```sql
SELECT  * FROM dbo.[credit_card];
--1. Write a query to print top 5 cities with highest spends and their percentage contribution of total credit card spends --
SELECT TOP 5 City,
    city_credit_spends,
    ((city_credit_spends / total_credit_spends) * 100) AS per_credit_spends
FROM
    (SELECT City,
        SUM(Amount) AS city_credit_spends,
        SUM(SUM(Amount)) OVER () AS total_credit_spends
     FROM dbo.credit_card
     GROUP BY City)  AS table_credit
ORDER BY city_credit_spends DESC;
```

0 %

Results | Messages

City	city_credit_spends	per_credit_spends
Greater Mumbai, India	576751476	14.154275695309
Bengaluru, India	572326739	14.0456865542606
Ahmedabad, India	567794310	13.9344545031867
Delhi, India	556846737	13.6657859815017
Kolkata, India	115466943	2.83371783675597

```sql
2.-- Write a query to print highest spend month and amount spent in that month for each card type
WITH month_year AS (
    SELECT *,
        MONTH(Date) AS spend_month,
        YEAR(Date) AS spend_year
    FROM dbo.credit_card
)
,highest_spend_month AS (
    SELECT TOP 1
        spend_month,
        spend_year,
        SUM(Amount) AS spend
    FROM month_year GROUP BY  spend_month, spend_year ORDER BY spend DESC
)
SELECT
     my.spend_month, my.spend_year, my.[Card Type], SUM(my.Amount)
FROM  highest_spend_month AS hsm join month_year AS
my ON hsm.spend_month = my.spend_month and
hsm.spend_year = my.spend_year
GROUP BY  my.[Card Type], my.spend_month, my.spend_year;
```

esults | Messages

spend_month	spend_year	Card Type	(No column name)
1	2015	Gold	55455064
1	2015	Platinum	57850182
1	2015	Signature	52774683
1	2015	Silver	57478645

```sql
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 */

    WITH cte_amount AS
       (SELECT *,
           SUM(Amount)Over(PARTITION BY [Card Type] ORDER BY Date) as Commulative
        FROM dbo.credit_card),
    cte_rank AS
        (Select *,DENSE_RANK()OVER(PARTITION BY [Card Type] ORDER BY Date ) as rank_predict
            FROM cte_amount
            WHERE cte_amount.Commulative>1000000)
    SELECT  [Card Type],
       Date FROM cte_rank
    WHERE  rank_predict=1
    GROUP BY [Card Type] , Date
```

esults | Messages

Card Type	Date
Gold	2013-10-04 00:00:00.000
Platinum	2013-10-05 00:00:00.000
Signature	2013-10-04 00:00:00.000
Silver	2013-10-04 00:00:00.000

```sql
4.--Write a query to find city which had lowest percentage spend for gold card type

WITH Total_Spend_Gold As (
    SELECT
        City,SUM(Amount) as total_spend_all
    FROM dbo.credit_card
    GROUP BY City
)
,Lowest_Spend_city_for_gold AS (
SELECT TOP 1
    City, [Card Type], SUM(Amount) AS amount
    FROM dbo.credit_card WHERE [Card Type] = 'Gold'
    GROUP BY  city,[Card Type]
    ORDER BY  Amount
)
select x.City, x.[Card Type],
x.Amount, ROUND(CAST(x.amount AS DECIMAL)/x.total_spend_all * 100,2)  AS pct_contribution
From (
    SELECT ls.*, ts.total_spend_all
    FROM Lowest_Spend_city_for_gold AS ls inner join Total_Spend_Gold AS ts
    ON ls.City = ts.City
) AS x;
```

esults | Messages

City	Card Type	Amount	pct_contribution
Dhamtari, India	Gold	1416	0.33

```sql
5.--Write a query to print 3 columns: city, highest_expense_type , lowest_expense_type (example format : Delhi , bills, Fuel)
WITH expenses AS (
    SELECT City, [Exp Type], SUM(Amount) AS Exp_Amount
    FROM dbo.credit_card
    GROUP BY City, [Exp Type]
),
highest_expenses AS (
    SELECT City, [Exp Type], ROW_NUMBER() OVER (PARTITION BY City ORDER BY Exp_Amount DESC) AS rn_desc
    FROM expenses
),
lowest_expenses AS (
    SELECT City, [Exp Type], ROW_NUMBER() OVER (PARTITION BY City ORDER BY Exp_Amount ASC) AS rn_asc
    FROM expenses
)
SELECT e.City, h.[Exp Type] AS highest_expense_type, l.[Exp Type] AS lowest_expense_type
FROM (
    SELECT DISTINCT City
    FROM expenses
) e
LEFT JOIN highest_expenses h ON e.City = h.City AND h.rn_desc = 1
LEFT JOIN lowest_expenses l ON e.City = l.City AND l.rn_asc = 1;
```

esults | Messages

City	highest_expense_type	lowest_expense_type
Achalpur, India	Grocery	Entertainment
Adilabad, India	Bills	Food
Adityapur, India	Food	Grocery
Adoni, India	Bills	Entertainment
Adoor, India	Fuel	Bills
Afzalpur, India	Fuel	Food
Agartala, India	Grocery	Food
Agra, India	Bills	Grocery
Ahmedabad, I...	Bills	Grocery
Ahmednagar,...	Fuel	Grocery
Aizawl, India	Food	Grocery
Ajmer, India	Entertainment	Fuel

```sql
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) AS expense_per_type,
    SUM(Amount) AS total_expense,
    SUM(CASE WHEN Gender = 'F' THEN Amount ELSE 0 END) / SUM(Amount) * 100 AS percentage_contribution_by_female
FROM dbo.credit_card
GROUP BY [Exp Type];
```

esults Messages

Exp Type	expense_per_type	total_expense	percentage_contribution_by_female
Entertainment	358663333	726437536	49.3729075420464
Food	452817279	824724009	54.9053106322263
Bills	579952994	906989998	63.9426008311946
Fuel	392282421	789135821	49.710380717846
Travel	55865530	109255611	51.1328704207237
Grocery	365646998	718207923	50.9110226009022

```sql
7-- Which card and expense type combination saw highest month over month growth in Jan-2014
WITH month_year_spend AS (
    SELECT
       [Card Type],
       [Exp Type],
       MONTH(Date) AS spend_month,
       YEAR(Date) AS spend_year,
       SUM(Amount) AS spend
    FROM dbo.credit_card
    GROUP BY  [Card Type], [Exp Type], MONTH(Date), YEAR(Date)
)
,prev_spent AS (
    SELECT
    *
    ,lag(spend,1) OVER(PARTITION BY  [Card Type],[Exp Type] ORDER BY  spend_year, spend_month) AS lag_spend
    FROM month_year_spend
)
SELECT   TOP 1 *,
   (spend-lag_spend) AS growth
FROM prev_spent
WHERE  spend_month = 1 and spend_year = 2014 and(spend-lag_spend) > 0
ORDER BY  (spend-lag_spend) DESC
```

esults | Messages

Card Type	Exp Type	spend_month	spend_year	spend	lag_spend	growth
Platinum	Grocery	1	2014	12256343	7757562	4498781

```sql
8--In weekends which city has highest total spend to total no of transcations ratio
    SELECT TOP 1
        City,
        SUM(Amount) AS TotalSpend,
        COUNT(*) AS TotalTransactions,
        SUM(Amount) / COUNT(*) AS SpendTransactionRatio
    FROM
       dbo.credit_card
    WHERE
        DATEPART(dw, Date) IN (6, 7)
    GROUP BY
       City
    ORDER BY
       SpendTransactionRatio DESC
```

esults | Messages

City	TotalSpend	TotalTransactions	SpendTransactionRatio
Raghogarh-Vijaypur, India	299980	1	299980

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

WITH  get_first_transaction AS
        (SELECT q1.City, q1.Date FROM
        (SELECT City, Date, ROW_NUMBER()OVER(PARTITION BY City ORDER BY Date  ASC)
          AS transaction_rank FROM dbo.credit_card ) AS q1
          WHERE q1.transaction_rank=1 ),
      get_500th_transaction AS
        (SELECT q2.City, q2.Date FROM
        (SELECT City, Date, ROW_NUMBER()OVER(PARTITION BY City ORDER BY Date  ASC)
          AS transaction_rank2 FROM dbo.credit_card ) AS q2
           WHERE q2.transaction_rank2=500 )
SELECT  TOP 1 f.City,f.Date as First_trans_date,l.Date AS last_trans_date,
    DATEDIFF(DAY, f.Date, l.Date) AS days
FROM get_first_transaction AS f JOIN get_500th_transaction AS l ON f.City=l.city
ORDER BY l.Date-f.Date
```

esults | Messages

City	First_trans_date	last_trans_date	days
Bengaluru, India	2013-10-04 00:00:00.000	2013-12-24 00:00:00.000	81