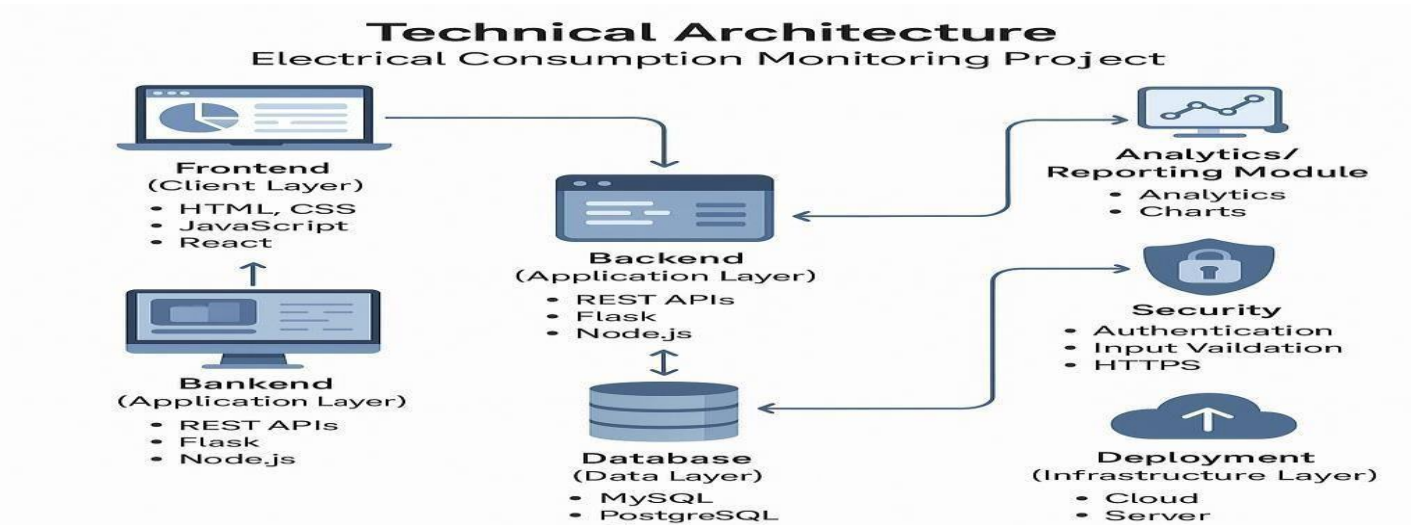


**Requirement Analysis**  
**Technology Stack (Architecture & Stack)**

Date	25-06-2025
Team ID	LTVIP2025TMID48302
Project Name	ToyCraft tales: tableau's vision into toy manufacturer data
Maximum Marks	4 Marks

**Visualization Tool for Electricity Consumption In India 2019 and 2020**

**Technical Architecture: -**



**Table 1: - Components and Technologies Used**

S.No	Component	Description	Technology Used
1	Data Collection Script	Reads real-time electricity usage from meter or sensor.	Python, Arduino C++, Serial Communication
2	Data Transmission Module	Sends usage data to the backend or cloud.	HTTP, MQTT, Python requests, ESP32 firmware
3	Backend Server	Handles incoming data, user requests, and processes logic.	Flask / Node.js / PHP, REST APIs

4	Database	Stores electricity data and user info.	MySQL, MongoDB, Firebase
5	Web Dashboard (Frontend)	Visualizes electricity consumption in charts and tables.	HTML, CSS, JS, Bootstrap, Chart.js
6	Authentication Module	Manages user login, registration, and access control.	Firebase Auth, JWT, PHP Sessions
7	Notification System (Opt.)	Alerts users when consumption exceeds threshold (SMS/email/push).	SMTP, Firebase Cloud Messaging, Twilio API

**Table2:- Characteristics and Technologies Used**

S.No	Characteristics	Technologies Used
1.	Real-time data reading	Python, Arduino C++

2.	Wireless data transmission	MQTT, HTTP, ESP32, Python requests
3.	Scalable and secure server-side processing	Flask, Node.js, PHP, REST APIs
4.	Interactive and responsive user interface	HTML, CSS, JavaScript, Chart.js, Bootstrap
5.	Reliable data storage and retrieval	MySQL, MongoDB, Firebase