

PROJECT DEVELOPMENT PHASE

DATE	Feb 2026
TEAM ID	LTVIP2026TMIDS47701
PROJECT TITLE	Visualization Tool for Electric Vehicle Charge and Range Analysis
MAXIMUM MARKS	15Marks

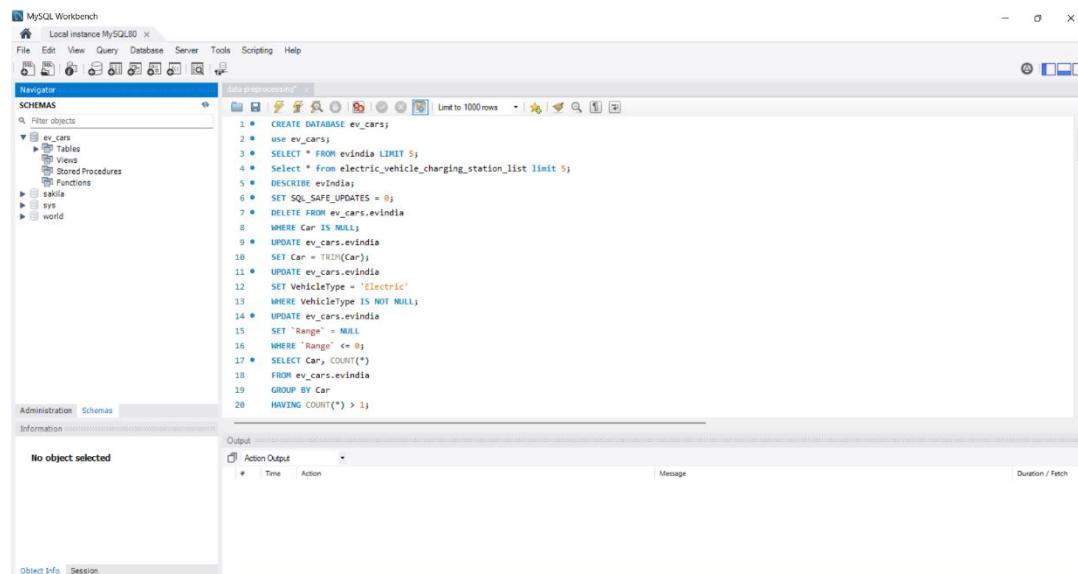
1. Data Connectivity

The data required for this project is collected from publicly available sources and stored in CSV file format. The datasets include electric vehicle specifications and charging station details. These CSV files are directly connected to Tableau for visualization and analysis.

2. Data Preparation

Data preparation is an important step to ensure accuracy and consistency. The following preprocessing steps were performed before visualization:

- Removed missing and null values
- Removed duplicate records
- Renamed column headers for better understanding
- Converted units such as range(km) and battery capacity(kWh) into standard formats
- Filtered unnecessary attributes
- Checked data consistency and corrected errors



```
CREATE DATABASE ev_cars;
use ev_cars;
SELECT * FROM evindia LIMIT 5;
Select * from electric_vehicle_charging_station_list limit 5;
DESCRIBE evIndia;
SET SQL_SAFE_UPDATES = 0;
DELETE FROM ev_cars.evIndia
WHERE Car IS NULL;
UPDATE ev_cars.evIndia
SET Car = TRIM(Car);
UPDATE ev_cars.evIndia
SET VehicleType = 'Electric'
WHERE VehicleType IS NOT NULL;
UPDATE ev_cars.evIndia
SET 'Range' = NULL
WHERE 'Range' <> 0;
SELECT Car, COUNT(*)
FROM ev_cars.evIndia
GROUP BY Car
HAVING COUNT(*) > 1;
```

MySQL Workbench

Local instance MySQL80

File Edit View Query Database Server Tools Scripting Help

Navigator

SCHEMAS

- ev_cars
 - Tables
 - Views
 - Stored Procedures
 - Functions
- sakila
- sys
- world

data preprocessing*

```

22 -- TABLE-2--+
23
24 • DELETE FROM ev_cars.electriccardata_clean
25 WHERE Brand IS NULL OR Model IS NULL;
26
27 • UPDATE ev_cars.electriccardata_clean
28 SET PriceEuro = NULL
29 WHERE PriceEuro < 0;
30
31 • UPDATE ev_cars.electriccardata_clean
32 SET TopSpeed_KmH = NULL
33 WHERE TopSpeed_KmH < 50;
34
35 • UPDATE ev_cars.electriccardata_clean
36 SET RapidCharge = 'No'
37 WHERE RapidCharge IS NULL;
38
39 • UPDATE ev_cars.electriccardata_clean
40 SET BodyStyle = LOWER(BodyStyle);
41
  
```

Administration Schemas

Information

No object selected

Action Output

#	Time	Action	Message	Duration / Fetch
1				

Object Info Session

MySQL Workbench

Local instance MySQL80

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data preprocessing*

```

82 SET `Range` = REPLACE(`Range`, ' km', '');
83
84 • UPDATE ev_cars.`cheapestelectriccars-evdatabase`
85 SET PriceInGermany = NULL
86 WHERE PriceInGermany = '-';
87
88 • UPDATE ev_cars.`cheapestelectriccars-evdatabase`
89 SET Drive = LOWER(Drive);
90
  
```

Result Grid | Filter Rows Export: Wrap Cell Content:

Field	Type	Null	Key	Default	Extra
Name	text	YES			
Subtitle	text	YES			
Acceleration	text	YES			
TopSpeed	text	YES			
Range	text	YES			
Efficiency	text	YES			
FastChargeSpeed	text	YES			
Drive	text	YES			
NumberOfSeats	int	YES			
PriceInGermany	text	YES			

evindia 1 electric_vehicle_charging_statio... Result 3 Result 4 electric_vehicle_charging_stabo... Result 6 Result 7 Result 8 x Read Only

Output

Action Output

#	Time	Action	Message	Duration / Fetch
25	14:57:21	DELETE FROM ev_cars.`cheapestelectriccars-evdatabase` WHERE Name IS NULL	0 rows affected Rows matched: 180 Changed: 0 Warnings: 0	0.016 sec
26	14:57:21	UPDATE ev_cars.`cheapestelectriccars-evdatabase` SET Name = TRIM(Name)	0 rows affected Rows matched: 180 Changed: 0 Warnings: 0	0.000 sec
27	14:57:21	UPDATE ev_cars.`cheapestelectriccars-evdatabase` SET NumberOfSeats = NULL WHERE Number...	0 rows affected Rows matched: 0 Changed: 0 Warnings: 0	0.000 sec
28	14:57:21	UPDATE ev_cars.`cheapestelectriccars-evdatabase` SET Range = REPLACE(`Range`, ' km', '')	0 rows affected Rows matched: 180 Changed: 0 Warnings: 0	0.000 sec
29	14:57:21	UPDATE ev_cars.`cheapestelectriccars-evdatabase` SET PriceInGermany = NULL WHERE Pric...	0 rows affected Rows matched: 0 Changed: 0 Warnings: 0	0.000 sec
30	14:57:21	UPDATE ev_cars.`cheapestelectriccars-evdatabase` SET Drive = LOWER(Drive)	0 rows affected Rows matched: 180 Changed: 0 Warnings: 0	0.000 sec

Object Info Session

