IBM NaanMuthalvan – Artificial Inteligence Group 4

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Phase 1:

MEASURE ENERGY CONSUMPTION

Problem Definition:

The problem at hand is the need for a comprehensive and user-friendly system to accurately measure and monitor energy consumption in residential and commercial settings. Current methods are often cumbersome, lack real-time data, or fail to engage users in energy conservation.

Design Thinking:

Designing an energy consumption system involves several components and consideration.

Hardware and Sensors:

Select appropriate sensors for measuring energy consumption

Data Acquisition System:

Set up a data acquisition system to collect data from sensors.

Use microcontrollers, data loggers, or dedicated hardware to interface with sensors.

Communication:

Choose a communication protocol for transmitting data from sensors to a central processing unit.

Central Processing Unit:

Select a microcontroller or single-board computer to receive, process, and store the incoming data.

Implement necessary algorithms for data processing and analysis.

Data Storage:

Decide on a suitable database or storage solution for storing historical energy consumption data

User Interface:

Develop a user interface for interacting with the system (e.g., web application, mobile app, dashboard).

Include features for viewing real-time and historical energy consumption data.

Data Analysis and Reporting:

Implement algorithms to analyze the data and generate reports or visualizations.

Include features for identifying trends, anomalies, and potential areas for optimization.

Alerts and Notifications:

Set up a system for generating alerts based on predefined thresholds or anomalies in energy consumption.

Power Management:

Implement power-saving measures for the system itself to minimize energy consumption.

Security:

Implement security measures to protect sensitive data and ensure the system's integrity.

Testing and Calibration:

Thoroughly test the system to ensure accurate data collection and processing.

Calibrate sensors periodically to maintain accuracy.

Maintenance and Updates:

Establish a maintenance schedule for sensor calibration, software updates, and hardware checks.