Visualization Tool For Electric Vehicle Charge And Range Analysis

Important Links

Github : https://github.com/KumarLakshmanan/naanmudhalvan
Live Demo : https://kumarlakshmanan.github.io/naanmudhalvan
Demonstration Video : https://github.com/KumarLakshmanan/naanmudhalvan/raw/main/Project%20Demonstration.mp4
Project Manual : https://github.com/KumarLakshmanan/naanmudhalvan/blob/main/Project%20Manual.pdf

1. Define Problem / Problem Understanding

Activity 1: Specify the business problem
Activity 2: Business requirements
Activity 3: Literature Survey
Activity 4: Social or Business Impact.

2. Data Collection & Extraction From Database

First, we understand the problem and then we collect the data by using the given link and then we import the data set into the database. After that we connected there to our tableau

We have downloaded that data sets by using the given link in the PDF. After that, we install the Mysql PhpMyAdmin in our system And after that, we created a database named electric vehicles, and after that be imported, the collected CSV files into the database,

After that we connected the tableau software with phpmyadmin by the following credentials

Username : root
Password : empty
Server : localhost
Port : 3306
Database : electric

3. Prepare The Data For Visualization

The database electric has four tables and these are created by using the following CSV files provided in the datasets link
After that we make a relation between the four tables by using the tableau software

In the four tables EVIndia table has unique values and then we merge the four tables by using their EVIndia table

By this way, we created their data preparation for visualization

4. Data Visualization

1. No of Unique Visualizations
2. Charging Stations by region and type in India
3. EV Charging stations map of India
4. Different EV cars in India
5. Top speed for different Brands
6. Price for different cars in India
7. Top 10 most efficient EV Brands
8. Brands according to Bodystyle

9. Brand filtered by PowerTrain type
10. No of models by each brand
11. Summary card for Different brands of EV Cars globally
12. Summary card for Different brands of EV Cars in India

Data visualization is the practice of presenting data in a graphical or visual format, such as charts, graphs, and maps, to help people better understand the information and insights contained within the data. By displaying data visually, it becomes easier to identify patterns, trends, and relationships that might be difficult to discern from raw data alone. Data visualization can be used in a wide variety of contexts, from scientific research and business analytics to journalism and education. Effective data visualization requires careful consideration of the data being presented, the audience for the visualization, and the goals of the communication.

In the database the data is stored as rows and columns. The process of converting the data into the charts is called as data visualization

5. Dashboard

A dashboard is a graphical user interface (GUI) that displays information and data in an organized, easy-to-read format. Dashboards are often used to provide real-time monitoring and analysis of data, and are typically designed for a specific purpose or use case. Dashboards can be used in a variety of settings, such as business, finance, manufacturing, healthcare, and many other industries. They can be used to track key performance indicators (KPIs), monitor performance metrics, and display data in the form of charts, graphs, and tables.

After creating the database connection start, we need to arrange the charts into the dashboard layout.
Arranging the charts into the dashboard layout is called as dashboard creation

6. Story

A data story is a way of presenting data and analysis in a narrative format, with the goal of making the information more engaging and easier to understand. A data story typically includes a clear introduction that sets the stage and explains the context for the data, a body that presents the data and analysis in a logical and systematic way, and a conclusion that summarizes the key findings and highlights their implications. Data stories can be told using a variety of mediums, such as reports, presentations, interactive visualizations, and videos.

7. Performance Testing

Performance testing in SQL involves measuring and analyzing the performance of SQL queries and database operations under different conditions to ensure that they meet the required performance standards.
There are several techniques for performance testing in SQL, including:

1. Benchmarking: This involves running SQL queries and database operations against a known set of data and comparing the results to established benchmarks to evaluate performance.

2. Load testing: This involves simulating heavy loads on the database, such as multiple users and concurrent transactions, to assess how the system performs under stress.
3. Stress testing: This involves pushing the system to its limits by increasing the workload beyond normal operating conditions to see how it handles extreme levels of traffic and usage.
4. Scalability testing: This involves evaluating the performance of the database as the size of the data and the number of users increase, to ensure that the system can handle future growth.

To perform effective performance testing in SQL, it is important to have a good understanding of the database schema, the queries being used, and the expected user workload. The results of performance testing can then be used to identify and address any bottlenecks, optimize SQL queries and database operations, and improve overall system performance.

8. Web Integration

Integrating a project into a web application involves incorporating the project's functionality and data into a web-based user interface, so that users can access and interact with the project through a web browser.
To integrate a project into a web application, you may need to perform the following tasks:

1. Develop a web-based user interface: This involves designing and developing a user interface that allows users to interact with the project through a web browser. This may involve developing web pages using HTML, CSS, and JavaScript, as well as

integrating server-side code to handle user requests and manage data.

2. Connect to the project's data sources: This involves establishing connections between the web application and the project's data sources, such as databases or APIs, so that the data can be accessed and displayed in the web-based user interface.
3. Integrate project functionality: This involves integrating the project's functionality into the web application, so that users can access and use the project's features through the web-based user interface.
4. Test and debug: Once the project has been integrated into the web application, it is important to thoroughly test and debug the system to ensure that it is functioning correctly and providing a positive user experience.