_count	inactive_count	inactive_count_percent
2017	April	218865	41830	19.1122
2017	August	217218	36713	16.9015
2017	December	197048	20476	10.3914
2017	February	182659	36656	20.0680
2017	January	180195	35953	19.9523
2017	July	227682	38139	16.7510
2017	June	225166	36789	16.3386
2017	March	209586	41046	19.5843
2017	May	222418	37679	16.9406
2017	November	193967	21684	11.1792
2017	October	191667	21780	11.3635
2017	September	202101	28913	14.3062

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

```
select da.atm_id, da.atm_manufacturer, dl.location,
sum(tf.transaction_amount) as total_trans_amount from
atm_new_trans.transaction_fact tf
join atm_new_trans.dim_atm da on tf.atm_id = da.atm_id
join atm_new_trans.dim_location dl on da.location_id =
dl.location_id
group by da.atm_id, da.atm_manufacturer, dl.location order by
total_trans_amount desc limit 10;
```

atm_id	atm_manufacturer	location	total_trans_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(*) as total_transaction_count,
count(case
      when tf.atm_status = 'Inactive' then 1
end) as inactive_count,
round(inactive_count * 100.0 / total_transaction_count, 4) as
inactive_count_percent
from atm_new_trans.transaction_fact tf
join atm_new_trans.dim_card_type ct on tf.card_type_id =
ct.card_type_id
group by ct.card_type order by inactive_count_percent desc;
```

card_type	total_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

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 da.atm_number, da.atm_manufacturer, dl.location,
case
      when dd.weekday in ('Saturday', 'Sunday') then 1 else 0
end as weekend_flag,
count(*) as total_transaction_count
from atm_new_trans.transaction_fact tf
join atm_new_trans.dim_atm da on tf.atm_id = da.atm_id
join atm_new_trans.dim_date dd on tf.date_id = dd.date_id
join atm_new_trans.dim_location dl on da.location_id =
dl.location_id
group by da.atm_id, da.atm_number, da.atm_manufacturer,
dl.location, weekend_flag
order by da.atm_number, weekend_flag, total_transaction_count;
```

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
103	Diebold Nixdorf	Vejgaard	0	18570

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

```
drop view if exists atm_new_trans.weekday_trans;
create view atm_new_trans.weekday_trans as
select dd.weekday, count(*)
from atm_new_trans.transaction_fact tf
join atm_new_trans.dim_date dd on dd.date_id = tf.date_id
join atm_new_trans.dim_atm da on tf.atm_id = da.atm_id
join atm_new_trans.dim_location dl on dl.location_id =
da.location_id
where dl.location = 'Vejgaard' group by dd.weekday;
```

```
select da.atm_id, da.atm_manufacturer, dd.weekday,
dl.location, count(*) as total_transaction_count
from atm_new_trans.transaction_fact tf
join atm_new_trans.dim_date dd on dd.date_id = tf.date_id
join atm_new_trans.dim_atm da on da.atm_id = tf.atm_id
join atm_new_trans.dim_location dl on dl.location_id =
da.location_id
where dl.location = 'Vejgaard' and dd.weekday = (select weekday
from atm_new_trans.weekday_trans
where count = (select max(count) from atm_new_trans.weekday_trans))
group by da.atm_id, da.atm_manufacturer, dd.weekday, dl.location
order by total_transaction_count;
```

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