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**

```
select a.atm_id,
        a.atm_number,
        l.location,
        count(t.trans_id) as transaction_count,
        count(t.atm_status) as inactive_count
 from etl_atm.atm a inner join etl_atm.location l on a.atm_location_id =l.location_id
                    inner join etl_atm.atm_trans t on a.atm_id = t.atm_id
where t.atm_status = 'Inactive'
 group by a.atm_id, a.atm_number, l.location
  order by transaction_count desc
   limit 10;
```

```
--- 1. Top 10 ATMs where most transactions are in the 'inactive' state
select a.atm_id,
       a.atm_number,
       l.location,
       count(t.trans_id) as transaction_count,
       count(t.atm_status) as inactive_count
  from etl_atm.atm a inner join etl_atm.location l on a.atm_location_id =l.location_id
                     inner join etl_atm.atm_trans t on a.atm_id = t.atm_id
 where t.atm_status = 'Inactive'
 group by a.atm_id, a.atm_number, l.location
 order by transaction_count desc
 limit 10;
```

atm_id	atm_number	location	transaction_count	inactive_count
22	16	Skive	44043	44043
18	12	ÃƒËœsterÃƒÂ¥ Duus	33982	33982
26	2	Vejgaard	33725	33725
101	88	Storcenter indg. A	32183	32183
38	30	NykÃƒÂ¸bing Mors	30883	30883
62	52	FarsÃƒÂ¸	27361	27361
60	50	Aarhus	23416	23416
36	29	Skelagervej 15	20773	20773
94	81	Spar KÃƒÂ¸bmand TornhÃƒÂ¸j	20148	20148
5	102	Aalborg Storcenter Afd	18297	18297

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

```
select ct1.weather_main,
       ct1.transaction_count,
       ct2.inactive_count
 from (select weather_main,  count(trans_id) as transaction_count
         from etl_atm.atm_trans
       group by weather_main ) as ct1 inner join
       (select weather_main,  count(atm_status) as inactive_count
          from etl_atm.atm_trans
        where atm_status = 'Inactive'
          group by weather_main) as ct2
       on ct1.weather_main = ct2.weather_main
group by ct1.weather_main, ct1.transaction_count, ct2.inactive_count
order by ct1.weather_main;
```

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

select ct1.weather_main,
       ct1.transaction_count,
       ct2.inactive_count
  from (select weather_main,
               count(trans_id) as transaction_count
          from etl_atm.atm_trans
        group by weather_main ) as ct1 inner join
       (select weather_main,
               count(atm_status) as inactive_count
          from etl_atm.atm_trans
        where atm_status = 'Inactive'
        group by weather_main) as ct2
        on ct1.weather_main = ct2.weather_main
 group by ct1.weather_main, ct1.transaction_count, ct2.inactive_count
 order by ct1.weather_main;
```

weather_main	transaction_count	inactive_count
	8087	1645
Clear	543949	85531
Clouds	1181901	194027
Drizzle	62530	8670
Fog	18174	3729
Mist	82801	12864
Rain	545135	86017
Snow	23405	4813
TORNADO	38	1
Thunderstorm	2549	361

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

```
select a.atm_id,
       a.atm_number,
       l.location,
       count(t.trans_id) as transaction_count,
       count(t.atm_status) as inactive_count
 from etl_atm.atm a inner join etl_atm.location l on a.atm_location_id =l.location_id
                    inner join etl_atm.atm_trans t on a.atm_id = t.atm_id
group by a.atm_id, a.atm_number, l.location
 order by transaction_count desc
  limit 10;
```

```
127 --- 3. Top 10 ATMs with the most number of transactions throughout the year
128 select a.atm_id,
129        a.atm_number,
130        l.location,
131        count(t.trans_id) as transaction_count,
132        count(t.atm_status) as inactive_count
133   from etl_atm.atm a inner join etl_atm.location l on a.atm_location_id =l.location_id
134                      inner join etl_atm.atm_trans t on a.atm_id = t.atm_id
135  group by a.atm_id, a.atm_number, l.location
136  order by transaction_count desc
137  limit 10;
```

atm_id	atm_number	location	transaction_count	inactive_count
47	39	Svenstrup	55380	55380
27	20	Bispensgade	54211	54211
2	10	NÃƒÂ¸rresundby	53794	53794
31	24	Hobro	53378	53378
54	45	Abildgaard	53198	53198
22	16	Skive	44043	44043
49	40	Frederikshavn	43767	43767
1	1	NÃƒÂ¦stved	42787	42787
50	41	Skagen	42732	42732
57	48	BrÃƒÂ¸nderslev	42493	42493

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

```
select ct1.year,
       ct1.month,
       ct1.transaction_count,
       ct2.inactive_atm_count
 from (select d.year, d.month, count(t.trans_id) as transaction_count
         from etl_atm.date as d inner join
              etl_atm.atm_trans as t
           on d.date_id = t.date_id
        group by d.year, d.month) as ct1 left join
      (select d.year, d.month, count(t.atm_status) as inactive_atm_count
         from etl_atm.date as d inner join
              etl_atm.atm_trans as t
           on d.date_id = t.date_id
        where t.atm_status = 'Inactive'
        group by d.year, d.month) as ct2
    on ct1.year = ct2.year
   and ct1 .month = ct2.month
  order by ct1.year,ct1.month;
```

```
--- 4. Number of overall ATM transactions going inactive per month for each month
select ct1.year,
       ct1.month,
       ct1.transaction_count,
       ct2.inactive_atm_count
 from (select d.year, d.month, count(t.trans_id) as transaction_count
         from etl_atm.date as d inner join
              etl_atm.atm_trans as t
           on d.date_id = t.date_id
        group by d.year, d.month) as ct1 left join
       (select d.year, d.month, count(t.atm_status) as inactive_atm_count
         from etl_atm.date as d inner join
              etl_atm.atm_trans as t
           on d.date_id = t.date_id
        where t.atm_status = 'Inactive'
        group by d.year, d.month) as ct2
     on ct1.year = ct2.year
    and ct1 .month = ct2.month
  order by ct1.year,ct1.month;
```

year	month	transaction_count	inactive_atm_count
2017	April	218865	41830
2017	August	217218	36713
2017	December	197048	20476
2017	February	182659	36656
2017	January	180195	35953
2017	July	227682	38139
2017	June	225166	36789
2017	March	209586	41046
2017	May	222418	37679
2017	November	193967	21684
2017	October	191667	21780
2017	September	202101	28913

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

```
select a.atm_id,
       a.atm_number,
       l.location,
       sum(t.transaction_amount) as total_withdrawn_amount
 from etl_atm.atm a inner join etl_atm.location l on a.atm_location_id =l.location_id
                    inner join etl_atm.atm_trans t on a.atm_id = t.atm_id
 where t.service = 'Withdrawal'
 group by a.atm_id, a.atm_number, l.location
 order by total_withdrawn_amount desc
 limit 10;
```

```sql
--- 5. Top 10 ATMs with the highest total withdrawn amount throughout the year
select a.atm_id,
       a.atm_number,
       l.location,
       sum(t.transaction_amount) as total_withdrawn_amount
  from etl_atm.atm a inner join etl_atm.location l on a.atm_location_id =l.location_id
                     inner join etl_atm.atm_trans t on a.atm_id = t.atm_id
 where t.service = 'Withdrawal'
 group by a.atm_id, a.atm_number, l.location
 order by total_withdrawn_amount desc
 limit 10;
```

atm_id	atm_number	location	total_withdrawn_amount
47	39	Svenstrup	277097637
27	20	Bispensgade	271008803
31	24	Hobro	268289882
2	10	NÃƒÂ¸rresundby	267379103
54	45	Abildgaard	265639616
22	16	Skive	220677013
49	40	Frederikshavn	219812287
50	41	Skagen	214127315
1	1	NÃƒÂ¦stved	213721117
57	48	BrÃƒÂ¸nderslev	212883099

6. Number of failed ATM transactions across various card types

```
select c.card_type,
       count(t.atm_status) as failed_transactions
  from etl_atm.card_type c inner join
       etl_atm.atm_trans t
    on c.card_type_id = t.card_type_id
where t.atm_status='Inactive'
group by c.card_type
 order by failed_transactions desc;
```

```
173 --- 6. Number of failed ATM transactions across various card types
174 select c.card_type,
175        count(t.atm_status) as failed_transactions
176   from etl_atm.card_type c inner join
177        etl_atm.atm_trans t
178     on c.card_type_id = t.card_type_id
179  where t.atm_status='Inactive'
180  group by c.card_type
181  order by failed_transactions desc;
```

card_type	failed_transactions
Visa Dankort - on-us	112972
Mastercard - on-us	86000
MasterCard	63482
Visa Dankort	60547
VISA	30713
Dankort - on-us	24680
HÃƒÂ¦vekort - on-us	10331
Dankort	4557
CIRRUS	2953
HÃƒÂ¦vekort	1208

card_type	failed_transactions
VisaPlus	150
Maestro	65

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 d.weekday
            WHEN 'Saturday'
            THEN '1'
            WHEN 'Sunday'
            THEN '1'
            ELSE '0'
        END AS weekend_flag,
        count(t.trans_id) as total_transaction_count
 from etl_atm.atm_trans as t inner join etl_atm.location as l on t.weather_loc_id = l.location_id
                             inner join etl_atm.atm as a on t.atm_id = a.atm_id
                             inner join etl_atm.date as d on t.date_id = d.date_id
 group by a.atm_number, a.atm_manufacturer, l.location, weekend_flag
 order by a.atm_number
 limit 10;
```

```
183 --- 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
184 select a.atm_number,
185        a.atm_manufacturer,
186        l.location,
187        CASE d.weekday
188            WHEN 'Saturday'
189            THEN '1'
190            WHEN 'Sunday'
191            THEN '1'
192            ELSE '0'
193        END AS weekend_flag,
194        count(t.trans_id) as total_transaction_count
195  from etl_atm.atm_trans as t inner join etl_atm.location as l on t.weather_loc_id = l.location_id
196                              inner join etl_atm.atm as a on t.atm_id = a.atm_id
197                              inner join etl_atm.date as d on t.date_id = d.date_id
198  group by a.atm_number, a.atm_manufacturer, l.location, weekend_flag
199  order by a.atm_number
200  limit 10;
```

atm_number	atm_manufacturer	location	weekend_flag	total_transaction_count
1	NCR	NÃƒÂ¦stved	1	10076
1	NCR	NÃƒÂ¦stved	0	32711
10	NCR	NÃƒÂ¸rresundby	1	12127
10	NCR	NÃƒÂ¸rresundby	0	41667
100	NCR	Intern Skive	1	1
100	NCR	Intern Skive	0	17812
101	NCR	Bryggen Vejle	1	3247
101	NCR	Bryggen Vejle	0	11693
102	NCR	Aalborg Storcenter Afd	0	14556
102	NCR	Aalborg Storcenter Afd	1	3741

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

```
select atm_number,
       location,
       weekday,
       total_transaction_count
  from(select atm_number,
                  location,
                  weekday,
                  total_transaction_count,
                  max(total_transaction_count)over(partition by atm_number) as max_count
        from(select a.atm_number,
                        l.location,
                        d.weekday,
                        count(t.trans_id) as total_transaction_count
                 from etl_atm.atm_trans as t inner join etl_atm.location as l
                                                  on t.weather_loc_id = l.location_id
                                               inner join etl_atm.atm as a
                                                  on t.atm_id = a.atm_id
                                               inner join etl_atm.date as d
                                                  on t.date_id = d.date_id
                 where l.location = 'Vejgaard'
                 group by a.atm_number, l.location, d.weekday))
 where total_transaction_count = max_count;
```

```
203 --- 8. Most active day in each ATMs from location "Vejgaard"
204 select atm_number,
205        location,
206        weekday,
207        total_transaction_count
208   from(select atm_number,
209               location,
210               weekday,
211               total_transaction_count,
212               max(total_transaction_count)over(partition by atm_number) as max_count
213         from(select a.atm_number,
214                     l.location,
215                     d.weekday,
216                     count(t.trans_id) as total_transaction_count
217                  from etl_atm.atm_trans as t inner join etl_atm.location as l on t.weather_loc_id = l.location_id
218                                              inner join etl_atm.atm as a on t.atm_id = a.atm_id
219                                              inner join etl_atm.date as d on t.date_id = d.date_id
220                 where l.location = 'Vejgaard'
221                 group by a.atm_number, l.location, d.weekday))
222  where total_transaction_count = max_count;
```

atm_number	location	weekday	total_transaction_count
2	Vejgaard	Friday	6290
103	Vejgaard	Friday	4757