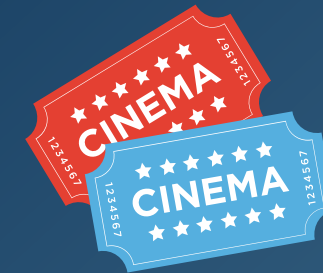


SQL PORTFOLIO PROJECT



Credit Card Transaction Analysis

Level-Advanced



Presented

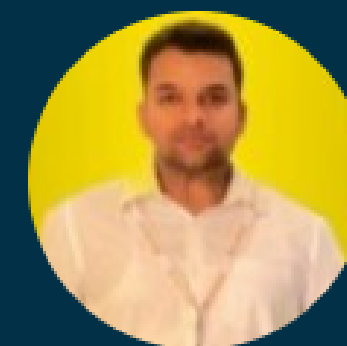
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Dataset Overview

- This dataset contains insights into credit card transactions made in India, offering a comprehensive look at the spending habits of around 29k customers across the nation.
- Transaction table contains field such as transaction_id (int) ,city (string), transaction_date (string), card_type (string),exp_type (string), Gender (string) , Amount (int)

Tools used : Excel, MySQL Server & Canva

Advanced SQL concepts: CTEs, window functions, Date & Time functions, aggregation, filtering

```
SELECT * FROM credit_card_transactions.data;
```

transaction_id	city	transaction_date	card_type	exp_type	gender	amount
1	Delhi	29-Oct-14	Gold	Bills	F	82475
2	Greater Mumbai	22-Aug-14	Platinum	Bills	F	32555
3	Bengaluru	27-Aug-14	Silver	Bills	F	101738
4	Greater Mumbai	12-Apr-14	Signature	Bills	F	123424
5	Bengaluru	05-May-15	Gold	Bills	F	171574
6	Delhi	08-Sep-14	Silver	Bills	F	100036
7	Delhi	24-Feb-15	Gold	Bills	F	143250

```
SHOW COLUMNS FROM credit_card_transactions.data;
```

Field	Type	Null	Key	Default	Extra
transaction_id	int	YES		NULL	
city	text	YES		NULL	
transaction_date	text	YES		NULL	
card_type	text	YES		NULL	
exp_type	text	YES		NULL	
gender	text	YES		NULL	
amount	int	YES		NULL	

Q 1 - Write SQL query to find top 5 cities with highest spends and their percentage contribution of total credit card spends

```
WITH citywise_spend as (SELECT city,SUM(amount) as total_amount
FROM credit_card_transactions.data
GROUP BY city),
total_spend as (SELECT SUM(amount) as total_spend FROM
credit_card_transactions.data)

SELECT c.*,ROUND((total_amount/total_spend)*100,1)as
percentage_contribution
FROM citywise_spend c INNER JOIN total_spend t ON 1=1
ORDER BY total_amount desc
LIMIT 5 ;
```

city	total_amount	percentage_contribution
Greater Mumbai	576751476	14.2
Bengaluru	572326739	14.0
Ahmedabad	567794310	13.9
Delhi	556929212	13.7
Kolkata	115466943	2.8

Q 2 - Find highest spend month and amount spent in that month for each card type

```
WITH cte1 as (  
  SELECT card_type,MONTH(str_to_date(transaction_date,"%d-%M-%Y")) as  
  month,YEAR(str_to_date(transaction_date,"%d-%M-%Y"))as year,SUM(amount) as  
  total_amount  
  FROM credit_card_transactions.data  
  GROUP BY month,year,card_type  
  ORDER BY card_type,total_amount desc  
)  
  
SELECT A.card_type, A.month,A.year,A.Total_amount  
FROM (SELECT cte1.*,dense_rank() OVER (PARTITION BY card_type ORDER BY  
total_amount desc) as rnk FROM cte1) A  
WHERE rnk=1;
```

card_type	month	year	Total_amount
Gold	1	2015	55455064
Platinum	8	2014	57936507
Signature	12	2013	58799522
Silver	3	2015	59723549

Q 3 - Find the transaction details(all columns from the table) for each card type when it reaches a cumulative of 10,00000 total spends (We should have 4 rows in the output one for each card type)



```
WITH cte1 as (  
SELECT *,SUM(amount)OVER( PARTITION BY card_type ORDER BY  
str_to_date(transaction_date, "%d-%M-%y"),transaction_id ) as running_spend  
FROM credit_card_transactions.data  
)  
  
SELECT transaction_id,city,str_to_date(transaction_date, "%d-%M-%y") as  
transaction_date,card_type  
FROM ( SELECT *,row_number() OVER (PARTITION BY card_type ORDER BY  
running_spend) as rw  
FROM cte1  
WHERE running_spend>=1000000 )A  
WHERE rw=1;
```

transaction_id	city	transaction_date	card_type
1522	Delhi	2013-10-04	Gold
191	Ahmedabad	2013-10-05	Platinum
73	Delhi	2013-10-04	Signature
7565	Bengaluru	2013-10-04	Silver

Q 4 - Find city which had lowest percentage spend for gold card type



```
WITH cte as (SELECT city,card_type,SUM(amount)as amt,SUM(CASE WHEN
card_type ="Gold" THEN amount END)as gold_amt
FROM credit_card_transactions.data
GROUP BY city,card_type)
,cte1 as (SELECT city,ROUND((SUM(gold_amt)/SUM(amt))*100,2)as
percentage_goldamount FROM cte
GROUP BY city)

SELECT * FROM cte1
WHERE percentage_goldamount IS NOT NULL
ORDER BY percentage_goldamount ASC
LIMIT 1;
```

city	percentage_goldamount
Dhamtari	0.33
Solan	0.37
Suar	0.39
Bhiwandi	0.39
Bhadracha...	0.40
Lalitpur	0.41
Uravakonda	0.53
Ranchi	0.57

Q 5 - Find percentage contribution of spends by females for each expense type

```
SELECT exp_type,SUM (CASE WHEN gender="F" THEN amount ELSE 0 END)/  
SUM(amount) *100 as percentage_womenspend  
FROM credit_card_transactions.data  
GROUP BY exp_type  
ORDER BY percentage_womenspend DESC;
```

exp_type	percentage_womenspend
Bills	63.9459
Food	54.9053
Travel	51.1329
Grocery	50.9110
Fuel	49.7104
Entertainment	49.3729

Q 6 - Write a query to print 3 columns : city, highest_expense_type , lowest_expense_type
(example format : Delhi , bills, Fuel)

```
WITH cte1 as (select city,exp_type,sum(amount) as total_amount
FROM
credit_card_transactions.data
GROUP BY city,exp_type),
cte2 as (SELECT *,rank()OVER(PARTITION BY city ORDER BY total_amount DESC)
as desc_rk,rank() OVER (PARTITION BY city ORDER BY total_amount asc) as
asc_rk FROM cte1)

SELECT city,MIN((CASE WHEN desc_rk = 1 THEN exp_type END)) as
highest_exp_type,MIN((CASE WHEN asc_rk = 1 THEN exp_type END)) as
lowest_exp_type
FROM cte2
GROUP BY city;
```

city	highest_exp_type	lowest_exp_type
Achalpur	Grocery	Entertainment
Adilabad	Bills	Food
Adityapur	Food	Grocery
Adoni	Bills	Entertainment
Adoor	Fuel	Bills
Afzalpur	Fuel	Food
Agartala	Grocery	Food

Q7 - Find various card and expense type combination month over month growth(%) in Jan-2014

```
WITH cte as ( SELECT * FROM (SELECT card_type,exp_type,EXTRACT ( YEAR_MONTH
FROM str_to_date ( transaction_date,"%d-%M-%y" ) ) as yr_mnth,SUM ( amount )
as total_amt
FROM credit_card_transactions.data
GROUP BY card_type,exp_type,yr_mnth) A
WHERE yr_mnth = 201312 OR yr_mnth = 201401
),
cte2 as ( SELECT *,LAG( total_amt,1 ) OVER (PARTITION BY card_type,exp_type
ORDER BY yr_mnth asc ) as prev_mth_amt
FROM cte )

SELECT card_type,exp_type,(( total_amt-prev_mth_amt)/prev_mth_amt )*100 as
mom_growth_perc FROM cte2
WHERE prev_mth_amt IS NOT NULL
ORDER BY mom_growth_perc DESC;
```

card_type	exp_type	mom_growth_perc
Gold	Travel	87.9201
Platinum	Grocery	57.9922
Silver	Travel	44.4175
Gold	Fuel	28.3349
Gold	Food	20.2488

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



```
SELECT city,(total_amount/transaction_count) as ratio
FROM
(SELECT city,SUM(amount) as total_amount,COUNT(amount)as transaction_count
FROM credit_card_transactions.data
WHERE DAYNAME(str_to_date(transaction_date,"%d-%M-%y")) IN
("Saturday","Sunday")
GROUP BY city) A
ORDER BY ratio DESC
LIMIT 1;
```

city	ratio
Sonepur	299905.0000

Q 9 - Which city took least number of days to reach its 500 th transaction after the first transaction in that city



```
WITH cte as ( SELECT *,row_number() OVER(partition by city ORDER BY
str_to_date (transaction_date,"%d-%M-%y") ASC ) as rw_no
FROM credit_card_transactions.data)

SELECT city,datediff ( 500th_order_date,first_order_date) as no_days
FROM ( select city,COUNT(*),MIN (str_to_date (transaction_date,"%d-%M-%y")
) as first_order_date,MAX ( str_to_date(transaction_date,"%d-%M-%y") ) as
500th_order_date
FROM cte
WHERE rw_no in(1,500)
GROUP BY city
HAVING COUNT(*) = 2 ) A
ORDR BY no_days ASC
LIMIT 1;
```

city	no_days
Bengaluru	81



Key Strategic Insights

- Metro cities like Greater Mumbai , Bengaluru, Ahmedabad , Delhi & Kolkata dominate in Credit card spending accounting around 60 % of total credit card spending with Greater Mumbai tops the list with 14.2% followed by Bengaluru.
- Among all categories of credit cards, the Gold card witnessed the highest spending in the month of January (Year 2015), totaling around 55 million rupees. This was followed by the Platinum which recorded around 57million rupees in the month of September (Year 2016).
- Gold Credit Card is the first to hit milestone of 1,000,000 in total spend!
- Gold credit card is the least preferred choice among customers in Dhamtari city.
- Women prefer using credit cards for paying bills compared to other expense categories.
- Achalpur exhibit the highest spending on groceries and least on entertainment followed by Adilabad.
- Gold credit card holders witnessed the highest month over month growth of around 88% in spending on travel category.
- Sonapur recorded the highest Average transaction value on weekends.
- IT hub Bangalore took only 81 no of days to record 500th transaction after their first transaction .

THANK
YOU