TUF | THE UNIVERSITY OF FAISALABAD

IOT Based Home Energy Monitor

INTRODUCTION

According to the report by the International Energy Agency on understanding energy challenges in Pakistan, there is a significant concern regarding the supply of adequate and reliable energy to the Indian population amid growing energy demand bolstered by economic growth. This calls for efficient management and conservation of energy in the present day scenario.

The manual examination of meters for billing purposes is prone to human error and manipulation. The data collected from meters is manually fed to a computer for billing purposes, a method that is again vulnerable to human error.

This project will describe an approach in which we implement a controlling and continuous monitoring system to observe load variation at home appliances with Android smart phone.

PROBLEM STATEMENT

Use of IoT technology to reduce energy consumption at home is one of the challenging task for the smart home engineer. It becomes more hectic in his/her busy life if user fails to turn off the home appliances, which may create the problem of loss of electricity. To achieve effective solution to this problem one such home automation system is required which allows the user to manage home appliances remotely without their physical presence.

Also there are problems with home automation as it faces the main problems of costing, manageability, security . In this project we introduced a smart phone application that gives continuous time monitoring to the user in our defined case. This application has a great flexibility as it is using IoT technology.

OBJECTIVES

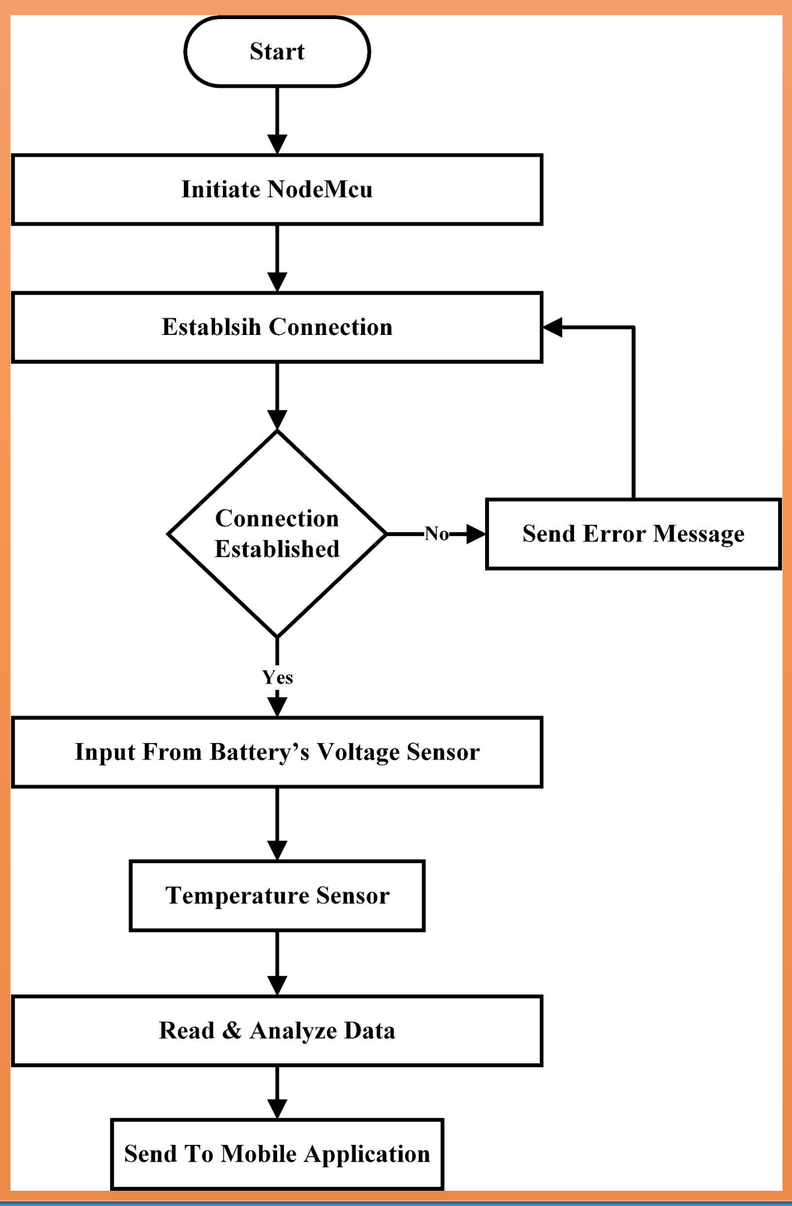
The objectives of this project are as follows:

- Energy Management
- Internet of Things (IoT)
- Energy optimization
- Reduction of power wastage

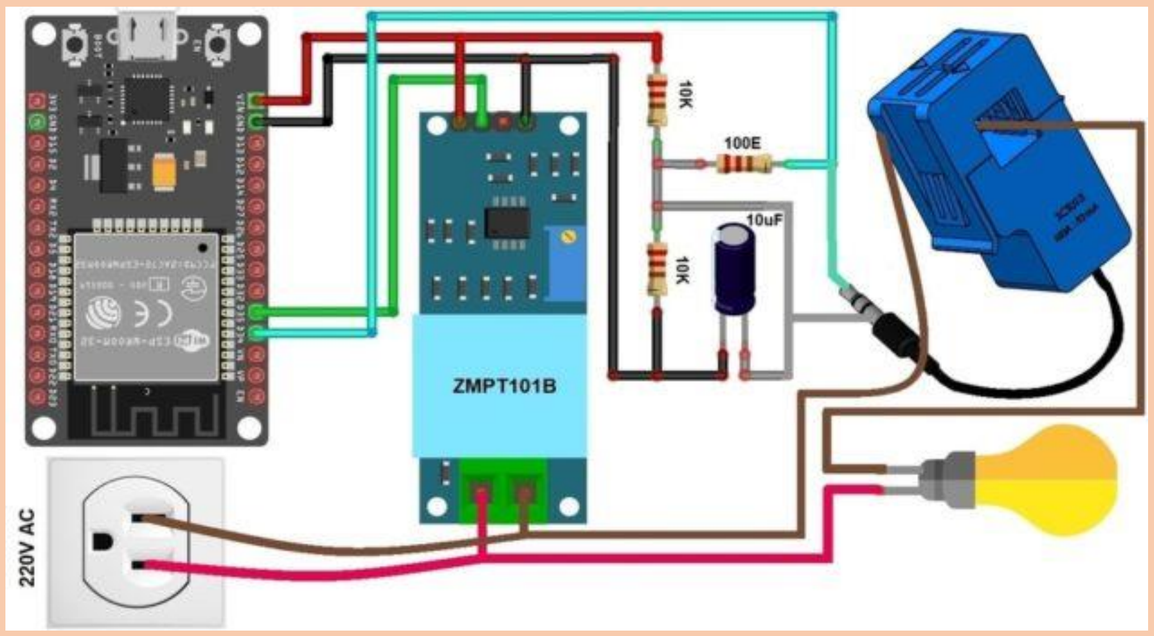
METHODOLOGY

Methodology consist of following stages:

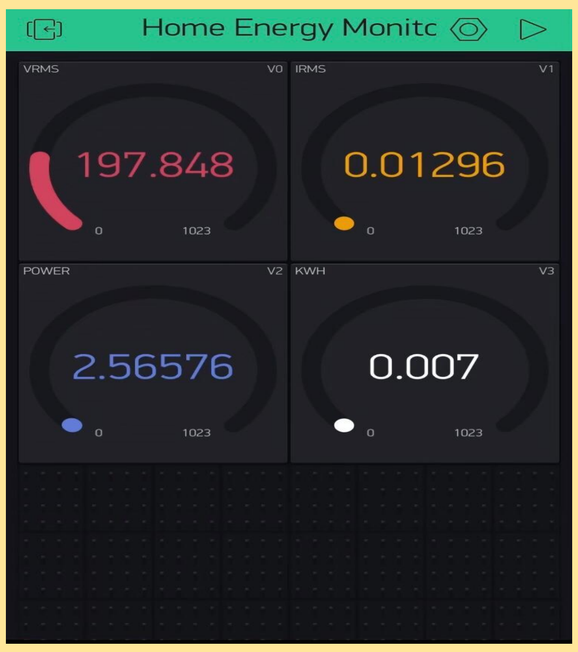
- Hardware designing
- Using voltage divider to reduce battery voltage for NodeMcu
- Interfacing with mobile application



CIRCUIT DIAGRAM/ SCHEMATICS



RESULTS



FUTURE WORK

- Use of IoT for monitoring of a energy consumption is an important step as day by day load variation and unscheduled load shedding.
- Thus automation and intellectualization of home energy monitoring will enhance future decision making process for load forecasting and decision making process.
- In this project we proposed an IoT based remote monitoring system for home energy monitoring, the approach is studied, implemented and successfully achieved the remote transmission of data to a server for supervision. IoT based remote monitoring will improve energy efficiency.

CONCLUSIONS

- IoT technology has been applied in various fields such as Smart Home, Smart Building, Smart Metering, Smart Environment, Commercial, and others.
- Arduino and NodeMCU are microcontrollers most often used in building IoT-based systems because they are cost-effective and modules that are provided compact with microcontrollers such as Wi-Fi modules that are directly installed on NodeMCU.
- In its application in the research environment, there are still many in the simulation/testing phase because to implement IoT it requires the readiness of each element in it, such as the availability of devices and also the environment/activities of each person must also adapt to these developments.

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