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Online Vehicle Registration

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Abstract:

Vehicle Registration System is a web application created in java and it is executed by utilizing windows apparatus. Vehicle registration system is principle module of smart road transport management solution , which mechanizes the vehicle registration cycle and makes it an extremely smooth ,easy ,secure interaction .The enrollment of these vehicle online will be a decent pacemaker as opposed to doing it physically .So here is a framework where we can enlistment of the vehicles on the web.

Thus undertaking has been created utilizing JAVA and HTML, CSS.

Introduction:

The Venture is outlined to enlistment of vehicles online rather than doing physically. Client have get to of current necessity information easily and no got to donate overwhelming fees to operators, client can get to the entire framework of enrollment from his domestic only. Vehicle enrollment framework is web application created in java and it is actualized by utilizing windows machine Vehicle enlistment framework is fundamental module of shrewd street transport . Adminstration arrangement ,which mechanizes the vehicle enlistment prepare and makes it a really smooth, easy and secure process. The enlistment of these vehicle online will be a good pacemaker rather than doing it physically. So here could be a framework where we will enlistment of the vehicles online. Proper interfacing are made to supply get to the clients , and data will be put away within the database. All the shapes are associated to the database based on need and report .

HARDWARE COMPONENTS

1.1.0 Arduino Board

Arduino is a microcontroller board, µc's are integrated circuits that are basically tiny computers which uses very low power that they can be powered by a battery which can be used for days to run and can process data very fast. Arduino is a company in Italy which manufactures this boards, Arduino is readymade circuit board which can helps to develop projects easy , fast and efficient way.

1.1.1 GSM Module

A GSM is a mobile system. Global system for mobile (GSM) is a big system made of few small systems such as Mobile station(MS) , Base station subsystem(BSS) , Network and switching subsystem (NSS) , Operating subsystem(OSS). Mobile station (MS) is device used to communicate such as mobile , fax machine etc. Base station subsystem(BSS) is connected to MS wire radio interface , it has two blocks Base Transceiver System and Base Station Controller. BTS is connected to MS devices in an area and connected to BSC. , Network and switching subsystem (NSS) this system mainly consist MSC which is the backbone of entire network system it controls the all operations from setting up call to hang off procedure. This MSC has the data which controls the users data locally, visitor data and the authentication of the user.

1.1.2 Energy Meter

The meters are used for measurement of energy, we know that the energy is measured by measuring the power consumed over a period of time. The unit of power is watt and time is hour so the energy meter is also known as Watt hour meter.

$$\text{Energy} = \int \text{power}.\, dt$$

So this meters measures the electrical energy consumed by the electrical products. It is used in homes, industries, organizations to find how much energy is consumed.

1.1.3 Power Supply

A power supply is a device that supplies electrical power to load. There are different types of power supply like Unregulated power supply, Simple Regulated power supply, Regulated power supply .

1.1.4 Mobile phone and Sim Card

sim card is required to communicate between the GSM module and the mobile phone.

We require two sims, one in the GSM module and another in the mobile phone.

Literature Survey:

21 Electricity Bill Forecasting Application by Home Energy Monitoring System (March 2017) -
Charnon Chupong, Boonyang Plangklang.

Energy monitoring system has the very predominant role in home energy management. Many analysis proved that with energy meter so much electricity consumption is reduced by verifying them daily. But now a days on busy schedule users are not verifying daily on their energy meter consumption due to their works. So in this paper they implemented a system that which measures the electricity on daily basis, 1) this system automatically learns how energy is consuming, 2) this system should be made for individual residential users and 3) users of this system need monitor this system daily it can automatically functions. In this article they created an application which will be used to show the results of consumption of the electricity. This system contains an applications programming interface which is called as an API that allows the customers to make applications upon their requirements of electric meter. From the API they created an application which monitors the consumption on daily basis and sends an email to the user that how much electricity is consumed, so for the users it is less effort and they get daily usage. And from that daily usage report they can assume that how much amount is consuming daily and they maintain their power usage based upon it.

22 Automation of Electricity Billing Process - Manisha V Shinde, Pradip W Kulkarni.

In this paper meter reading can be calculated using a camera placed in front of the energy meter. Electricity usage is very important in our everyday life. Now a days for calculating and billing of energy consumption an electricity provider employee will come and takes the reading of the energy meter and he will send the usage details to the electricity provider's office and they will calculate it and will sent to our region by the end of that month. For this process, there is so much time and money is consuming that the electricity employee travelling charges for that particular region and going to home to home so both time and money is consuming. For this in this paper they come up with the idea AMR that is Automatic Meter Reading concept is proposed. This makes less amount of time, transparency and also decreases travelling charges for providers. In this project they used a camera in front of the energy meter which is used to click the picture of the energy meter. That camera will capture the picture of the energy meter and then it will send the picture to the energy bill provider's office and after calculation of the bill, the generated bill will again sent to the user using GSM module.

23 Design of an IoT Energy Monitoring System

The Internet of Things (IoT) is more widely used technology these days. it's often develops by growing its network for connected devices, or "things", that are capable of exchange of data over on a bandwidth in a network. IoT can be used in various areas, like automotive industry, logistics, healthcare, smart grid and smart cities. We try to implement a low-cost IoT energy monitoring system which will be utilized in many applications, like electricity billing system, energy management in smart grid and residential automation. The planning is predicated on a low-cost, using non-invasive CT sensors, SD3004 electric energy measurement chip and ESP8266 Wemos D1 mini microcontroller for retrieving data from sensor nodes and sending data to server via internet. The experimental results proved that the developed smart energy monitoring system can successfully measure and record the voltage, current, active power and accumulative power consumption.

24 Bluetooth Performance Analysis in Personal Area Network (PAN)

Bluetooth is a wireless personal area network protocol a WPAN protocol that is designed by Bluetooth SIG(special interest group).It is used to replace cable connectivity many different types of devices typically from mobile phone to head set or a wireless speaker and also medical equipment use Bluetooth technology. Bluetooth is standardized by SIG inn 1998. First specification was Bluetooth 1.0 was released in 1999 and latest was Bluetooth 5 was released in Dec 2016.Earlier standard (Bluetooth 1.1 and 1.2) were ratified as IEEE 802.15.1 standard , however this is no longer maintained as an IEEE standard. Bluetooth operates in 2.4 GHz unlicensed ISM band. It uses adaptive frequency hopping scheme (FHSS – frequency hopping spread spectrum) it avoids interface with other non-hopping i.e., Wi-fi, Zigbee ISM network which improves the co-existence within the ISM band. It forms a Piconet in a star topology has one master node at center and multiple slave nodes. The master node provides exchange of packet, reference clock time and frequency hopping pattern . The slave nodes can only connect to master node and synchronize to master's clock and frequency hopping spread spectrum pattern.

25 6LoWPAN-SNMP: Simple Network Management Protocol for 6LoWPAN

Low-power Wireless Personal Area Networks (LoWPANs) contains most of low-cost devices that comes under the IEEE 802.15.4 MAC/PHY layer specification. Because of the advantages such as low- power and low-cost nature of those technologies, LoWPANs have recently enabled the event of the many interesting applications found in commercial ,industrial, Automobile, Housing, in medical sensors, and in actuator application domains. A main and interesting point of LoWPAN with IPv6 capabilities is to reuse existing IP-based protocols the maximum amount as far as possible. Since LoWPAN may be a severely resource constrained network, management functionality is critical for required successful operations. Additionally , minimal configuration and self-healing features should even be

supported. Recent efforts from the research have implemented SNMP on 6LoWPAN or LoWPAN. However, they usually does not have the native support of messages on the LoWPAN nodes because SNMP is typically implemented as a proxy service.

Survey Questions and need Analysis report:

3.1 SURVEY QUESTIONS:

- How much current bill do you receive every month on average
- How current bill amount you received during lockdown i.e for the two months (April & may)
- Will you agree with the bill you had received
- Where is the mistake do you think i.e from public or government
- Do you think government gave appropriate reason for increased current bill charges
- Do you know the cost of 1 unit of current
- You have any idea that how many units of current you had consumed last month
- You like know your current consumption data on daily basis, monthly and yearly basis
- How do you pay current bill? online or offline.
- If online which mobile application you prefer and why
- Have ever faced any obstacles while paying money through online

3.2 NEED ANALYSIS

From the above survey analysis we came know that most of the public fell that there is a mistake from government side that is they were charging heavily on electricity and that to during lockdown they received heavy current than what the usually receive every month .They also said that they won't waste current i.e unnecessary usage of current .So they fell that if they monitor the current usage on the daily basis they fell comfortable and mostly educated people prefer online payment of current bill while the uneducated people prefer offline payments.

Objectives:

- To replace old Traditional energy meters into Smart meters
- To establish a transparency between Electricity bill generation and people
- To provide a system and a mobile application where people can monitor the energy consumption and amount should be paid according to hourly basis ,daily basis ,monthly basis.
- To develop a new application which can show all the necessary electricity monitoring and if required payment of electricity bill through online mode via phone pe , g-pay etc.
- To reduce the clashes between people and government on electricity bill taxes and extra cost for households in this type of hard times.
- To provide a alarming system if there is a

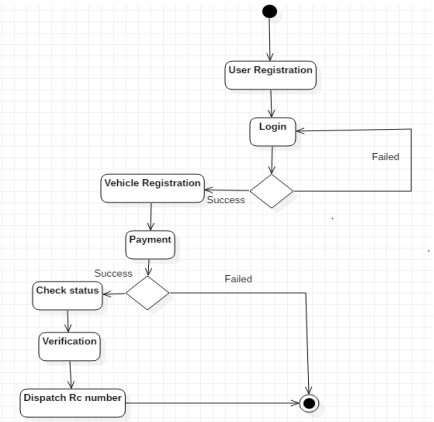


Fig 5.a sequence digram

heavy load acting on the meter and also if energy consumption crosses the basic limit

- To establish a connection between energy meter and mobile phone through GSM to send and receive data in the form of SMS.

Methodology:

This project consists of Arduino board, GSM Module, Power Supply, Relay, 16X2 LCD Display and Load which together used for electricity monitoring and auto bill generation. The load can be monitored by sending an SMS from mobile phone to GSM Module with the help of energy meter which is embedded in the system and we can obtain the electricity bill through GSM Module to directly to our mobile phones showing how many units has been consumed. Firstly we turn on the power supply for the kit and we initialize it by dumping Arduino code to Arduino UNO board with USB cable, the software code can be coded in Arduino application and wait for the LCD to operate and then send a message from mobile phone to ON bulb 1 or ON bulb 2 or ON ALL. GSM receives the SMS and executes the instructions .So, By the way we can switch ON/OFF the load (bulbs).Energy meter present in the system gives out the reading i.e how many units has been consumed and also which provides the electricity bill via GSM module to mobile phone displaying the number of units consumed along with the amount to be paid.

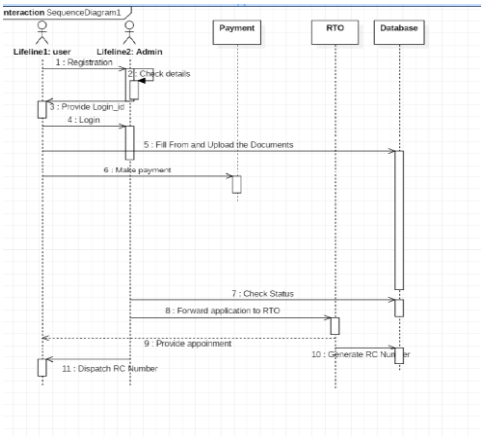


Fig 5.b Activity Diagram

5.1 ARDUINO BOARD

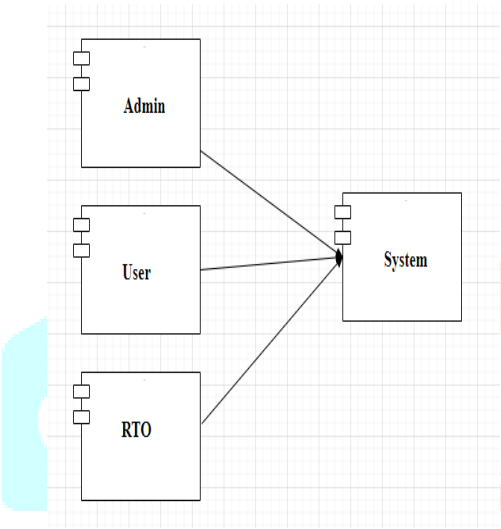
Arduino uno is the newest version of the normal Arduino USB board. We can connect this Arduino board with the computer using USB cable and then we need to program it and then we can use the board. It is a microcontroller having 14 pins based on ATmega328. In the 14 digital input and output pins in which 6 pins are act as PWM outputs, another 6 acts as analog inputs, then a 16 MHz of ceramic resonator, a USB connector, an ICSP header.

There are so many types of Arduino boards that can be maintained for different uses. For any type of Arduino board these components are common in them.

Power :

For every Arduino board supplying the power is needed. We should connect it with a power supply. The Arduino UNO board can be easily

connect with USB cable with your computer and also we can connect it with power supply. Using USB connection we can dump the code in the Arduino board which we programmed using Arduino software in our computer. The important thing is we should not use power supply more than 20 volts it will over power your Arduino and it can be destroyed. The usual voltage for all the types of



Arduino boards it should be between 6 – 12 Volts.

Pins:

pins are used on your arduino board are to connect wires to make a circuit probably for adding of breadboard and some other wires. The arduino board has various types of pins each of them used for different purposes.

GND : GND is shortcut for 'Ground'. There are various GND pins on the Arduino board, all are used for ground.

5V & 3.3V : In the Arduino 5V pin is used for 5 volts power supply and the 3.3V pin is used for 3.3 volts power supply.

Analog : The pins which are mentioned at the 'Analog In' (A0 – A5) are used as the Analog input pins. These pins are used to read the data from the analog sensor and it can convert it into digital value.

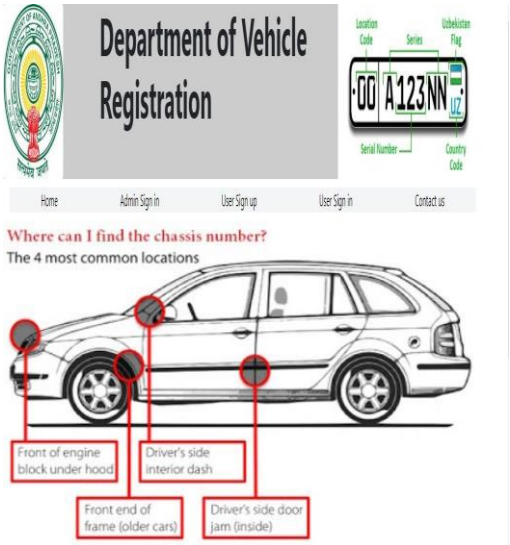
Digital : Digital pins(D0 – D13) are used for both digital input and digital output.

PWM : PWM pins are used as normal digital pins and also used for pulse width modulation(PWM). These pins are used to give analog output on an LED or on a buzzer.

AREF : it stands for Analog Reference. These pins are used sometimes only as external reference voltage, anyway we can leave this pin most of the times.

Reset button : Arduino is having a reset button which is used to restart the Arduino board when required. When we click this button it temporarily connect to the ground and it will restart the code that is dumped previously in the Arduino board.

Main IC : IC is an Integrated circuit it is the brain of the Arduino board. The main IC is differs from one Arduino to another Arduino board types, but mainly they are from ATmega IC's designed by the ATMEL company. It is necessary to learn about the IC type before using it for programming the Arduino board. On top every IC they write the information about it. Voltage regulator : Actually we don't use voltage regulator or we don't need to interact with it. But it is useful to know something about that. It is used to control the voltage flow which will go into the Arduino board


Department of Vehicle Registration
Location Code
Series
Uzbekistan Flag
00 A123NN UZ
Serial Number
Country Code
Home
Admin Sign in
User Sign up
User Sign in
Contact us
Where can I find the chassis number?
The 4 most common locations
Front of engine block under hood
Driver's side interior dash
Front end of frame (older cars)
Driver's side door jam (inside)

GSM Module

GSM module is employed to send an SMS to the user telephone . When the gas leakage is detected by the gas sensor, microcontroller sends a sign to GSM module, during which one among the tasks is to send the text SMS. GSM module requires one SIM card. This module is capable to simply accept any network SIM card. The GSM module which will use SIM memory to store the data of system owner and distributor or to whoever the messages got to be forwarded. It uses less memory to send and receive text messages and operates on simple 12 V.

A GSM is a mobile system. Global system for mobile (GSM) is a big system made of few small systems such as Mobile station(MS) , Base station subsystem(BSS) , Network and switching subsystem (NSS) , Operating subsystem(OSS). Mobile station (MS) is device used to communicate such as mobile , fax machine etc. Base station subsystem(BSS) is connected to MS wire radio interface , it has two blocks Base Transceiver System and Base Station Controller. BTS is connected to MS devices in an area and connected to BSC. , Network and switching subsystem (NSS) this system mainly consist MSC which is the backbone of entire network system it controls the all operations from setting up call to hang off procedure. This MSC has the data which controls the users data locally, visitor data and the authentication of the user.

GSM is one of the most standard produced by the ETSI to evaluate protocols for the 2G digital mobile networks used by mobile phones. It is global standard for mobile communications , and is out there in over 219 countries and territories.

GSM (Global System for Mobile) modem SIM900 quad-band GSM / GPRS device, works on frequencies 850 MHZ, 900 HZ, 800 MHZ and 1900 HZ. It is very compact in size and straightforward to use as connect GSM Modem.

The baud are configurable from 9600-115200 bps through AT (Attention) commands. The modem are often interfaced with a Microcontroller using USART (Universal Synchronous Asynchronous Receiver and Transmitter) feature.

5.2 Energy Meter

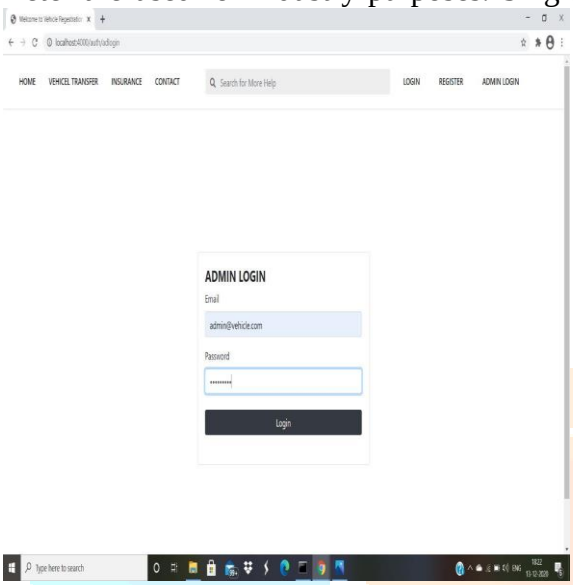
An electricity meter or an energy meter is an absolutely necessary device that goes with utilization of commercially issued energy.

Some of the meters just measures only the length of the time for which the charge flowed, with which no quantification of the magnitude of current. These are only suitable for the constant load applications. These types are not used today anywhere. In inclusion to metering required on the scale of energy is used, other different types of metering are also available. These were based upon supply voltage is staying constant for a precise estimation of energy usage, which was not a likely conditions with most devices.

Usually, electrical meters function by constantly measuring of the rapid voltage and the current and gaining the product of these to gives the spontaneous electrical power that is in watts which is then consolidated against time to gives the amount of energy used in kilo

watts.

They are divided into two meters they are single phase meters they are used for homes and also there is three phase energy meter are used for industry purposes. Single



phase is directly connected between line and load and three phase meters, they are used for heavy amount of energy and heavy currents are flowing in the industrial equipment and to protect from the heavy currents we have to use

current transformers there. In this step down current transformers are used to isolate energy.

Type of display provided by energy meter based on that there are analog energy meter and digital energy meter. Types of metering point are primary metering point and secondary metering points as of their purposes. Based on applications also there are various energy meters they are used for home applications or for industrial applications also we have seen the single and three phase energy meters. So there are various factors based on the energy meters and there purposes.

Electromechanical induction type energy meter it is the oldest energy meter. It consists of a rotating along the magnetic disc on the permanent magnet. The rotating aluminum disc is rotating in the magnetic disc there are two electro magnets on that the aluminum disc is there. This disc is mounted on a spindle this disc is rotating in the magnetic field so due to the rotation of the magnetic field the speed of the rotation of the aluminum disc the speed of the magnetic disc is proportional to the power. When the speed is increases the power also increase

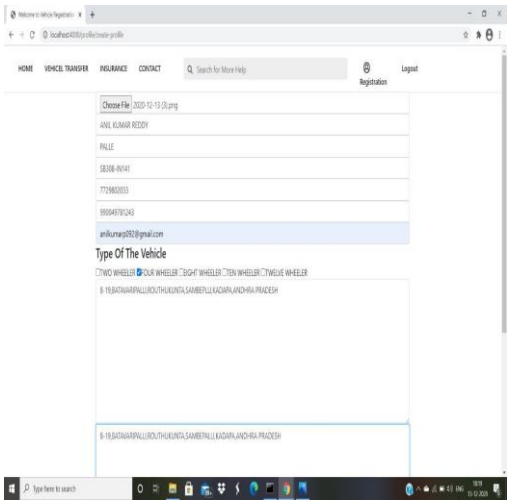


Figure . Vehicle registration page

5.3 Power Supply

Power supply is an electronic device which is useful to supply the electric power to the required devices through it to the electrical load. The main function of the power supply is to change the electric current and then power the load.

We have three types of power supply:

1. unregulated power supply
2. simple regulated power supply and
3. regulated power supply

In every electronic circuits or electronic device we will be having different power supply.

The main block diagram for power supply includes input main is given to the input rectifier and filter block later it is given to the inverter chopper block from their supply is given to the output transformer and from there it is given to the output rectifier and filter block and here we are having a closed-loop lock from the output to the inverter shop per between we have the chopper controller blocked the DC output is taken from the output.

5.4.1. Unregulated power supply

This circuit includes the transformer, bridge rectifier circuit and filter circuit. The input 230 volt and 50 Hertz supply is given to the transformer and from there the AC input is converted into DC rectifier circuit and in the filter circuit we have LC circuit which includes one inductor and two capacitors. in unregulated power supply if there is any fluctuation in the input side we can see in the outside.

5.4.2. Simple regulated power supply

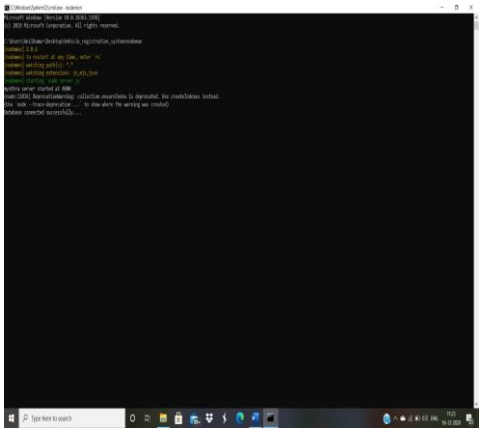
This circuit is similar to the unregulated power supply but there is a small change in the circuit diagram. The input is taken as 230 volt and 50 Hertz supply is given to the transformer and from there is given to the bridge rectifier , here AC will get converted into pulsating DC and in the filtering circuit will include a Zener diode which will fix the threshold voltage point.

based on the required output voltage will fix the threshold point of the Zener diode and the Zener diode is connected in parallel with the output load. If there is any fluctuation in the input side , we cannot see in the outside because the load is in parallel with this Zener diode since the Zener diode will pass the fixed voltage only so that the load will receive the same as in the Zener diode.

This type of circuits can be seen in amplifiers audio circuits and simple power supplies.

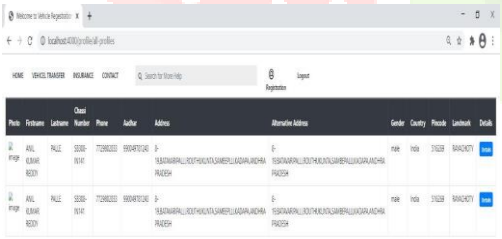
5.4.3. Regulated power supply

This regulated power supply circuit includes Transformer, rectifier circuit, filter capacitor, voltage regulator and output capacitor. Similar to the simple regulated power supply if there is any fluctuation in the input it cannot be seen in the output side. In the place of Zener diode we have voltage regulator IC which will maintain the constant power supply for the output.



REPORT AND DISCUSSION

Hardware Connection: A microcontroller input is adequately interfaced to a computerized energy meter that takes the perusing from the energy meter and shows the equivalent on a LCD. The perusing of the energy meter is additionally shipped off the control room by a SMS by means of SIM stacked GSM modem. This GSM modem can likewise get orders from the phone to control the proprietor's electrical burdens. It utilizes a standard computerized energy meter that conveys yield heartbeats to the microcontroller to perform meaning important activity. On getting order it can turn ON/OFF the heaps.



CONCLUSION AND FUTURE WORK:

Based on survey we came to conclusion that most of the public wants know the electricity consumption on daily, monthly and yearly basis. So they fell good if they can monitor their electric current usage their mobile phone and also they won't blame government anymore. The government transparency on unit current will increase so public will have good opinion on government.

Till now we gathered the information which is required to implement the project we referred IEEE papers , searched on internet and you tube , referred some books , joined some online courses , analyzed the survey what the public fell , hardware design of the project and components required .

In future we need to apply our design and implement it , along with that we will develop the mobile application where an individual can monitor the electricity usage , in order develop an application we will do a course on android development and for data storage we use firebase. Firebase is a cloud platform which is provided by google for data storage.