**A Smart Home Automation and Metering System**

**Using Internet of Things (IoT)**

**Alternate Title:**

Smart Home Energy Meter System Using Internet of Things (IoT)

**Aim:**

Aim of this project isIoT based energy calculating and energy meter updating smart home automation system.

**Introduction:**

Enhancement of technology makes the human daily life easier with the help of newly developed smart systems. Due to the rapid development of internet technology and smart embedded systems, people are more interested to involve in using the internet to control and observe different types of devices. Internet of things (IoT) creates a innovative evolution of the technology world with a new era of mature intelligence computing. IoT can be defined as the connection between many kinds of devices like smartphone, personal computer, and tablets to the internet, which brings in the very new kind of communication between things and people and also between things. The key goal of IoT is to control any kind of electric objects or devices around us in a more easy, evocative and smooth manner.

IoT helps to improve the prominence of electric devices by confirming cost-effective living with protection, safety, and entertainment. IoT technology is used to come in with a pioneering idea and great growth for smart homes to improve the living standards of life. In recent years, the concept of a smart home is a growing interest among consumers. There is lots of research going on home automation involving IoT*.* Developed a smart home system with high security and low implementation cost using IoT*.* Proposed an IoT-based home automation using low-cost Android phones in the Indian context. Developed a system using IoT for power utilization and conservation in smart homes. In this system, they used an image processing system to recognize human activities. N. David*.* Designed a home automation system that can control different household devices with the help of Wi-Fi and GSM technology. Though there are other researchers are going on, still, there is the scope to improve this home automation system using IoT.

In this paper is home automation and energy monitoring system and it is updating energy status to cloud. The arduino uno is used to collect energy values from current sensor and voltage sensor. The current value is calculating unit of watts by controller and its update to cloud every one hour using esp8266. Server is calculating total energy value per month and these details is send to users.

**Existing System:**

In the existing system is IoT based smart home automation energy monitoring system and it is used to control the electric and electronic devices and also get status of energy consumption. The voltage is controlled by mobile application. The main goal of the paper is to control the home appliances as well as electronic devices through the website. This system is used set threshold level for energy unit.

**Proposed System:**

In this proposed system is IoT based home energy monitoring system. It is used to check energy status through webpage. It is used to calculate energy meter values and also calculating total amount of energy using per month. Server sends message to user every month bill value and energy status also. It will reduce human resource for government. This system is fixed amount of unit using per day. This fixing unit level is reached threshold value it will intimate to user.

**Block Diagram:**

Arduino uno

2 channel relay

LOAD1

5v Regulated Power Supply

Line

Esp8266

 ADC

I/O

PORT

CURRENT

SENSOR

Cloud

Mobile

Phone

Voltage

SENSOR

LCD

Transmission line

**Block Diagram Description:**

Above the block diagram is contain transmission line, current sensor, relay switch, load, Esp8266, arduino uno and power supply unit. Current sensor is used to calculate current value from transmission line and it is given to Arduino uno microcontroller. This current values and voltage values are sending to webpage by using esp826. Every month of billing values are sending to user from server. The power supply unit is used to provide power to microcontroller.

**Requirements:**

**Hardware Requirements:**

* Arduino uno
* Load-1
* Relay -1
* Current sensor
* Voltage sensor
* LCD 16x2
* ESp8266

**Software Requirements:**

* C language
* Arduino IDE

**Conclusion:**

In this paper is IoT based home energy monitoring system and used to check energy status through webpage. We are calculating the voltage and current status and update to the cloud and Server sends message to user every month bill value and energy status also It will reduce human resource for government.