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## SMS BASED ELECTRONIC NOTICE BOARD

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**Abstract**— In today's world the wireless technology is getting more and more used technology. This paper deals with use of one such wireless technology GSM for controlling electronic notice boards using ATMEGA328P microcontroller IC. This embedded system contains 2 types of main components. Those are hardware and software components. The hardware module constitutes of GSM modem, computer interface, microcontroller, monitoring system, and 16X2 LCD. The software module also consists of Arduino so as to monitor the information to be displayed on notice board efficiently as well as enter in the notices through the computer were the GUI is been used.

**Keywords**— Wireless technology, ATMEGA328P, 16X2LCD, SIM900 GSM Modem.

### INTRODUCTION

Now a days Notice board became a mandatory thing in each and every field/domain such as Schools, Public Parks, Airports, Institutions, etc. But Changing the notices in them became a big task. To overcome this problem, so many wireless devices were developed. They used Bluetooth, Wi-Fi to communicate with the notice board, but when they are far away it become a problem to change the notice using those devices. So, the main objective of this project is to make communication with the notice board using Users Mobile. This makes the project as Wireless Notice Board Using GSM Module. This helps the people to send notice into the device very fast and easily. As soon as they send the message through SMS to the SIM in the GSM Module, this Module will detect the Message and will be transmitted to the LCD Display through the Arduino which will help for encoding and decoding the message. We can use this type of Notice Board in public places like parks, stations etc. to advertise anything.

And also this can be used in schools where the display is placed in every and in main places in the school and the GSM module will be placed hidden in official room and the displays will be connected to that, so that any official person can share the information by SMS from their mobile phone. The SMS should be in specific format such that “#hello\*”. the domain of the project, embedded system is discussed. A basic detail about the embedded systems hardware and the software has been also discussed. The objective and motivations based of the project is defined. The problem definition gives the brief description about the main problem that are resolved in this project is discussed.

### PROBLEM DESCRIPTION

When we done the survey from many schools, institutions, we noticed that maintaining the notice board clean and passing the information in a fast and easy manner without any wastage of paper. And also it will be very difficult when any officials are away from the institution to pass any piece of information. A GSM receiver and a display which can be programmed using Arduino IDE. After receiving the message, it will be displayed on the LCD display after some encoding and decoding. It is used as the notice board to display the important notices instantaneously without any latency. Being wireless and GSM based it is easy to expand and allows the user to add more display units at any time and at any location in the campus depending on the requirement of the institute.

## OBJECTIVES

- To design and develop a user-friendly communication device using GSM Module using IoT.
- Interfacing the Arduino with communication device such as GSM Module 900A and to communicate with each other.
- Decoding and Encoding between the GSM Module, Arduino, and LCD Display.
- To increase the Communication Range using GSM instead of using of Bluetooth and Wi-Fi Modules.
- A single device which can be used as multipurpose likely transferring the information to anywhere in the world from the fingertips

## LITERATURE SURVEY

1. Author: Dharmendra Kumar Sharma and Vineet Tiwari, IEEE 2015[1]

Dharmendra proposed that the message may sent from one person to another using mobiles. In the same way when we use the module used in the mobile and a display, we can send a small text message simply with low cost without buying mobiles.

2. Author: Neeraj Khera and Divya Shukla, IEEE 2016[2]

Neeraj proposed a system that sends message through Wi-fi module. He designed a circuit which transfers the message using Wi-Fi module and used in some local utilities like hotels, schools etc.

3. Author: Aniket Pramanik, Rishikesh and Vikash Nagar, IEEE 2016[3]

Pramanik designed a system which control home appliances using Bluetooth. And he designed a system in such a way that whenever the system needs to display a message that will come in the arranged display.

4. Author: Kruthika Simha, Shreya and Chethan Kumar, IEEE 2017[4]

Heart rate measuring helps to find the cardiovascular diseases in a person. It is preferable to continuously monitor the heart rate for better health. Generally, we use stethoscope, digital pressure monitors for checking. In case of emergency, we use any of these methods to check and intimate the heart attack using the Bluetooth device to the nearby monitoring person.

5. Author: S. Rubin Bose and J. Jasper Prem IJRIER 2017[5]

Major problem heart attack as become the most common diseases now-a-day's which affects nearly 60% of population due to various reasons such as food, environment conditions. Since there is no correct tool to identify the heart disease in prior. Once after the attack occurred only the patient can be monitored and can be treated. If the rate is not in given limits, it indicates the heart attack. This project also has provision of detecting heart attack but also

intimate the occurrence of attack to family or hospital through a wireless Bluetooth module. Heartbeat signals are sensed by using a pulse sensor. Checking and counting of signals and pulses are taken care by the microcontroller. If any variation occurs in the normal certain levels the microcontroller activates the GSM module and sends information in the form of a message to the numbers of family and important numbers which are already given in microcontroller. More number of males and females are being tested with the developed system. Due to more testing and up- dation the developed system given previous identification and sending alert.

6. M. Arun, P. Monika and G. Lavanya IJCAT 2017[6]

They proposed that the heart disease is detected with person like pulse rate, fat and some other conditions which will be varied from one person to other person. He supported these parameters like gender, vital sign et al. getting to suffer from heart condition. These parameters are regularly sent to Bluetooth connected mobile to avoid heart attack.

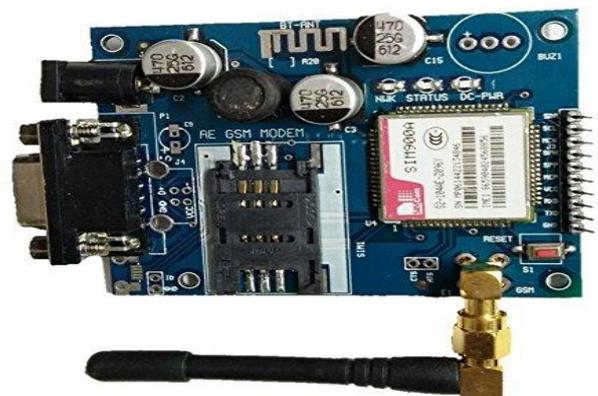
## 7. SUMMARY

The above referred papers discuss about the different types of communication in IoT domain in different fields. They mainly used Wi-Fi, Bluetooth modes of communication as a transmitting and receiving devices. These modules are used in various applications such as Medical, Institutional applications etc.

## III. DESCRIPTION

### A. GSM Modem

This module contains both the GSM and GPRS which follows Transfer Control Protocol. It can do



communication with devices using SMS facility. It a low power consumption device and can be sufficient if we can supply from the Arduino. It can be used wherever the network connectivity is available.

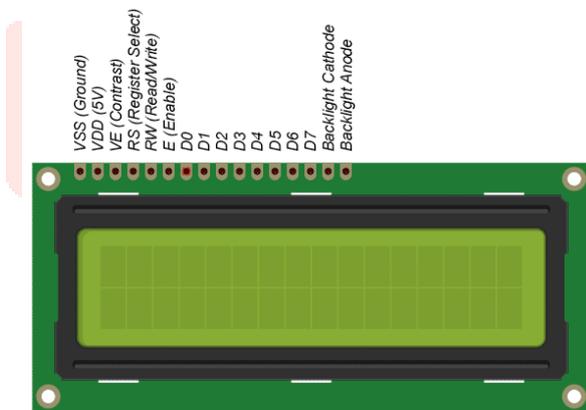
B. Arduino UNO



ATmega328 Arduino Uno microcontroller board as shown in figure is used in the designed system. 14 pins are present in the unit, which allows outflow and inflow of feeding, a Universal Serial Bus port, 6 continuous signals with time changing quantity, an on-board voltage regulator, 16 Mega Hertz electronic oscillator, a power connector, ICSP header, and a reset button. The Atmega328 microcontroller has 32 Kilo Bytes flash memory, 1 Kilo Bytes EEPROM and 2 Kilo Bytes SRAM.

C. LCD Display

Liquid Crystal Display (LCD) is a material which combine the properties of both liquids and crystals as a display. They have temperature range within which the molecules rather than having melting point. They are having almost mobility as that would be in liquids.



D. Jumper Wires

These are the wires used to connect the devices with a specific pin.

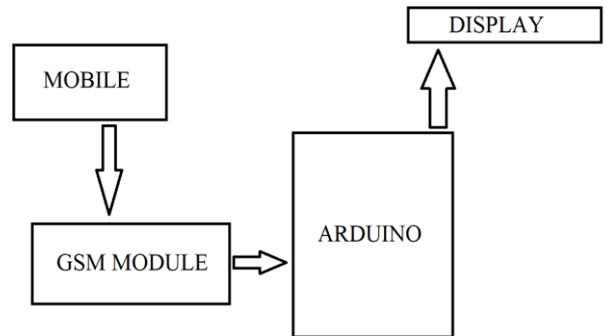


E. Arduino IDE

This is an IDE to integrate the Arduino to the System and to Embed the desired code/program into the Hardware.

BLOCK DIAGRAM

In the below figure, we can observe that GSM Module and LCD Display are interfaced with Arduino, we use Mobile to send the message through SMS. Then it will be received to the SIM in the GSM Module via wireless medium, the obtained message is transmitted to the Arduino for the further processing. After decoding and encoding the message is sent to the LCD Display, thus it will be displayed.

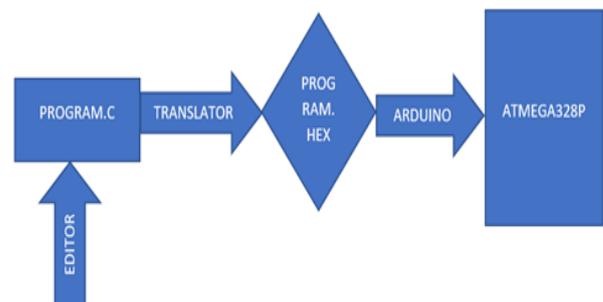


ALGORITHM

1. Connect the components with respect to the circuit diagram.
2. Then, we must embed the code into the Arduino for it to work.
3. After that when we send the message to the SIM in the GSM Module.
4. The Arduino will check for any new message and if any message is detected, it will transmit to the display.
5. If not, then keep displaying old message.
6. Else it will keep displaying the new message.

SOFTWARE IMPLEMENTATION

The blueprint of software for this comprises of a free running program that employs the load input signal from the GSM



Module to the LCD Display through Arduino. The software code is written down on Arduino sketch and will be embedded to ATMEGA328 microcontroller program memory by using Arduino development board. The hex decimal file is created by using the Arduino IDE sketch environment. The below figure represents the system programming operated for this research.

## CONCLUSION

This prototype is a GSM based notice board which gets information from the user mobile through SMS service. This can be used in various domains such as institutions, medical organizations etc.

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