Digi-Control Notification System

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Abstract - *The noticeboard is a primary thing in any institution or organization to disperse information among the stakeholders. When we need to make any announcement we need to print it and circulate in every class. To Make sure that every student and teacher has received the message. So, decided to build a Digi-Control Notification System that will be fixed on the walls which will help us to save time and resources. Our Digi-Control Notification System is simple LED matrix that can operated both through a computer and Mobile. In Mobile we use an Application that will help us to send our message to the display. We use bluetooth module to connect phone to display which help us to transmit the message to the display. This system will also be useful in various other places like seminar, work office , schools , wedding places, Trains etc. This system help us to save the resources as earlier in print media system if we printed certain notification and then we have to make certain changes in that then it will be very difficult because we have to reprint those notifications which leads to wastage of resources. But now through this system changes or any updation word is in just few seconds. Also much more advantages were there in this system.*

***Key Words*: Arduino Nano, 100 µf ceramic capacitor, Bluetooth module, Max 7219 IC, PCB Board , etc.**

1. INTRODUCTION:

In recent times due to increasing number of population we have exhausted our resources. With the help of this IOT project we can save time and money in small jobs. This project helped in becoming a higher authority more independent and they do not have to depend on any Junior who'll take their notice from every section of the office to make sure that task is complete.[1]

In this project, we have built a simple prototype of a Digi-Control Notification System using Arduino Nano to combine the WIFI and Bluetooth connectivity with a low power architecture, we have used 8X8 LED matrix for notification as they use less power to display character as well as Videos and Bluetooth module for wireless connection.

1.1 METHODOLOGY:

We have to create 4 matrices each of of 8 by 8 leds. Each MAX7219 driver can handle a 64 LEDs matrix. The

arduino will send the data using a serial comunication. So we have to connect the clock and load pins from the arduino to all MAX7219 drivers. The data pin will be only connected to the first driver. From the "data out" pin of the first driver we will connect a wire to the second "data in" of the second driver and so on. That's how we connect four 8x8 matrices in series. We should also connect the bluetooth module to the Tx and Rx pins of the Arduino. Once we have our 4 matrices we can join them together with the "data out" "data in" pins.
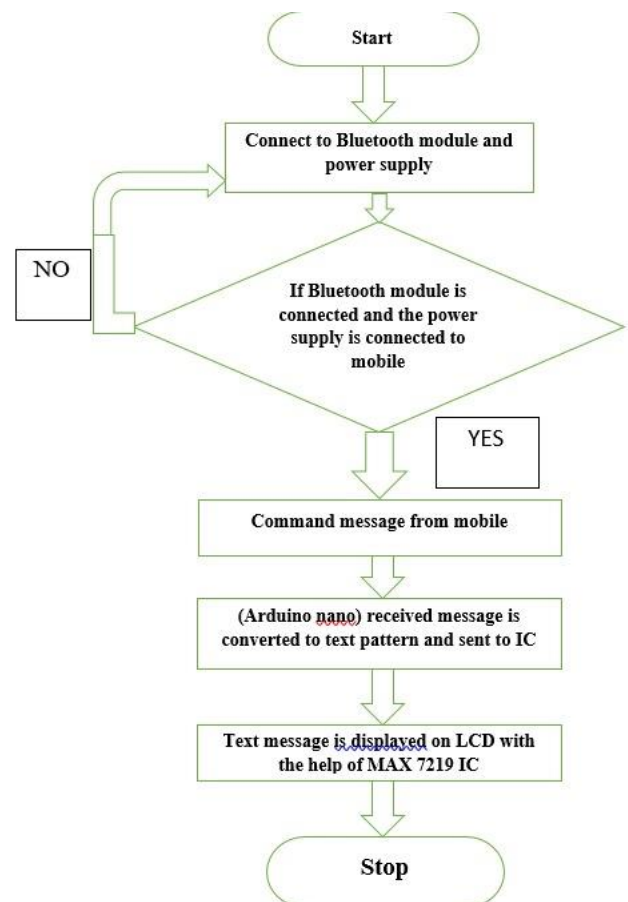
2. SYSTEM FLOWCHART

Fig:- 2.1

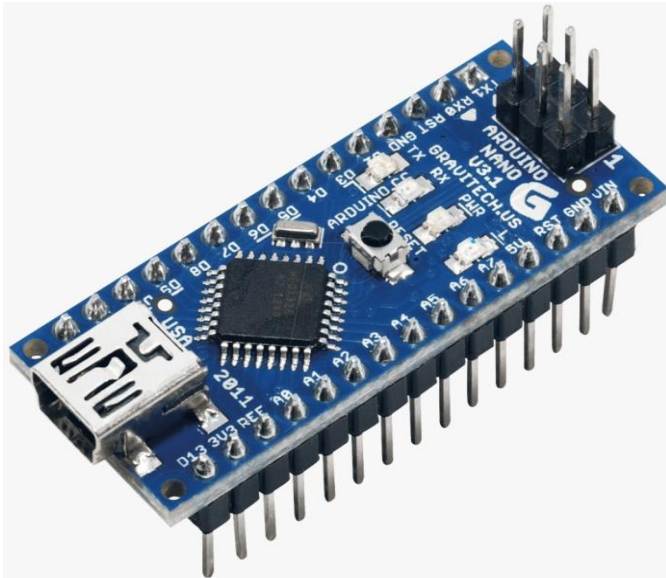## 3. COMPONENTS:-

3.1 Ardiuno Nano

Fig:- 3.1.1

The Arduino Nano is a small, complete, and breadboard-friendly board based on the ATmega328P released in 2008. It offers the same connectivity and specs of the Arduino Uno board in a smaller form factor. The Arduino Nano is equipped with 30 male I/O headers, in a dip-30 like configuration, which can be programmed using the Arduino Software integrated development environment (IDE), which is common to all Arduino boards and running both online and offline.[2] The board can be powered through a type-b micro-USB cable, or through a 9V battery.
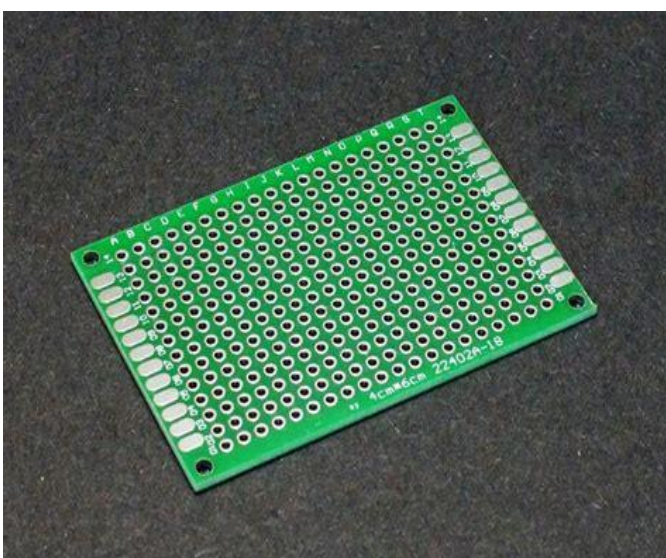
3.2 PCB Board

Fig :- 3.1.2

A printed circuit board mechanically supports and electrically connects electrical or electronic components using conductive tracks, pads and other features etched from one or more sheet layers of copper laminated onto and/or between sheet layers of a non-conductive substrate. A printed circuit board (PCB) mechanically supports and electrically connects electrical or electronic components using conductive tracks, pads and other features etched from one or more sheet layers of copper laminated onto and/or between sheet layers of a non-conductive substrate. Components are generally soldered onto the PCB to both electrically connect and mechanically fasten them to it. Printed circuit boards are used in all but the simplest electronic products. They are also used in some electrical products, such as passive switch boxes.

3.3 Ceramic capacitor

Fig no. 3.1.3

A ceramic capacitor is a fixed-value capacitor where the ceramic material acts as the dielectric. It is constructed of two or more alternating layers of ceramic and a metal layer acting as the electrodes. Ceramic capacitor is a fixed-value capacitor where the ceramic material acts as the dielectric. It is constructed of two or more alternating layers of ceramic and a metal layer acting as the electrodes. The composition of the ceramic material defines the electrical behavior and therefore applications. Ceramic capacitors are divided into two application classes: - a) Class 1 ceramic capacitors offer high stability and low losses for resonant circuit applications. b) Class 2 ceramic capacitors offer high volumetric efficiency for buffer, by-pass, and coupling applications. Ceramic capacitors, especially multilayer ceramic capacitors (MLCCs), are the most produced and used capacitors in electronic equipment that incorporate approximately one trillion (1012) pieces per year.
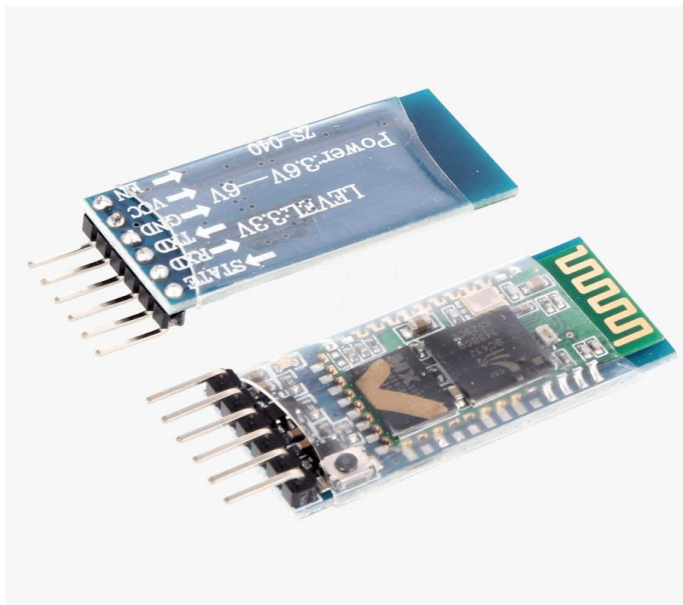
3.4 Bluetooth Module

Fig no. 3.1.4

The Bluetooth module at the other end receives the data and sends it to Arduino through the TX pin of the Bluetooth module(RX pin of Arduino). The Code fed to Arduino checks the received data and compares it.If received data is 1 the LED turns on turns OFF when received data is 0. It is usually a hardware component that provides. a wireless product to work with the computer; or in some cases, the. bluetooth may be an accessory or peripheral, or a wireless headphone. or other product

3.5 Max 7219 IC

Fig no. 3.1.5

The MAX7219 is an IC designed to control a 8x8 LED MATRIX. The IC is serial input common-cathode (Common Negative) display drivers that interface microprocessors (or microcontroller) to 7-segment numeric LED displays of up to 8 digits, bar-graph displays, or 64 individual LEDs.
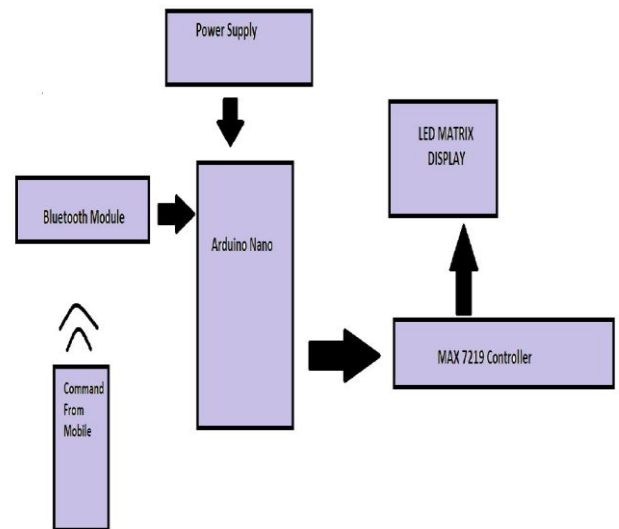
4. SYSTEM ARCHITECTURE

Fig :- 4.1

The First block is the 16 cross 2 LCD Display, which is the output unit. This will be mainly responsible for Displaying the measured distance. The second block is the Arduino; this is considered as the brain of this project. This will be controlling and coordinating all the other blocks. The Third block is the Buzzer .We uses this unit to make the project more user friendly. This will be producing Buzzing sound according to the Distance measured. The Forth block is the Sonar Sensor. This is mainly responsible for measuring the Distance.

5. RESULTS ON PROPOSED MODELS

Fig :- 5.1 Output of implementaton using Arduino Nano & LCD

Fig :- 5.2 Output Of message send by mobile to display in LCD(all welcome)

6. CONCLUSIONS

This Project focusses on reducing unnecessary effort made by us to make an announcement using Arduino Uno, Bluetooth Module and LEDs. We have emphasized on paper less world which will be beneficial for the environment instead of wasting the resources on just notification we have compressed the messages on LED. Display Text messages and multimedia data can be seen whenever we want to see is an advantage of using our project. The system is simple low cost and easy to use that interacts with the intended users instantly.

ACKNOWLEDGEMENT

REFERENCES

Appendix 1

[1] Jung .H.G, Kim .D.S, and Kim .J,(2010) "Light stripe projection-based target position designation for Intelligent parking-assist system," IEEE Trans.., vol. 11, no. 4, pp. 942–953.

[2] Kaempchen .N, Franke . U, and Ott .R, (2002) "Stereo vision based pose estimation of parking lots using 3-D vehicle models," in Proc. IEEE Intell. Veh. Symp., pp. 459–464

Appendix 2 - Weblinks:-

[1] https://dt01-s1.123dok.com/pdf/123dok_us/pdf/2

[2] https://www.electronicshub.org/arduino-car-reverse-parking-sensor/

[3] https://www.researchgate.net/publication/330877699_Development_of_a_Voice_and_SMS_Controlled_Dot_Matrix_Display_Based_Smart_Noticing_System_with_RF_Transceiver_and_GSM_Modem

[4]   https://www.slideshare.net/eben4uever/digital-notice-board-in-schools-and-colleges-by-implementing-iot-with-audio-alert-system

[5] https://www.robotsthenextspeciesonearth.com/p/blog-page_38.html?m=1

[6] https://www.electronicshub.org/arduino-car-reverse-parking-sensor/