GSM Based Monthly Electrical Energy Billing Through SMS

Tejas Chate[1], Aniket Kahalkar[2], Prashant Soni[3], Prof. Dinesh Gawande[4]

[1]Computer Science and Engineering, DBACER, Nagpur, Maharashtra, India
[2]Computer Science and Engineering, DBACER, Nagpur, Maharashtra, India
[3]Computer Science and Engineering, DBACER, Nagpur, Maharashtra, India
[4]Computer Science and Engineering, DBACER, Nagpur, Maharashtra, India
[1] palash6787@gmail.com; [2] akahalkar278@gmail.com; [3] Rajatsoni0909@gmail.com; [4] Gawandedinesh@gmail.com

Abstract—The basic thought to plan this venture is to make a programmed framework to process power charge. The entire framework will continue checking the electric bill and the microcontroller unit will be utilized to keep record of the considerable number of units. As the month will be ended the aggregate units will be ascertained and in like manner the bill is auto created and will be displayed on the LCD screen and an additional SMS will be sent to the power board and to the consumer. Toward the finish of the month a predefined message send by power office to GSM modem joined with vitality meter. At that point GSM modem associated with meter answered a message which contains add up to number of unit expended and computed add up to the power office

The venture requires a GSM Modem, microcontroller and static vitality meter to consequently make an impression on the client's versatile staying away from manual charging. The beats from the heap are given to the microcontroller which tallies them, figures the bill and gives the charge automatically to the GSM Modem to make an impression on the client's versatile and charging office.

Keywords— "Microcontroller", "GSM Module", "Vitality meter", "LCD screen"

I. INTRODUCTION

The project requires a GSM Modem, microcontroller and static energy meter to automatically send a message to the customer's mobile avoiding manual billing. The pulses from the load are given to the microcontroller which counts them, calculates the bill and gives the command automatically to the GSM Modem to send a message to the customer's mobile and billing office.

The main motive to design this project is to create an automatic system to generate electricity bill. The complete system will keep on monitoring the electric bill and the microcontroller unit will be used to keep record of all the units. As the month will be completed the total units consumed will be calculated and accordingly the bill is auto generated and displayed on LCD also an SMS can be sent to the electricity board as well as consumer describing the amount of the bill. At the end of the month a predefined message send by electricity department to GSM modem attached with energy meter. Then GSM

modem connected with meter replied a message which contains total number of unit consumed and calculated amount to the electricity department

II. RELATED WORK

Subhashis Maitra (Oct 2008) in this paper, a new concept of energy meter will be discussed, where maximum demand of energy of a consumer will be indicated in the meter used by the consumer. After exceeding the maximum demand, the meter and hence the connection will automatically be disconnected by an embedded system inserted in the meter itself. According to the maximum demand, the consumer will purchase a cash-card of amount depending on the consumption of energy and after the full consumption, the consumer again has to purchase another cash-card or recharge the same and thus the hassle related to go to the billing office, to stand in a long queue and to submit the bill, can be avoided. Also this system helps to eliminate the draw backs of billing management system, such as to take the reading from the meter, to create the bill, to print the bill.

III. PROPOSED WORK
COMPONENTS

A. *Arduino microcontroller:*

Arduino is an open-source prototyping platform based on easy-to-use hardware and software. Arduino boards are able to read inputs and turn it into an output. Over the years Arduino has been the brain of thousands of projects, from everyday objects to complex scientific instruments. A worldwide community of makers – students, artists, programmers, and professionals - has gathered around this open-source platform. The Arduino project provides an integrated development environment (IDE) based on a programming language named Processing, which also supports the languages, C and C++.

B. *GSM module:*

A GSM module or a GPRS module is a chip or circuit that will be used to establish communication between a mobile device or a computing machine and a GSM or GPRS system.

A GSM modem can be a dedicate modem device with a serial, USB or Bluetooth connection, or it can be a mobile phone that provides GSM modem capabilities.
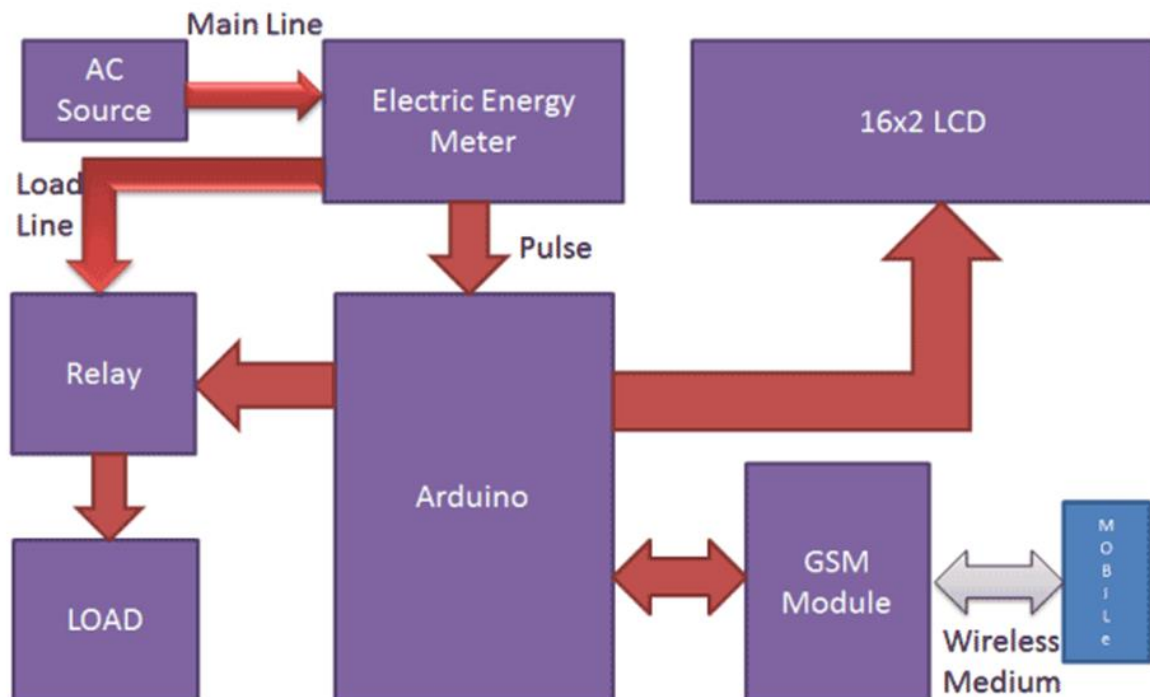
C. LCD display:

A liquid crystal display (LCD) is a thin, flat display device made up of any number of colour or monochrome pixels arrayed in front of a light source or reflector.

This LCD has two registers, namely, Command and Data. The command register stores the command instructions given to the LCD.
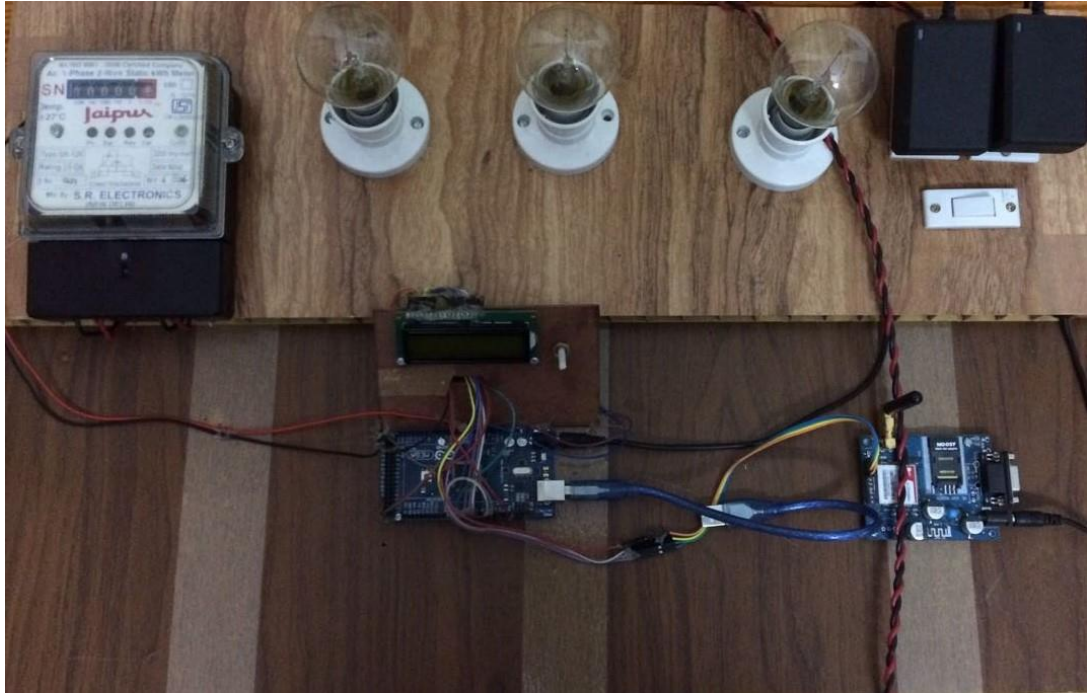

IV. FLOW DIAGRAM

The work flow diagram is shown below:

V. IMPLEMENTATION

- The whole framework will be as follows:

- The units consumed by the customer is continuously displayed on the LCD screen with the appropriate cost of that units:

VI. CONCLUSION

   GSM based vitality meter is anything but difficult to establishment and helpful for both vitality Provider and Customer. This lessens the manual cost and furthermore decreases the mistakes done by the people. This likewise decreases the issues confronted by client like over running of the meter, over load, and additionally lessens robberies. At whatever point blame happens it demonstrates to the client. At that point client can advise to the organization at that point vitality Provider Company can cut the power effortlessly by sending the SMS to that specific ID number which is associated with the SIM number. The measurable load utilized what's more, profile help the client to deal with their vitality utilization. This helps them to lessen their remarkable duty. This framework can be utilized even in the remote zones by changing the kind of the modem, and its scope of recurrence for correspondence. This gadget lessens all instances of income issues to the nation and pushes us to enhance our utilization.

REFERENCES

[1] W.Amer, Y. Attitude, A. Nadeem, Abdul Ghafoor 2010. Comprehensive E-monitoring, E-management and E-billing system with ZOOM-in ZOOM-out Capabilities to Reduce Electricity Distribution Loses for Developing Countries. 4th IEEE Annual SystemConference, PP: 174-177.

[2] Shi-Wei Lee, Design of an Automatic Meter Reading System, IEEE IECON 22nd International conference,Aug 1996.

[3] H.G.Rodney, Tan IEEE, C.H.Lee and V.H.Mok, 2007. Automatic Power Meter Reading System using GSM Network. The 8th International Power Engineering Conference, PP: 465-469

[4] T.Chandler, the Technology Development of automatic metering and monitoring systems, IEEE

[5] Power Meter Store. Measure Power at the plug. Web. 30 November 2010