**Time Series Data Visualization - Documentation**

**1. Project Overview**

This project is a **Vue.js-based** time series data visualization tool that allows users to filter and analyze electricity price data from different regions (**DE, GR, FR**). The data is displayed in both a **table** and a **dynamic chart**, with the ability to modify values in real-time.

**2. Features & Functionality**

**✔ Date Range Filtering**

* Users can select a **start and end date** using a date picker.
* Only the data within the selected range will be displayed in the table and chart.

**✔ Toggle Visibility for Regions**

* Checkboxes allow users to **show/hide** the electricity price data for:
  + 🇩🇪 **Germany (DE)**
  + 🇬🇷 **Greece (GR)**
  + 🇫🇷 **France (FR)**

**✔ Editable Table**

* Users can manually modify the price values in the table.
* Any modifications immediately update the chart.

**✔ Interactive Chart**

* Displays a **line graph** representing the time series data.
* Updates dynamically based on **date selection, checkboxes, and table modifications**.

**✔ Data Validation**

* Only values **between -2000 and 2000** are accepted.
* Invalid inputs trigger a **red border** around the input field and an error message.

**3. Project Structure**

The project follows a **modular structure** with key components:

📂 **src/**

* 📄 App.vue → Main application container
* 📂 components/
  + 📄 TimeSeriesTable.vue → Displays the table and checkboxes
  + 📄 DateRangePicker.vue → Handles date selection
  + 📄 LineChart.vue → Renders the chart
* 📂 assets/
  + 📄 timeseries.json → Contains the dataset

**4. Assumptions & Design Decisions**

**✔ Data Format**

* The **timestamps** in the dataset are formatted as:  
  **DD-MM-YYYY HH:mm**  
  Example: 02-02-2024 14:00

**✔ Date Selection Behavior**

* The **date picker** uses the standard YYYY-MM-DD format.
* The filtering mechanism converts dates accordingly for accurate comparison.

**✔ Chart Updates**

* The chart updates only when the displayed data changes.
* If all regions are unchecked, the chart will be empty.

**5. How to Use**

1. **Start the application** by running npm run dev.
2. **Select a date range** using the date picker.
3. **Use the checkboxes** to toggle visibility of different regions.
4. **Modify values in the table** (if needed).
5. **View the updated chart** reflecting the filtered data.

**6. Known Limitations & Future Improvements**

**✅ Current Limitations**

* Date picker formatting is YYYY-MM-DD, which might be confusing at first.
* The dataset is **static**; it does not fetch live data.

**7. Conclusion**

This project demonstrates how to **filter, edit, and visualize** time series data in Vue.js. The modular structure makes it easy to **expand** and **optimize** further.

For setup instructions, refer to the **README.md** file.