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( Title of the Project )

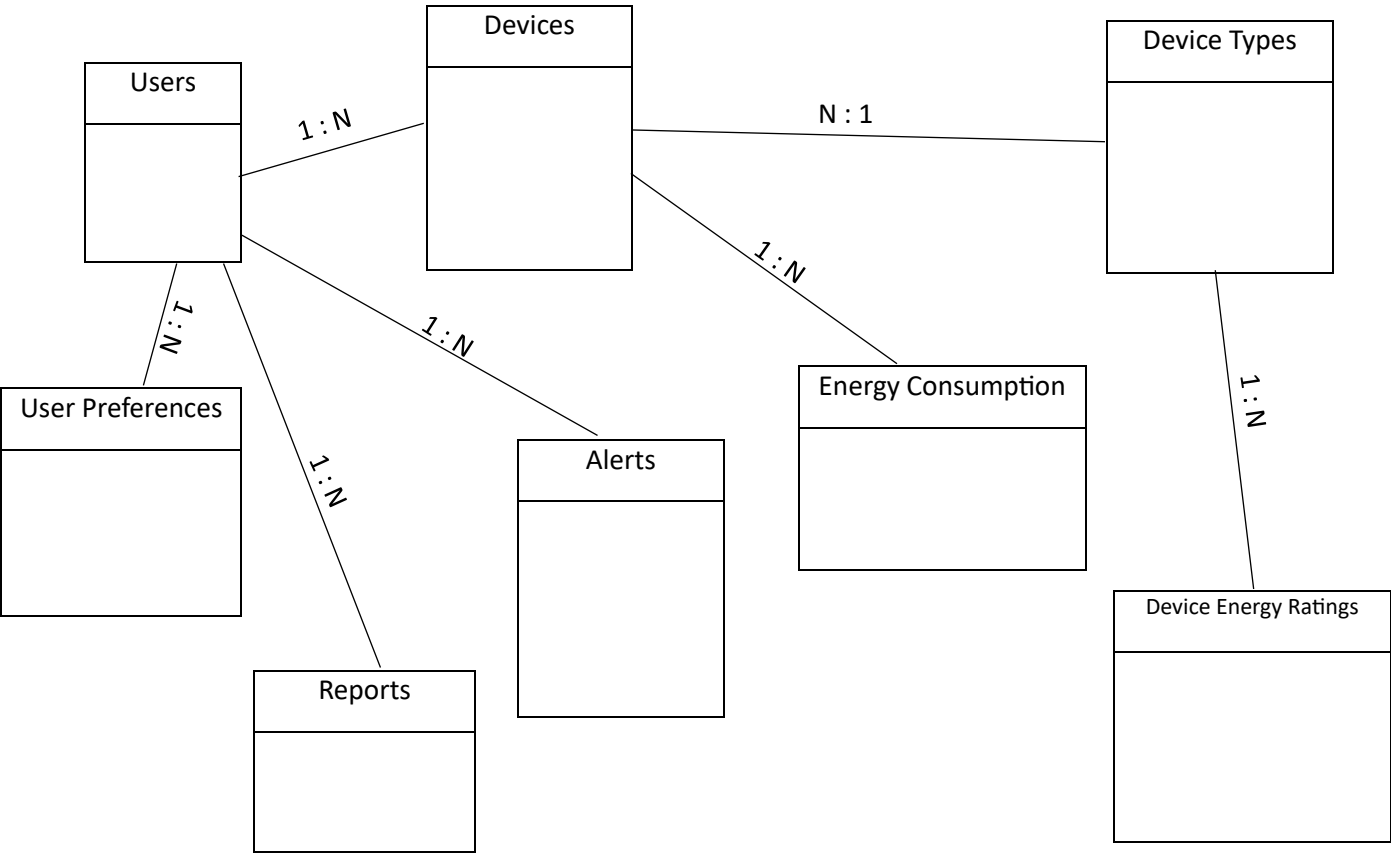
Energy Consumption Management System Project

( Description )

The Energy Consumption Management System is designed to help users monitor, analyse, and manage their energy usage efficiently.

By providing real-time tracking, insightful analytics, and personalized energy-saving tips, the system aims to promote sustainability and reduce costs.

ERD (Entity-Relationship Diagram)



Energy Price

Consumption Forecast

Activity Logs

Weather Data

Monthly Summaries

Appliance Profiles

Appliance Profiles

## **LDM (Logical Data Model)**

The LDM organizes entities and their relationships:

- Users (User\_ID, User\_Name, User\_Email, User\_Password, Gender)
- Device Types (DeviceType\_ID, DeviceType\_Name)
- Devices (Device\_ID, Device\_Name, DeviceType\_ID, User\_ID)
- Energy Consumption (Record\_ID, Device\_ID, ConsumptionDate, EnergyUsed)
- Tips (Tip\_ID, TipDescription)
- User Preferences (Preference\_ID, Preference\_Name, Preference\_Value, User\_ID)
- Alerts (Alert\_ID, Alert\_Message, Alert\_Date, User\_ID)
- Reports (Report\_ID, Report\_Date, Report\_Content, User\_ID)
- Device Energy Ratings (Rating\_ID, Energy\_Rating, DeviceType\_ID)
- Activity Logs (Log\_ID, Activity\_Description, Activity\_Date, User\_ID)
- Energy Price (Price\_ID, Price\_Date, Price\_PerUnit)
- Consumption Forecast (Forecast\_ID, ForecastDate, Forecasted\_Energy, Device\_ID)
- Weather Data (Weather\_ID, Weather\_Date, Temperature, Humidity)
- Monthly Summaries (Summary\_ID, Month\_Year, Total\_EnergyUsed, User\_ID)
- Appliance Profiles (Profile\_ID, Appliance\_Model, Average\_EnergyUsage)

## **( Data Dictionary )**

A data dictionary provides a description of each table and its attributes:

- 1- Users:** Stores user information.
  - User\_ID: Primary key.
  - User\_Name: Name of the user.
  - User\_Email: Email address of the user.
  - User\_Password: Password for user authentication.
  - Gender: Gender of the user.
- 2- Device Types:** Categorizes devices.
  - DeviceType\_ID: Primary key, unique identifier.
  - DeviceType\_Name: Name of the device type.
- 3- Devices:** Tracks devices being monitored.
  - Device\_ID: Primary key, unique identifier.
  - Device\_Name: Name of the device.
  - DeviceType\_ID: Foreign key, references DeviceTypes.
  - User\_ID: Foreign key, references Users.

**4- Energy consumption:** Records energy usage.

- Record\_ID: Primary key, unique identifier.
- Device\_ID: Foreign key, references Devices.
- ConsumptionDate: Date and time of energy consumption recording.
- EnergyUsed: Amount of energy used.

**5- Tips:** Stores energy-saving tips.

- Tip\_ID: Primary key, unique identifier.
- TipDescription: Description of the tip.

**6- User preferences:** Stores user-specific preferences.

- Preference\_ID: Primary key, unique identifier.
- Preference\_Name: Name of the preference.
- Preference\_Value: Value of the preference.
- User\_ID: Foreign key, references Users.
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**7- Alerts:** Manages user notifications.

- Alert\_ID: Primary key, unique identifier.
- Alert\_Message: Message of the alert.
- Alert\_Date: Date and time of the alert.
- User\_ID: Foreign key, references Users.

**8- Reports:** Stores generated reports.

- Report\_ID: Primary key, unique identifier.
- Report\_Date: Date of the report.
- Report\_Content: Content of the report.
- User\_ID: Foreign key, references Users.

**9- Device Energy Ratings:** Stores energy ratings for devices.

- Rating\_ID: Primary key, unique identifier.
- Energy\_Rating: Rating of the device.
- DeviceType\_ID: Foreign key, references DeviceTypes.

**10- Activity Logs:** Tracks user activities.

- Log\_ID: Primary key, unique identifier.
- Activity\_Description: Description of the activity.
- Activity\_Date: Date of the activity.
- User\_ID: Foreign key, references Users.

**11- Energy Price:** Stores energy prices for different periods.

- Price\_ID: Primary key, unique identifier.
- Price\_Date: Date of the price.
- Price\_PerUnit: Price per unit of energy.

**12- ConsumptionForecast:** Stores forecasted energy consumption.

- Forecast\_ID: Primary key, unique identifier.
- ForecastDate: Date of the forecast.
- Forecasted\_Energy: Forecasted amount of energy used.
- Device\_ID: Foreign key, references Devices.

**13- Weather Data:** Stores weather information for energy consumption analysis.

- Weather\_ID: Primary key, unique identifier.
- Weather\_Date: Date of the weather data.
- Temperature: Temperature on the given date.
- Humidity: Humidity on the given date.

**14- Monthly summaries:** Stores monthly summaries of energy consumption.

- Summary\_ID: Primary key, unique identifier.
- Month\_Year: Month and year of the summary.
- Total\_EnergyUsed: Total energy used in that month.
- User\_ID: Foreign key, references Users.

**15- Appliance Profiles:** Stores profiles of different appliance models and their typical energy usage.

- Profile\_ID: Primary key, unique identifier.
- Appliance\_Model: Model of the appliance.
- Average\_EnergyUsage: Average energy usage of the appliance model.