## SQL PROJECT Credit Card Transactions

This project is a part of NamasteySQL: Zero to Hero SQL course provided by Ankit Bansal Sir.

This project consists of one table with column name :

- transaction\_id
- city
- transaction\_date
- card\_type
- exp\_type
- gender
- amount

Prepared by: BANKIM DAS

## **SQL PROJECT Credit Card Transactions**

Basic Data Exploration

SELECT \* FROM credit\_card;

	transaction_id	city	transaction_date	card_type	exp_type	gender	amount
1	1	Delhi	2014-10-29	Gold	Bills	F	82475
2	2	Greater Mumbai	2014-08-22	Platinum	Bills	F	32555
3	3	Bengaluru	2014-08-27	Silver	Bills	F	101738
4	4	Greater Mumbai	2014-04-12	Signature	Bills	F	123424
5	5	Bengaluru	2015-05-05	Gold	Bills	F	171574
6	6	Delhi	2014-09-08	Silver	Bills	F	100036
7	7	Delhi	2015-02-24	Gold	Bills	F	143250
8	8	Greater Mumbai	2014-06-26	Platinum	Bills	F	150980
9	9	Delhi	2014-03-28	Silver	Bills	F	192247
10	10	Delhi	2014-09-01	Platinum	Bills	F	67932
11	11	Delhi	2014-06-22	Platinum	Bills	F	280061
12	12	Greater Mumbai	2013-12-07	Signature	Bills	F	278036
13	13	Greater Mumbai	2014-08-07	Gold	Bills	F	19226
14	14	Delhi	2014-04-27	Signature	Bills	F	254359
15	15	Greater Mumbai	2014-08-15	Signature	Bills	F	302834
16	16	Greater Mumbai	2014-11-28	Platinum	Bills	F	647116
17	17	Greater Mumbai	2014-06-14	Signature	Bills	F	421878
18	18	Greater Mumbai	2015-03-30	Gold	Bills	F	986379
19	19	Greater Mumbai	2014-03-15	Platinum	Bills	F	213047
20	20	Greater Mumbai	2013-11-09	Platinum	Bills	F	735566
21	21	Delhi	2014-04-04	Signature	Bills	F	366102

Total number of records

SELECT count(\*) AS no\_of\_records
FROM credit\_card; -- 26052

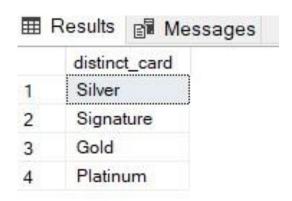
Distinct cards type

SELECT DISTINCT card\_type AS distinct\_card
FROM credit\_card;

Number of transactions by cards\_type

SELECT card\_type ,
COUNT(transaction\_id) AS no\_of\_transactions
FROM credit\_card
GROUP BY card\_type;

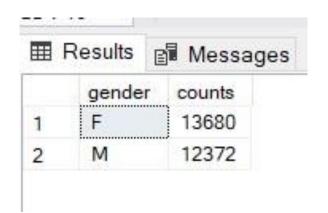




	Results	Messages
	card_type	no_of_transactions
1	Silver	6840
2	Signature	6447
3	Gold	6367
4	Platinum	6398

```
TOP 10 Transactions by city
SELECT TOP 10 city,
COUNT( transaction_id ) AS no_of_transactions
FROM credit card
GROUP BY city
ORDER BY 2 DESC;
-- Transactions by gender
SELECT gender,
COUNT(1) AS counts
FROM credit_card
GROUP BY gender
ORDER BY 2 DESC;
-- F-> Female ; M -> Male
```

	city	no_of_transactions	
1	Bengaluru	3552	
2	Greater Mumbai	3493	
3	Ahmedabad	3491	
4	Delhi	3482	
5	Hyderabad	784	
6	Chennai	774	
7	Kolkata	773	
8	Kanpur	764	
9	Lucknow	759	
10	Jaipur	752	



## Questions from the Stakeholder.

```
Q.1- write a query to print top 5 cities with
highest spends and their percentage contribution of
total credit card spends
WITH amount spend by city AS (
SELECT city , SUM(amount) AS amount spend
FROM credit card
GROUP BY city
total amount spend AS (
SELECT SUM( CAST(amount AS BIGINT) ) AS total amount
FROM credit card
SELECT TOP 5 t1.*,
((t1.amount_spend*1.0)*100/t2.total_amount) AS
percent spend
FROM amount spend by city t1
INNER JOIN total amount spend t2
0N 1=1
ORDER BY t1.amount spend DESC;
```

Results	Mess:	ages	
city		amount_spend	percent_spend
Greate	er Mumbai	576751476	14.153989211474930167653
Benga	aluru	572326739	14.045402268280676516389
Ahmedabad		567794310	13.934172468553599430825
Delhi		556929212	13.667533393886336956728
Kolkat	ta	115466943	2.833660482047887654816
	Greate Benga Ahme Delhi	city Greater Mumbai Bengaluru Ahmedabad	city amount_spend  Greater Mumbai 576751476  Bengaluru 572326739  Ahmedabad 567794310  Delhi 556929212

```
Q.2- write a query to print highest spend month and amount
spent in that month for each card type */
WITH cte1 AS (
SELECT DATEPART(MONTH , transaction date) AS month no ,
 DATEPART(YEAR , transaction_date) AS year_of_transaction ,
 card type, amount
FROM credit card
cte2 AS (
SELECT card type , month no , year of transaction ,
SUM(amount) AS amount spend
FROM cte1
GROUP BY card_type ,year_of_transaction , month_no
rn AS (
SELECT * , DENSE_RANK() OVER(PARTITION BY card_type ORDER
BY amount_spend DESC) AS drnk
FROM cte2
SELECT card_type ,year_of_transaction , month no ,
amount spend
FROM rn
WHERE drnk=1
ORDER BY amount spend DESC;
```

Linked In: https://www.linkedin.com/in/bankim-das-71b79319/

ш.	Results 📲	Messages		
	card_type	year_of_transaction	month_no	amount_spend
1	Silver	2015	3	59723549
2	Signature	2013	12	58799522
3	Platinum	2014	8	57936507
4	Gold	2015	1	55455064

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Q.3- write a query to print the transaction details(all columns from the table) for each card type when it reaches a cumulative of 1000000 total spends(We should have 4 rows in the o/p one for each card type).

```
WITH cte AS(
SELECT * ,
SUM(CAST(amount AS BIGINT)) OVER(PARTITION BY card type
ORDER BY transaction date, transaction id) AS cumm amt
FROM credit card
),
cte2 AS (
SELECT * ,
DENSE RANK() OVER(PARTITION BY card type ORDER BY
cumm amt) AS rk
FROM cte
WHERE cumm amt > 1000000
SELECT *
FROM cte2
WHERE rk=1;
```

	Results 🗿 Mes	ssages						
	transaction_id	city	transaction_date	card_type	exp_type	gender	amount	cumm_amt
1	1522	Delhi	2013-10-04	Gold	Food	M	281924	1272624
2	191	Ahmedabad	2013-10-05	Platinum	Bills	F	612572	1537482
3	73	Delhi	2013-10-04	Signature	Bills	F	550782	1285819
4	7565	Bengaluru	2013-10-04	Silver	Food	F	205179	1115582

```
Q.4- write a query to find city which had lowest percentage spend for gold
card type?
WITH cte AS (
SELECT city , card_type , SUM(CAST(amount AS BIGINT)) as total_amount,
SUM(CASE WHEN card_type='Gold' THEN amount ELSE 0 END) AS gold_amt
FROM credit card
GROUP BY city, card type
SELECT TOP 1 city , ((SUM(gold_amt)*1.0)/SUM(total_amount))*100 AS
gold pct
FROM cte
GROUP BY city
HAVING SUM(gold amt)>0
ORDER BY gold pct ASC;
```

	Results	Messages	
	city	gold_pct	
1	Dham	tari 0.332987647004874882700	

```
Q.5- write a query to print 3 columns: city, highest expense type,
lowest expense type(example format : Delhi , bills, Fuel)
WITH total exp AS (
SELECT city ,exp_type , SUM(amount) AS total_expense
FROM credit card
GROUP BY city ,exp_type
rnk AS (
SELECT city , exp_type , total_expense,
DENSE RANK() OVER(PARTITION BY city ORDER BY total expense ASC) AS
asc rnk ,
DENSE RANK() OVER(PARTITION BY city ORDER BY total expense DESC) AS
des rnk
 FROM total exp
SELECT city,
MAX(CASE WHEN asc_rnk = 1 THEN exp_type END) AS lowest_expense_type ,
MAX(CASE WHEN des rnk = 1 THEN exp type END) AS highest expense type
FROM rnk
GROUP BY city;
```

	city	lowest_expense_type	highest_expense_type		
1	Achalpur	Entertainment	Grocery		
2	Adilabad	Food	Bills		
3	Adityapur	Grocery	Food		
4	Adoni	Entertainment	Bills		
5	Adoor	Bills	Fuel		
6	Afzalpur	Food	Fuel		
7	Agartala	Food	Grocery		
8	Agra	Grocery	Bills		
9	Ahmed	Grocery	Bills		
10	Ahmed	Grocery	Fuel		
11	Aizawl	Grocery	Food		
12	Ajmer	Fuel	Entertainment		
13	Akola	Fuel	Bills		
14	Akot	Entertainment	Fuel		
15	Alappu	Entertainment	Food		
16	Aligarh	Entertainment	Bills		
17	Alipurd	Entertainment	Food		
18	Alirajpur	Entertainment	Entertainment		
19	Allahab	Bills	Grocery		
20	Alwar	Entertainment	Food		
21	Amalap	Fuel	Grocery		
22	Amalner	Food	Entertainment		
23	Ambejo	Grocery	Food		

Q.6- write a query to find percentage contribution of spends by females for each expense type.

```
SELECT exp_type ,
(SUM(CASE WHEN gender = 'F' THEN amount ELSE 0 END)*1.0 / SUM(amount) )*100 AS
pct_females_contribution
FROM credit_card
GROUP BY exp_type
ORDER BY pct_females_contribution DESC;
```

	exp_type	pct_females_contribution		
1	Bills	63.945879327700		
2	Food	54.905310632200		
3	Travel	51.132870420700		
4	Grocery	50.911022600900		
5	Fuel	49.710380717800		
6	Entertainment	49.372907542000		

```
Q.7- which card and expense type combination saw
highest month over month growth in Jan-2014.
WITH cte AS (
SELECT card_type , exp_type , amount ,
DATEPART(YEAR , transaction date) AS yr ,
DATEPART(MONTH , transaction date) AS mnth
FROM credit card
amount spend AS (
SELECT card type , exp type , yr , mnth ,
SUM(amount) AS total exp
FROM cte
GROUP BY card type , exp type , yr , mnth
previous expenses AS (
SELECT card_type , exp_type , yr , mnth , total_exp,
LAG(total_exp , 1 , 0) OVER(PARTITION BY card_type , exp_type ORDER
BY yr , mnth) AS prev_month_exp
FROM amount spend
SELECT TOP 1 * --card_type , exp_type , total_exp , prev_month_exp
,(total exp - prev month exp) AS MoM Growth
FROM previous expenses
WHERE yr = '2014' AND mnth = '1'
ORDER BY MoM Growth DESC;
```

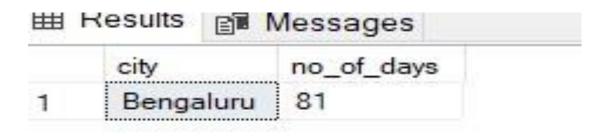
Ш	Leanin	[B	wessages						
	card_t			yr	mnth	total_exp	prev_month_exp	MoM_Growth	
1		um	Grocery	2014	1	12256343	7757562	4498781	

Q.8- During weekends which city has highest total spend to total no of transcations ratio.

```
SELECT TOP 1 city , SUM(amount) AS total_spend , SUM(amount)*1.0/COUNT(1) AS ratio
FROM
(SELECT * ,
DATEPART(WEEKDAY , transaction_date) AS week_day --,DATENAME(WEEKDAY ,
transaction_date) => SUN=1 , SAT=7
FROM credit_card) a
WHERE week_day IN (1,7)
GROUP BY city
ORDER BY ratio DESC;
```

<b>   </b>	Results		Messages	
	city	0.000	total_spend	ratio
1 Sonepur		299905	299905.000000000000	

```
Q.9- Which city took least number of days to reach its 500th transaction after
the first transaction in that city?
WITH cte AS (
SELECT * ,
ROW_NUMBER() OVER(PARTITION BY city ORDER BY transaction_date , transaction_id)
AS rn
FROM credit card
SELECT TOP 1 city,
DATEDIFF(DAY , MIN(transaction_date) , MAX(transaction_date) ) AS no_of_days
FROM cte
WHERE rn=1 OR rn=500
GROUP BY city
HAVING COUNT(1) = 2
ORDER BY no of days;
```



Prepared by: BANKIM DAS

## Thank You

Do share your views