EV SALES ANALYSIS

MYSQL PROJECT

Objective

- To analyse electric vehicle (EV) sales data using SQL for meaningful business insights.
- To identify sales trends across different states, months, and vehicle categories.
- To evaluate customer purchase behaviour based on demographics and model preferences.
- To assess the impact of government incentives on EV adoption state-wise.
- To analyse charging infrastructure distribution by charger type and installation dates.
- To compare manufacturer performance based on model variety and units sold.
- To utilize SQL techniques including joins, aggregations, and CTEs for advanced analytics.
- To support data-driven decision-making in EV marketing, sales, and policy planning.

Question Modes

Easy – Queries use basic SQL operations such as: SELECT, WHERE, GROUP BY, ORDER BY, LIMIT, DESC

Moderate – Queries involve intermediate SQL operations including: JOIN, GROUP BY, ORDER BY, LIMIT

Advanced – Queries utilize advanced techniques such as: CTE (Common Table Expressions), window functions, subqueries

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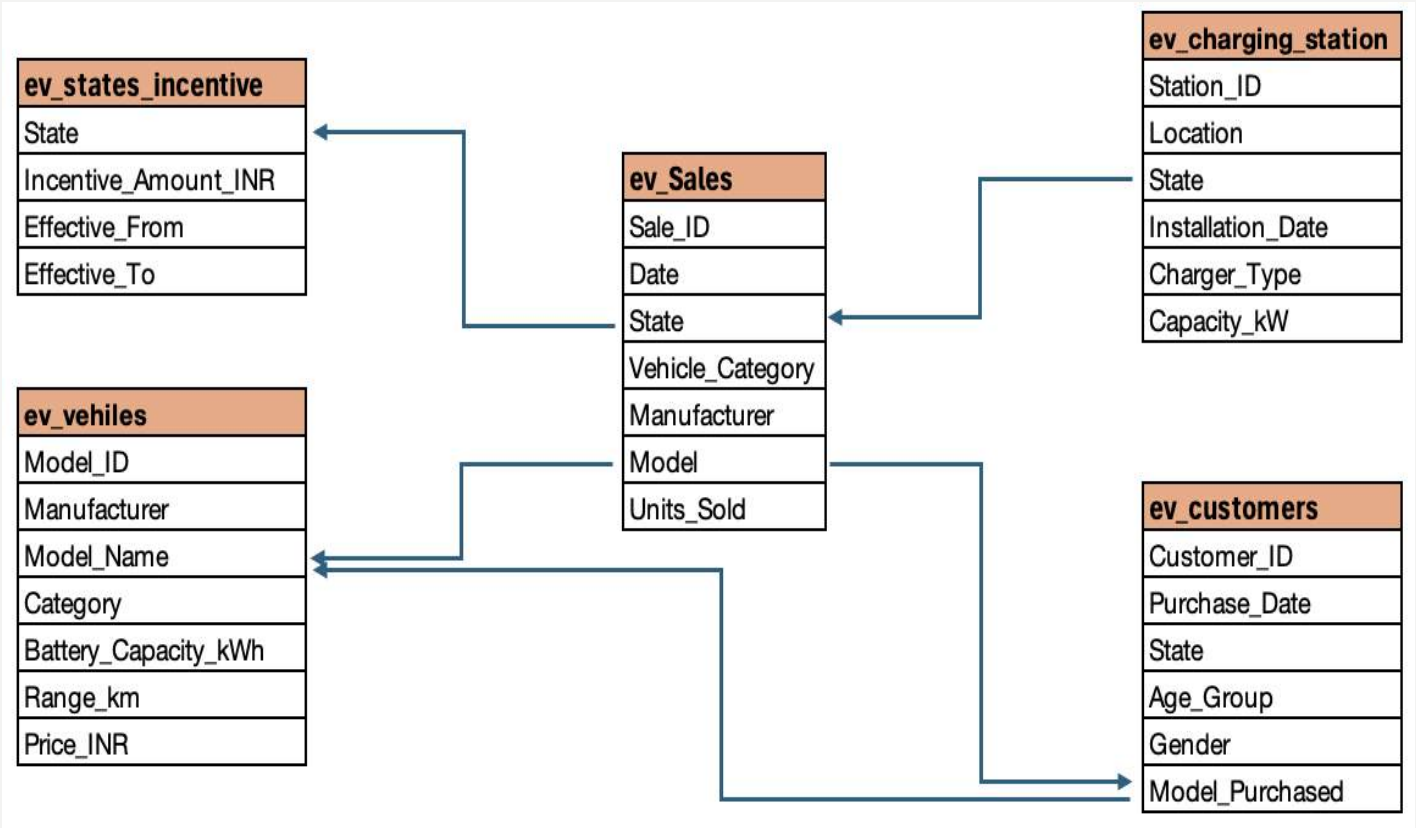
EV SALES ANALYSIS

MYSQL PROJECT

EV Database



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EV SALES ANALYSIS

LEVEL - BASIC

Q1 List all EV models sold in Karnataka.

- Input:

```
SELECT Model_Purchased
FROM ev_customers
WHERE State = 'Karnataka';
```

- Output:

Model_Purchased
eVerito
Tigor EV
S1 Pro
450X
ZS EV
e2o Plus
Nexon EV
Kona Electric

EV SALES ANALYSIS

LEVEL - BASIC

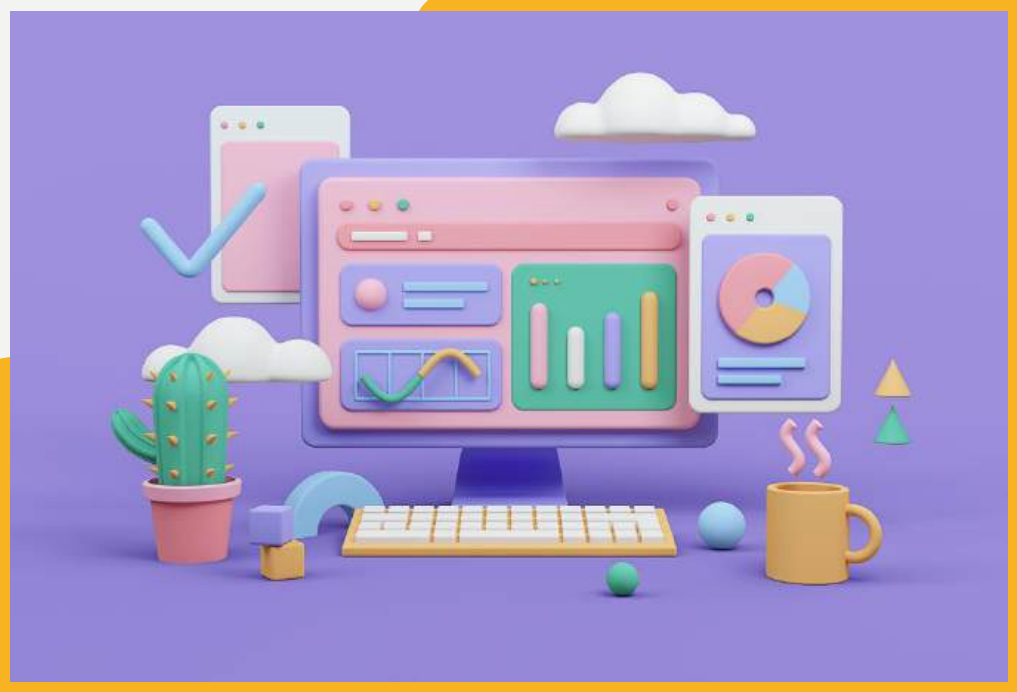
Q2 Find the total number of units sold in each month of 2023.

- Input:

```
SELECT MONTH(Date) as Month, SUM(Units_Sold) AS
Units_Sold FROM ev_sales WHERE YEAR(Date) = 2023
GROUP BY MONTH(Date) ORDER BY MONTH(Date) Asc;
```

- Output:

Month	Units_Sold
1	934
2	946
3	1344
4	1271
5	1000
6	942
7	843
8	1308
9	855
10	1130
11	1223
12	957



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EV SALES ANALYSIS

LEVEL - BASIC

Q3 Display all manufacturers that produce four-wheelers.

- Input:

```
SELECT DISTINCT Manufacturer
FROM ev_vehicles
WHERE Category = 'FOUR WHEELER';
```

- Output

Manufacturer
Tata
Mahindra
MG
Hyundai

EV SALES ANALYSIS

LEVEL - BASIC

Q4 Get the Station ID of charging stations installed after January.

- Input:

```
SELECT Station_ID
FROM ev_charging_stations
WHERE Installation_Date > '2023-01-01';
```

- Output:

Station_ID
4
7
9
17
19
39
45
49
53
61
63
66
67
70
74
75
77
80
82
85
95
99

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EV SALES ANALYSIS

LEVEL - BASIC

Q5 Show the models sold more than 10 times in a single day.

- Input:

```
SELECT
    Model,
    Date,
    SUM(Units_Sold) AS Units_Sold
FROM ev_sales
GROUP BY Model, Date
HAVING SUM(Units_Sold) > 10
ORDER BY Units_Sold DESC;
```

- Output:

Model	Date	Units_Sold
Kona Electric	2023-03-12	84
ZS EV	2023-02-15	84
ZS EV	2023-04-20	80
Kona Electric	2023-11-06	75
eVerito	2023-10-30	69
Kona Electric	2023-04-12	68
S1 Pro	2023-08-01	66
Nexon EV	2023-04-13	65
Nexon EV	2023-07-03	65
Kona Electric	2023-02-10	60
450X	2023-05-20	59
S1 Pro	2023-11-07	56
ZS EV	2023-03-13	54
450X	2023-08-16	54
450X	2023-03-22	50
S1 Pro	2023-07-10	50
e2o Plus	2023-08-02	49
Tigor EV	2023-01-18	49
Tigor EV	2023-01-20	49
e2o Plus	2023-12-04	49

EV SALES ANALYSIS

LEVEL - MODERATE

Q1 List all customer purchases along with the vehicle price.

- Input:

```
SELECT
    c.Customer_ID,
    c.Model_Purchased,
    c.Purchase_Date,
    v.Price_INR
FROM ev_customers c
JOIN ev_vehicles v ON c.Model_Purchased = v.Model_Name;
```

- Output:

Customer_ID	Model_Purchased	Purchase_Date	Price_INR
1	Kona Electric	2023-10-21	136035
2	eVerito	2023-10-26	315400
3	450X	2023-12-27	110699
4	450X	2023-12-31	110699
5	Nexon EV	2023-03-30	2414181
6	S1 Pro	2023-04-19	218413
7	Kona Electric	2023-02-16	136035
8	Tigor EV	2023-09-26	1764742
9	Tigor EV	2023-10-17	1764742
10	S1 Pro	2023-07-22	218413
11	ZS EV	2023-10-17	2235219
12	eVerito	2023-10-05	315400
13	Kona Electric	2023-10-27	136035
14	eVerito	2023-09-10	315400
15	450X	2023-08-28	110699
16	S1 Pro	2023-09-28	218413

EV SALES ANALYSIS

LEVEL - MODERATE

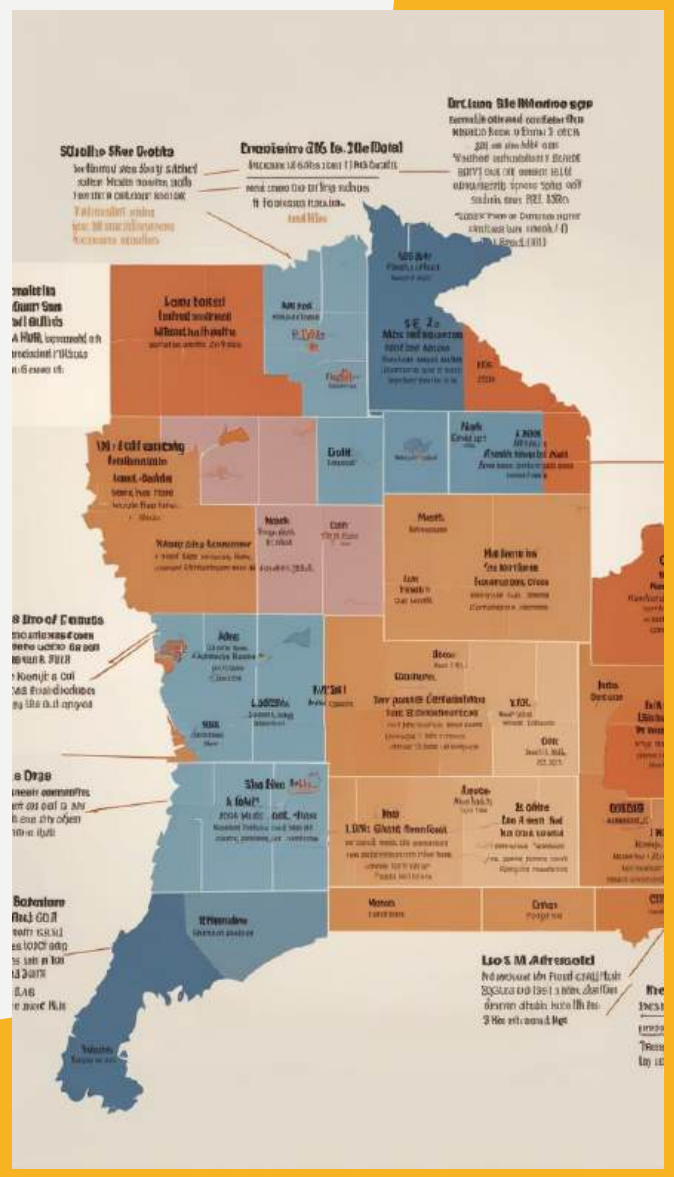
Q2 Display the average range of EVs sold in each state.

- Input:

```
SELECT
    s.State,
    ROUND(AVG(v.Range_km), 2) AS AVG_Range
FROM ev_sales s
JOIN ev_vehicles v ON s.Model = v.Model_Name
GROUP BY s.State;
```

- Output:

State	AVG_Range
Delhi	207.34
Telangana	214.89
Maharashtra	209.24
Tamil Nadu	228.87
Karnataka	225.93



EV SALES ANALYSIS

LEVEL - MODERATE

Q3 Show total EV sales per gender.

- Input:

```
SELECT
    Gender,
    COUNT(Customer_ID) AS EV_Sales
FROM ev_customers
GROUP BY Gender;
```

- Output:

Gender	EV_Sales
Female	68
Other	60
Male	72

EV SALES ANALYSIS

LEVEL - MODERATE

Q4 List the top 3 states with the highest total incentive amounts and their total units sold.

- Input:

```
SELECT
    s.State,
    SUM(s.Incentive_Amount_INR) AS Incentive_Amount,
    SUM(sa.Units_Sold) AS Units_Sold
FROM ev_state_incentives s
JOIN ev_sales sa ON s.State = sa.State
GROUP BY s.State
ORDER BY Incentive_Amount DESC
LIMIT 3;
```

- Output:

State	Incentive_Amou...	Units_Sold
Karnataka	4554792	2846
Tamil Nadu	2908157	2268
Maharashtra	2745004	2518

EV SALES ANALYSIS

LEVEL - MODERATE

Q5 Find the number of fast and slow chargers installed in each state.

- Input:

```
SELECT
    State,
    Charger_Type,
    COUNT(*) AS Total_Charger
FROM ev_charging_stations
GROUP BY State, Charger_Type
ORDER BY State, Charger_Type;
```

- Output:

State	Charger_Type	Total_Charger
Delhi	Fast Charger	7
Delhi	Slow Charger	11
Karnataka	Fast Charger	12
Karnataka	Slow Charger	11
Maharashtra	Fast Charger	6
Maharashtra	Slow Charger	14
Tamil Nadu	Fast Charger	6
Tamil Nadu	Slow Charger	9
Telangana	Fast Charger	14
Telangana	Slow Charger	10

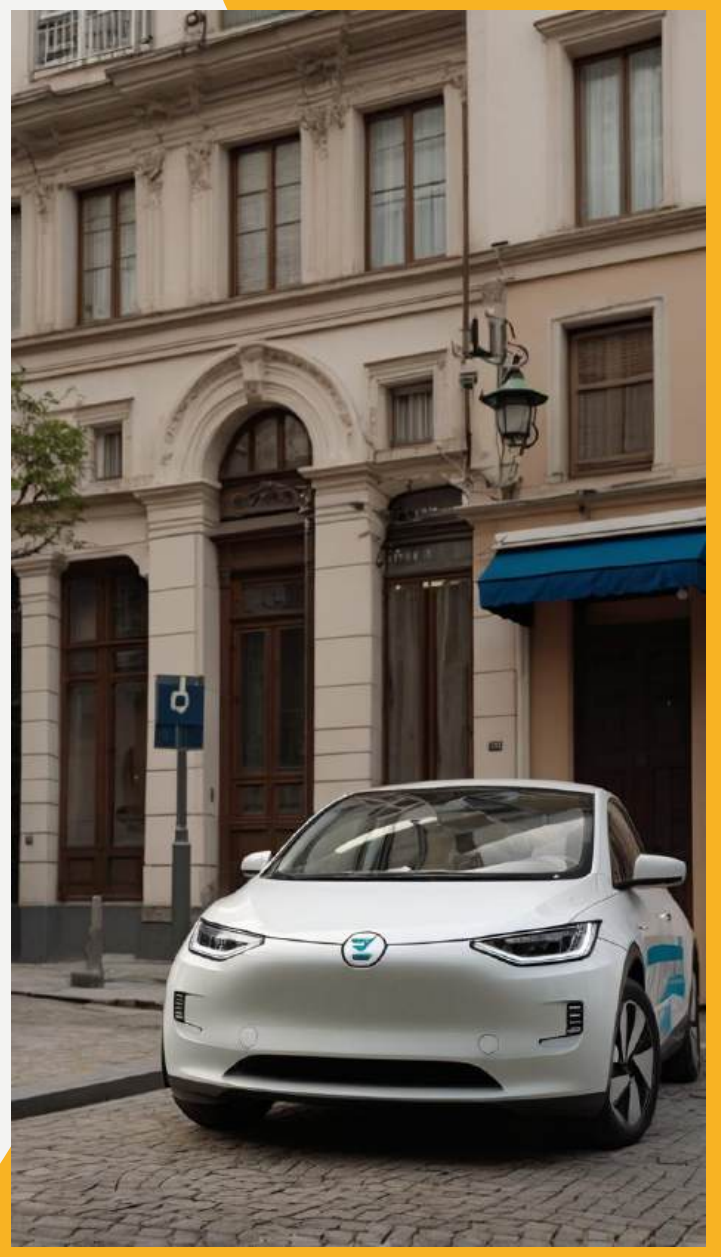
EV SALES ANALYSIS

LEVEL - ADVANCE

Q1 Use a CTE to find the most popular vehicle category in terms of units sold.

- Input:

```
WITH CategorySales AS (
    SELECT
        Vehicle_Category,
        SUM(Units_Sold) AS Total_Units_Sold
    FROM ev_sales
    GROUP BY Vehicle_Category
)
SELECT Vehicle_Category, Total_Units_Sold
FROM CategorySales
ORDER BY Total_Units_Sold DESC
LIMIT 1;
```



- Output:

Vehicle_Category	Total_Units_So...
TWO WHEELER	4568

EV SALES ANALYSIS

LEVEL - ADVANCE

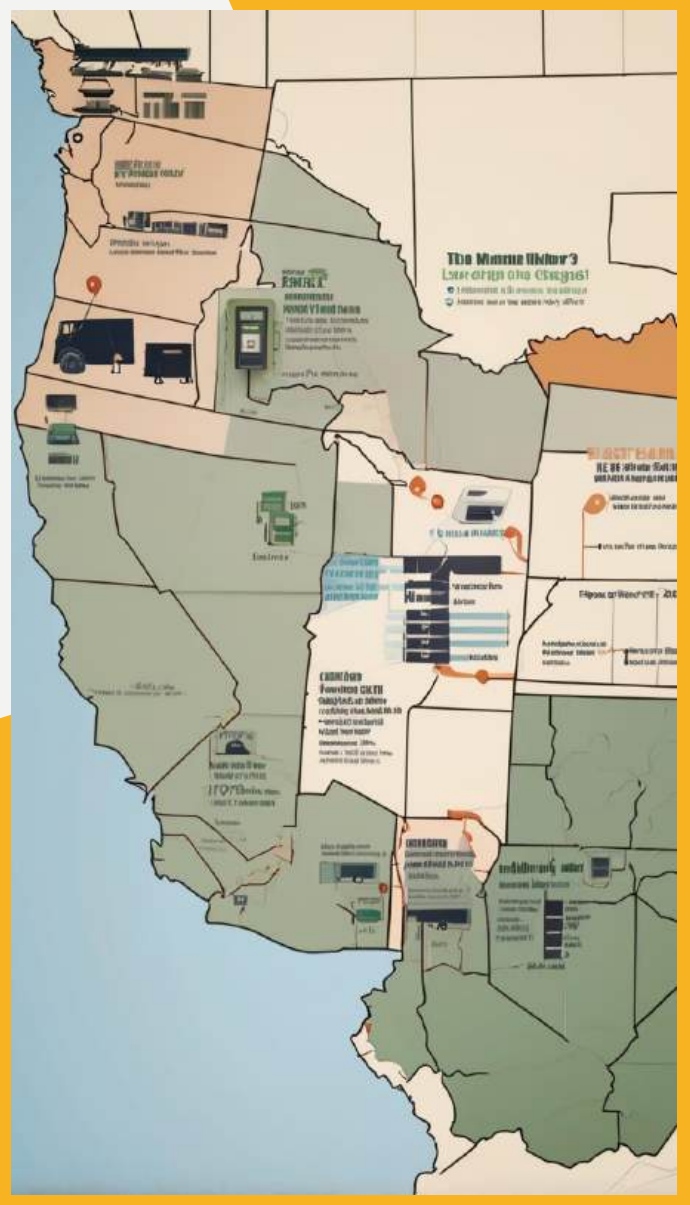
Q2 Use a CTE to rank EV models by total sales per state.

- Input:

```
WITH ModelSales AS (
    SELECT
        Model,
        SUM(Units_Sold) AS Total_Sales
    FROM ev_sales
    GROUP BY Model
)
SELECT
    Model,
    Total_Sales,
    DENSE_RANK() OVER (ORDER BY Total_Sales DESC) AS Sales_Rank
FROM ModelSales;
```

- Output:

Model	Total_Sales	Sales_RANK
450X	2234	1
Kona Electric	2140	2
S1 Pro	2075	3
ZS EV	1934	4
Nexon EV	1228	5
e2o Plus	1117	6
Tigor EV	1076	7
eVerito	949	8



EV SALES ANALYSIS

LEVEL - ADVANCE

Q3 Use a CTE to find customers who purchased models with above-average range.

- Input:

```
WITH AvgRange AS (
    SELECT AVG(Range_km) AS Avg_Range
    FROM ev_vehicles
)
SELECT
    c.Customer_ID,
    c.Model_Purchased,
    v.Range_km
FROM ev_customers c
JOIN ev_vehicles v ON c.Model_Purchased = v.Model_Name
JOIN AvgRange a ON v.Range_km > a.Avg_Range
ORDER BY v.Range_km DESC;
```

- Output:

Customer_ID	Model_Purchased	Range_km
3	450X	300
4	450X	300
5	Nexon EV	300
8	Tigor EV	300
9	Tigor EV	300
15	450X	300

EV SALES ANALYSIS

LEVEL - ADVANCE

Q4 Use a CTE to find which manufacturer has the widest variety of model.

- Input:

```
WITH Varients AS (
    SELECT
        Manufacturer,
        COUNT(DISTINCT Model) AS NumVarient
    FROM ev_sales
    GROUP BY Manufacturer
)
SELECT Manufacturer, NumVarient
FROM Varients
ORDER BY NumVarient DESC
LIMIT 1;
```

- Output:

Manufacturer	NumVarient
Tata	2

EV SALES ANALYSIS

LEVEL - BASIC

Q5 Use a CTE to list the top 3 most recent EV purchase in each state.

- Input:

```
WITH EV AS (
    SELECT
        State,
        MAX(Purchase_Date) AS Recent_Purchase
    FROM ev_customers
    GROUP BY State
)
SELECT *
FROM EV
LIMIT 3;
```

- Output:

State	Recent_Purchase
Tamil Nadu	2023-12-31
Karnataka	2023-12-20
Telangana	2023-12-27

EV Sales Analysis

MYSQL PROJECT

Profile Links

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