**Problem Definition and Design Thinking**

**Problem Definition:** The objective is to create an automated system for measuring energy consumption, analyzing data, and providing visualizations. This aims to improve efficiency, accuracy, and decision-making in managing energy consumption across various sectors.

**Design Thinking:**

1. **Data Source:**
   * Identify and use the provided dataset: [Hourly Energy Consumption Dataset](https://www.kaggle.com/datasets/robikscube/hourly-energy-consumption).
2. **Data Preprocessing:**
   * Clean, transform, and prepare the dataset for analysis.
   * Handle missing values, outliers, and format issues.
3. **Feature Extraction:**
   * Extract relevant features and metrics related to energy consumption.
   * Identify key variables for analysis.
4. **Model Development:**
   * Utilize statistical analysis to uncover trends, patterns, and anomalies.
   * Consider exploring time series analysis and machine learning models.
5. **Visualization:**
   * Develop visualizations (graphs, charts) to present energy consumption trends and insights.
   * Use tools like Matplotlib, Seaborn, or Plotly for visualization.
6. **Automation:**
   * Build a script that automates data collection, analysis, and visualization processes.
   * Ensure the script is scalable and easily adaptable for different datasets.

**Phase 2: Innovation**

Explore innovative techniques:

* Consider implementing advanced time series analysis methods.
* Explore machine learning models for predicting future energy consumption patterns.

**Phase 3: Development Part 1**

Initiate the development process:

* Select the dataset and import it into your preferred programming environment.
* Perform basic data exploration to understand the structure and content.

**Phase 4: Development Part 2**

Continue the development:

* Apply data preprocessing steps to clean and transform the dataset.
* Implement statistical analysis to uncover trends and patterns.
* Develop visualizations to represent the insights gained.

**Phase 5: Project Documentation & Submission**

**Documentation:**

* Clearly outline the problem statement, design thinking process, and development phases.
* Describe the dataset, data preprocessing steps, and visualization techniques used.
* Document any innovative techniques or approaches applied during development.

**Submission:**

* Compile all code files, including data preprocessing and visualization code.
* Provide a well-structured README file explaining how to run the code and any dependencies.
* Include the dataset source and a brief description.
* Share the submission on platforms like GitHub or a personal portfolio for accessibility and review.

This should give you a solid foundation for structuring and executing the project.