Date: 12 January 2023

Project Name	Energy Monitoring and Bill Anticipation Device		
Project Sponsor	Dave Martin N. Broñola	davemartin2345@gmail.com	+639050298128
Project Developer	Lionelle Diaz	lionellediaz2557@gmail.com	+639223884864

Objective

The work is being commissioned to provide a working electronics prototype of ENERGY MONITORING AND BILL ANTICIPATION DEVICE given with the following project requirements and specifications:

1. A system that utilizes Web Application containing the following pages with their respective functionalities:

- Monitor – shows the following electricity metrics
  - Voltage (V)
  - Current (A)
  - Power (W)
  - Frequency (Hz)
  - Power Factor
  - *Power Rate (Php/kWh)*
  - Energy Consumption Today (kWh)
  - Energy Consumption This Month (kWh)
  - Daily Billing Forecast = Energy Today * Power Rate
  - Monthly Billing Forecast = Energy This Month * Power Rate
- Awareness
  - *Monetary Limit*
  - *Offset Percentage*
- History
  - Show the previous energy consumptions from a certain date range, grouped by year/month/day
- About

2. Green LED lights up when the device is connected to the internet

3. Red LED lights up when the PZEM sensor data is not delivered.

4. If the monthly billing forecast has exceeded or reached the offset percentage, the system will beep in within 6 seconds at a length of 500 milliseconds each beep.

5. If the monthly billing forecast has exceeded or reached the 100% of Monetary Limit, the system will beep in continuous manner for 6 seconds.

6. Provide a:

    - Schematic Diagram of the device
    - Reproduceable Arduino Code
    - Working prototyp

Work Breakdown Structure

1. Material Procurement

- Identification of components based on project's specification
- Purchasing
    - Amounts payable of the billed materials are shouldered by the project sponsor.
    - Purchased unused materials are part of the risks during the development which may be due to component-component compatibility
    - In relation to previous statement, there might be a need to purchase other material(s) as an alternative/work-around fix in case if problems are observed that blocks the development process.

2. Design

- Code Design
    - Individual Testing of Components (making sure all components work)
    - Implementing the logic and the given specifications based on the thesis document
    - Fullstack Web Application Implementation (Frontend, Backend, Database)
- UIUX Design
    - Web application UIUX Design
- Hardware Design
    - Create a schematic diagram of the device.

3. Build

- The 3D printing service is 1.5 pesos per minute. This amount is excluded from the total fee. This is optional.
- Assembly of
    - Electronics
    - Relevant enclosure (if availed)
- Deployment of web application

Any features that are not included in this document are subject for discussion and evaluation to gauge its complexity. The initial fee may increase with the compensation incurred based on the complexity of an added feature.

Client Responsibilities

- Responsiveness to all communication
- Quick decisions of proposals and suggestions to support the timeline (within 24 hours)

Fees

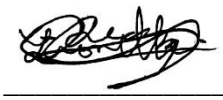
Sir Broñola and his team approached me to develop a portion of their system in fulfillment for their thesis project which covers electronics and programming. Sympathetic to their cause, I accepted the offer to develop their system based on the given specification at a fixed price of **P12,000.00** for the development based on the work breakdown structure only.

Payment Schedule

Item	Description	Amount
Down Payment	Paid	5000
Project Prototype	Balance upon Turnover	7,000
Total		**12,000**

P.S. Start of work also requires all the required materials to be ready.

Acceptance



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