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Smart Energy Management
Using Esp-32

19CSE446-INTERNET OF THINGS,
DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

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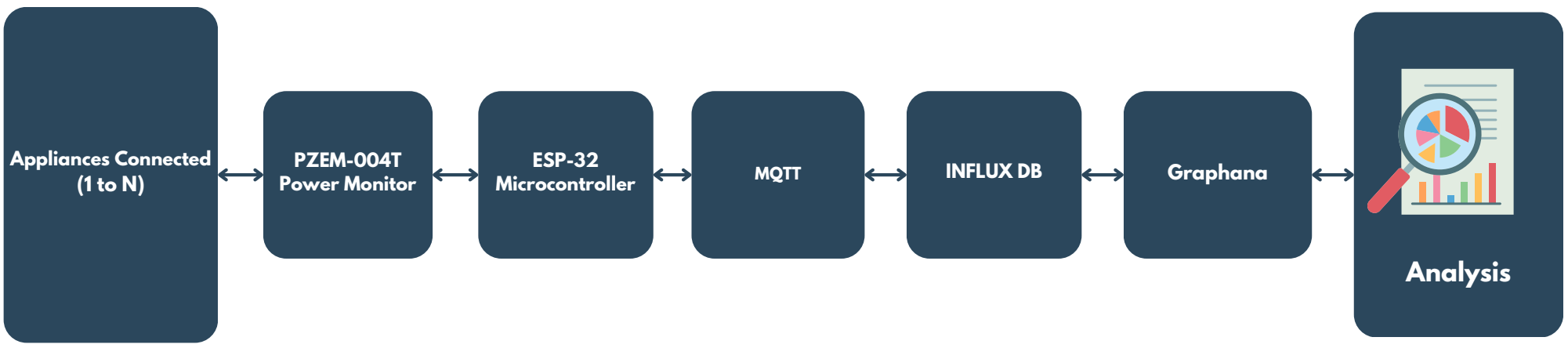
Workflow of the proposed Model:



Introduction

Smart laboratories leverage advanced technology and sustainable practices to optimize operations and reduce environmental impact.

Over a month, we will collect data on Mondays, Wednesdays, and Fridays, recording laboratory session counts, energy consumption, system usage, and CO2 levels.

This data provides a **comprehensive view of lab activities** and their environmental footprint, guiding us towards creating a more efficient and eco-friendly laboratory.

Motivation:

- **Efficiency Improvement:** To streamline laboratory operations by identifying and addressing inefficiencies.
- **Environmental Responsibility:** To minimize the lab's ecological impact through informed, data-driven decisions.
- **Cost Reduction:** To lower operational costs through better resource management and energy savings.

Objectives:

- **Data Analysis:** To gather and analyze detailed data on lab sessions, energy usage, and environmental metrics.
- **Operational Optimization:** To identify and implement strategies for reducing energy consumption and improving system utilization.
- **Sustainability Enhancement:** To develop and promote practices that lower CO2 emissions and support long-term ecological sustainability.

Into the Domain:	What other Companies are working on smilar projects?
Siemens, Johnson Controls, Honeywell, Schneider Electric, Thermo Fisher Scientific, IBM	

Hardware Components Used:

ESP 32
PZEM Module
Co2 Sensor -MQ135
Nodes

Benefits of Smart Labs:

Lower Energy Bills
Efficient Equipment Use
Actionable Insights
Sustainability Tracking