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## SPEAKING MICROCONTROLLER FOR DEAF AND MUTE PEOPLE

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### Abstract :

Micro controller based speaking system for deaf and mute is designed to give the signs, which are preloaded in the device. It is a micro controller based device, which gives the alert sounds just by pressing the control buttons, which are given some redefined messages like asking for water ,food, etc., here the person can just press the control button which indicates the sig water (example)then the device sounds the same with some output volume.

Micro controller is the heart of the device .It stores the data of the needs of the person . So that it can make use of the data stored whenever the person uses the device . This device helps the deaf and mute people to announce their requirements . By this the person who s near can understand their need and help them . This saves the time to understand each other and ease in communication. This device is designed to provide with a greater advantage producing voice based announcement for the user I . e, the user gets the voice which pronounces his/her need as and when it is required

### KEYWORDS

1. Arduino Uno Board (ATmega 328 Microcontroller)
2. 16x2 character LCD display.
3. Speaker.
4. Voice module ISD 1820.
5. LEDs and keys.
6. Power Supply

### I. INTRODUCTION

**II.** This paper aims in designing a Speaking microcontroller for deaf and mute people, Now a day s many people are suffering from some type of disability .some people are not able to speak properly and explore their thoughts, ideas, views, in society. To solve some problems, a system is implemented called “SPEAKING MICROCONTROLLER FOR DEAF AND MUTE PEOPLE”. The system is microcontroller primarily based speaking system for deaf and mute to offer the signs, that square measure preloaded within the device. It is a small controller primarily based device, which provides the sounds simply by pressing the management buttons, that square measure given some audio message like need water, need food etc., here the person simply press the management button and speak message that indicates the sign of need water(example) then the device convert it into the text it shows on the display. shown in the figure 1.

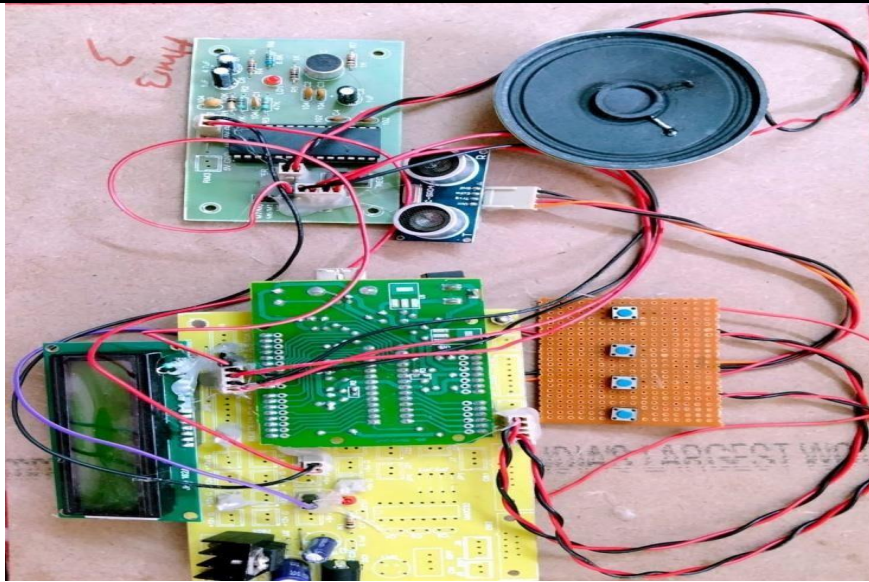


Fig- 1 Speaking microcontroller for deaf and mute people

II . Equipment's/The main blocks of this paper are:

- ❖ Power Supply
- ❖ PIC microcontroller
- ❖ LCD display
- ❖ APR33A3 Voice Module
- ❖ Arduino UNO
- ❖ Ultrasonic Sensor
- ❖ Push Buttons
- ❖ Speaker
- ❖ LED indicators

III. Working:

- ❖ The main controlling device of this speaking micro controller for deaf and mute people is ARDUINO UNO microcontroller.
- ❖ By using Voice IC APR33A3 we have recorded four sounds in that.
- ❖ Ultrasonic sensor, push buttons, LCD display, and voice IC APR33A3 are interfaced to the Arduino microcontroller. All these components are connected
- ❖ If we give power supply to the arduino uno the LED glows and the LCD display on.
- ❖ If any object is placed on the Ultrasonic sensor then it gives a sound from speakers that obstacles.
- ❖ If we press the button 1 then it gives “need food ” from the speaker and in LCD display it shows same.
- ❖ If we press the button 2 then it gives “need water ” from the speaker and in LCD display it shows same.
- ❖ If we press the button 1 then it gives “need help ” from the speaker and in LCD display it shows same.
- ❖ If we press the button 1 then it gives “need medicine ” from the speaker and in LCD display it shows same.

SOFTWARE'S USED :

- ❖ ARDUINO UNO compiler for dumping the code into the microcontroller.
- ❖ Embedded C programming.

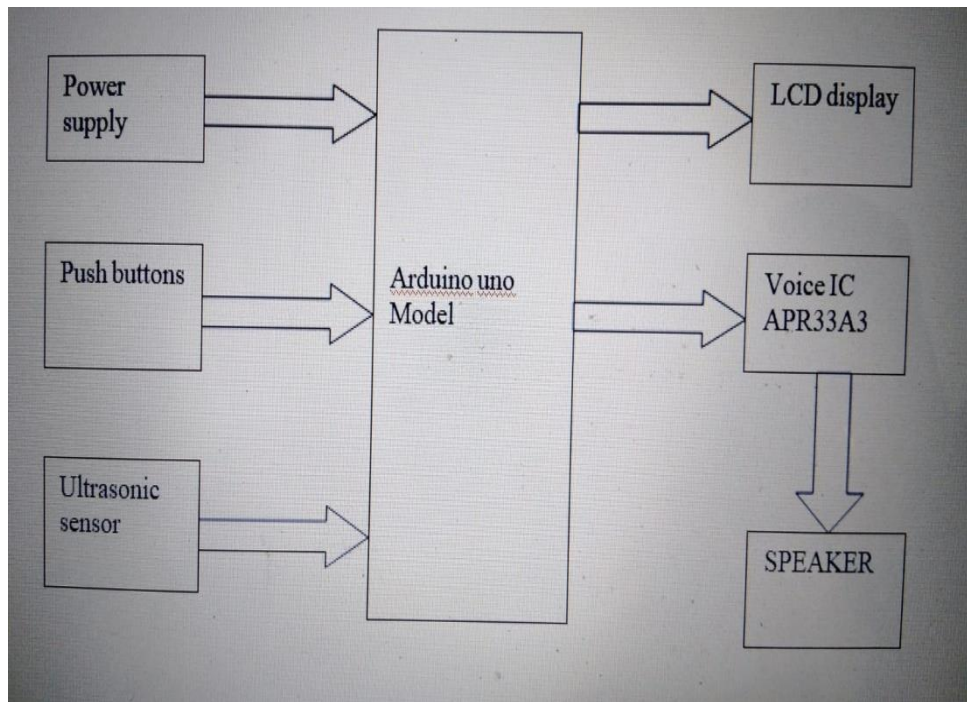


Fig-.2 Block Diagram

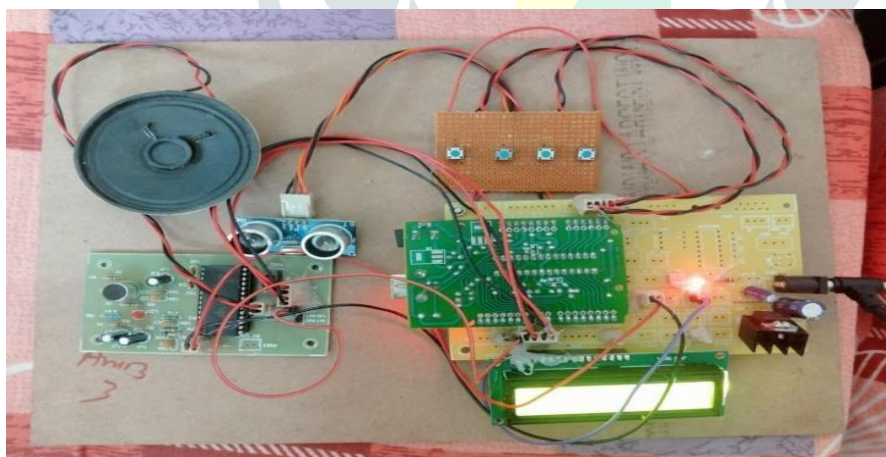


Fig-.3 Speaking Microcontroller for deaf and mute people during working condition

Figure.2 block diagram of the project.

#### IV Hardware Requirements:

##### ARDUINO UNO:

ARDUINO UNO IS A LOW-COST, FLEXIBLE, AND EASY-TO-USE PROGRAMMABLE OPEN-SOURCE MICROCONTROLLER BOARD THAT CAN BE INTEGRATED INTO A VARIETY OF ELECTRONIC PROJECTS. THIS BOARD CAN BE INTERFACED WITH OTHER ARDUINO UNO BOARDS, ARDUINO SHIELDS, RASPBERRY PI BOARDS AND CAN CONTROL RELAYS, LEDs, SERVOS, AND MOTORS AS AN OUTPUT.



Fig- 4 Arduino UNO

##### LCD Display:

LCD stands for liquid crystal display it is a flat panel display it uses liquid crystals in its primary form of operations. The LCD we use here is (16x2). Here the use of the LCD display in our project is the raspberry pi that sends messages based on the temperature sensor and pi camera.



Fig -5 16x2 LCD Display

##### APR33A3 Voice Module:

APR33A3 is a 8 Channel Voice Record & Audio Playback Board integrated with APR33A series IC which is a powerful audio processor along with high-performance audio analog-to-digital converters (ADCs) and digital-to-analog converters (DACs).



Fig- 6 APR3A3 Voice Module

##### Ultrasonic Sensor:

This is the HC-SR04 ultrasonic distance sensor. This economical sensor provides 2cm to 400cm of non-contact measurement functionality with a ranging accuracy that can reach up to 3mm. Each HC-SR04 module includes an ultrasonic transmitter, a receiver and a control circuit.

There are only four pins that you need to worry about on the HC-SR04: VCC (Power), Trig (Trigger), Echo (Receive), and GND (Ground). You will find this sensor very easy to set up and use for your next range-finding project



Fig- 7 Ultrasonic Sensor

**Push Buttons:**

Push buttons can be explained as simple power controlling switches of a machine or appliance. These are generally metal or thermoplastic switches that are intended to grant easy access to the user.

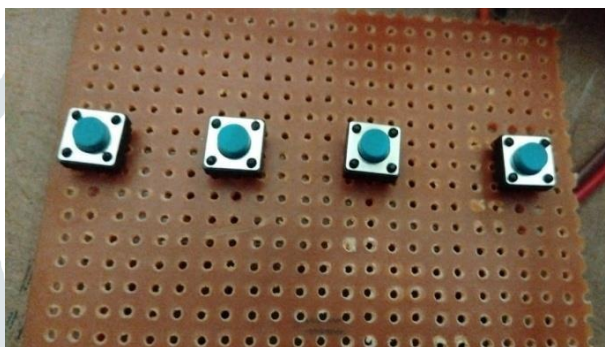


Fig- 8 Push Buttons

**General Power Supply:**

The power supply circuits built using filters, rectifiers, and then voltage regulators. Starting with an ac voltage, a steady dc voltage is obtained by rectifying the ac voltage, then filtering to a dc level, and finally, regulating to obtain a desired fixed dc voltage. The regulation is usually obtained from an IC voltage regulator unit, which takes a dc voltage and provides a somewhat lower dc voltage, which remains the same even if the input dc voltage varies, or the output load connected to the dc voltage changes.

**FLOWCHART:**

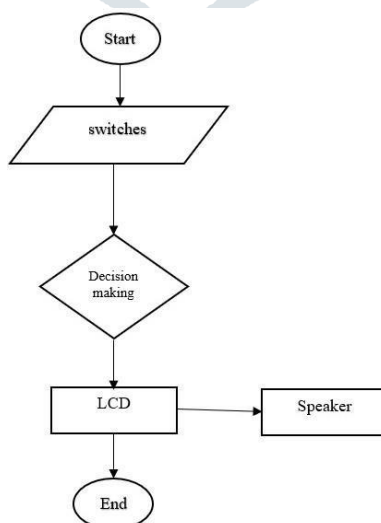


Fig- 9 Flow Chat For Speaking Micro Controller For Deaf and Mute People

V . OUTPUT:

If we press the buttons then it shows like this

S.No	Input Key Number	Message Displayed on LCD	Voice message
1	Input Key 1	“Need Food”	“Need Food”
2	Input Key 2	“Need Water ”	“Need Water”
3	Input Key 3	“Need Help”	“Need Help”
4	Input Key 4	“Need Medicine ”	“Need Medicine”

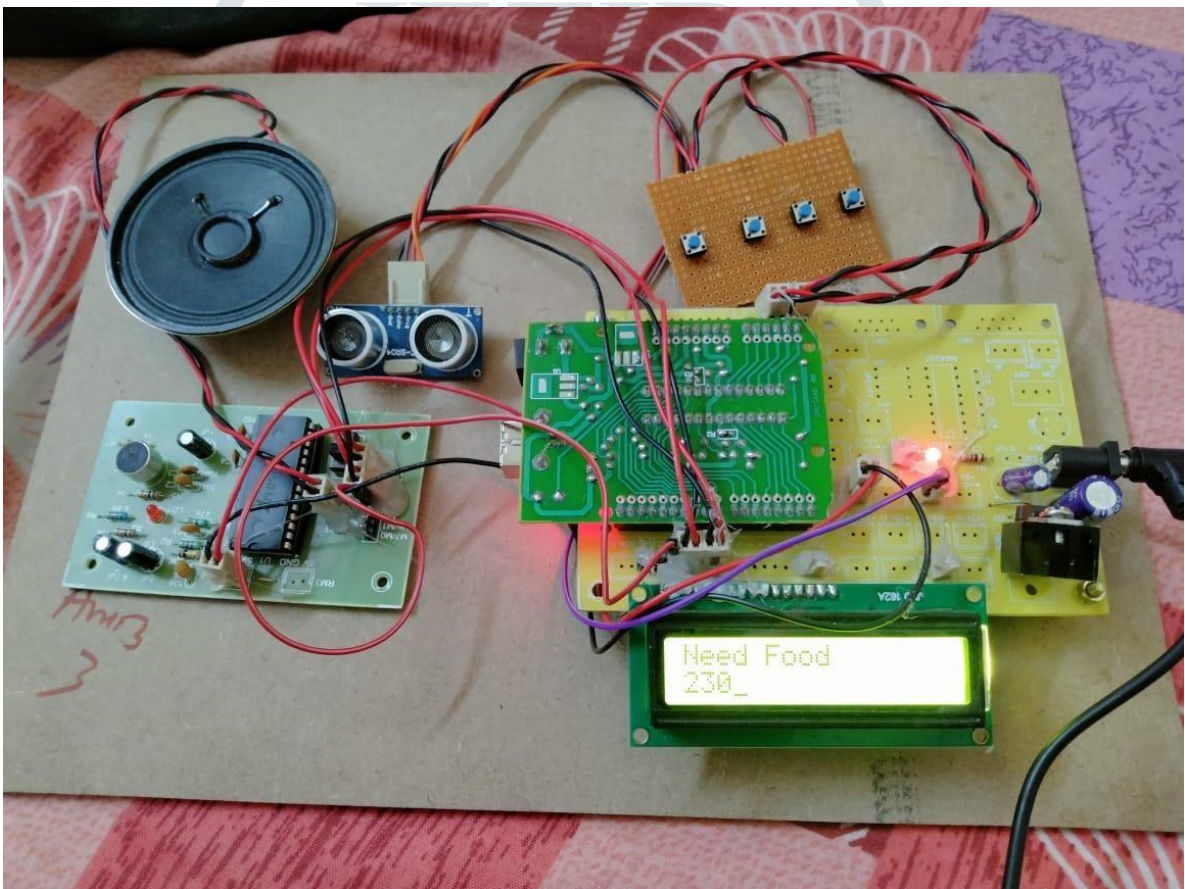


Fig- 10 If we Press the button 1 then it shows Need Food in the display

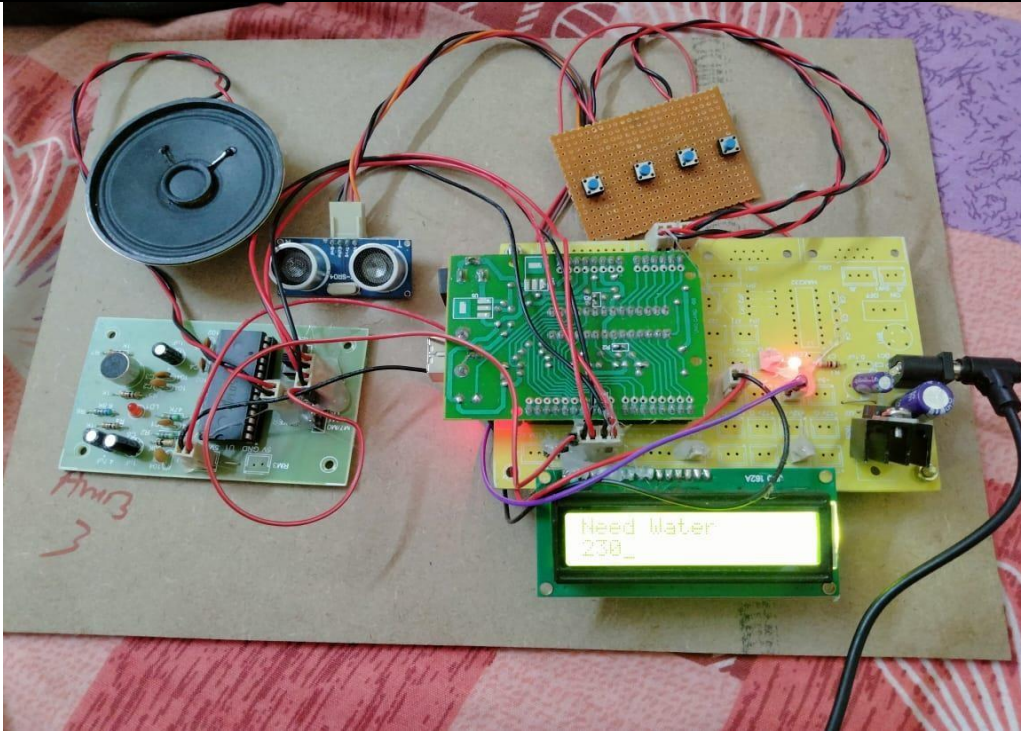


Fig- 11 If we Press the button 2 then it shows Need Water in the display

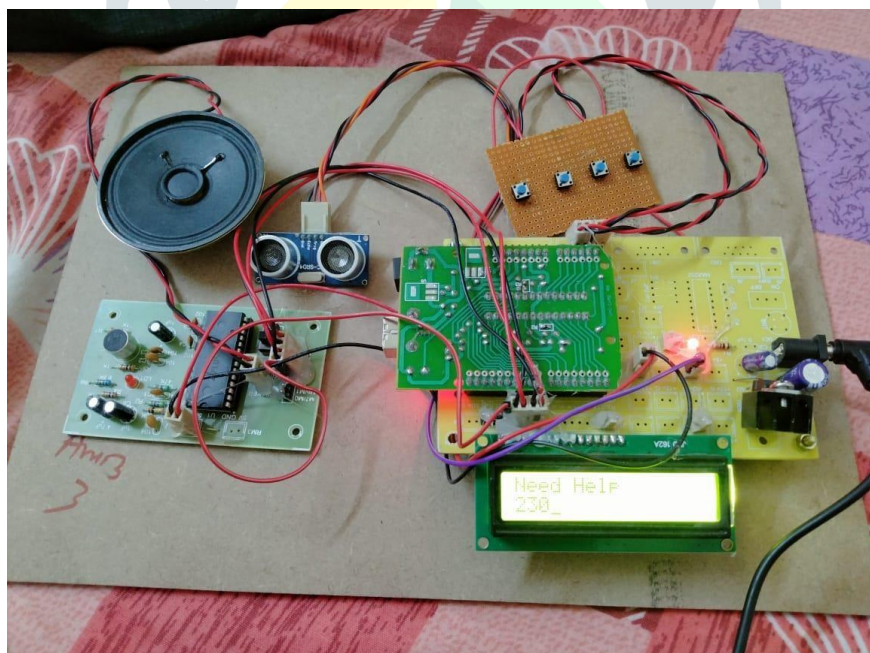


Fig- 12 If we Press the button 3 then it shows Need Help in the display

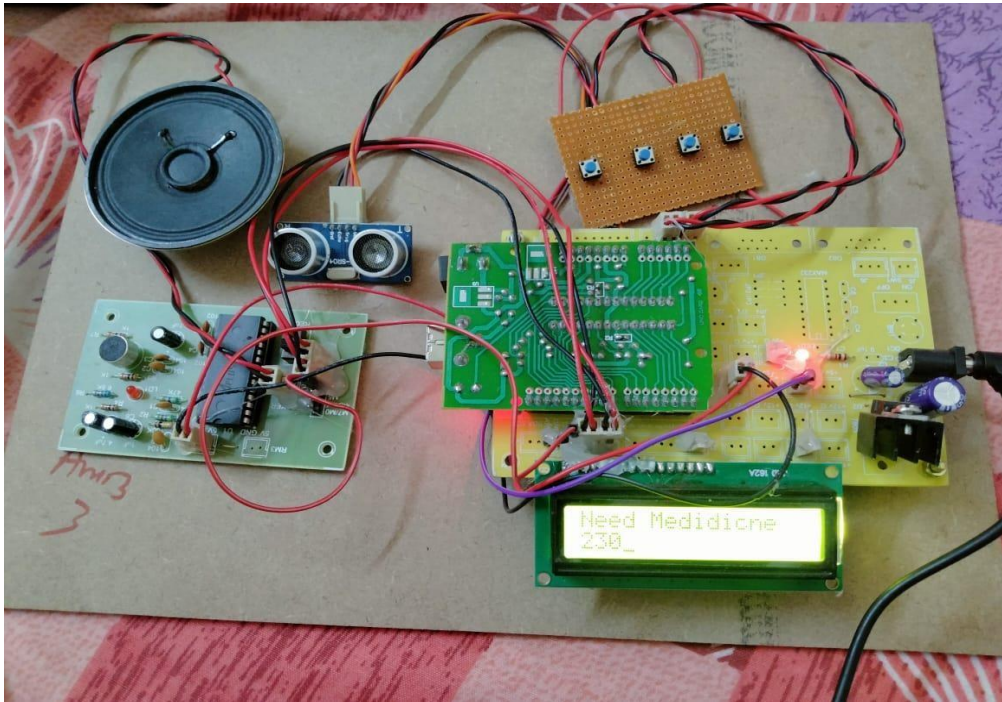


Fig- 13 If we Press the button 4 then it shows Need Medicicne in the display

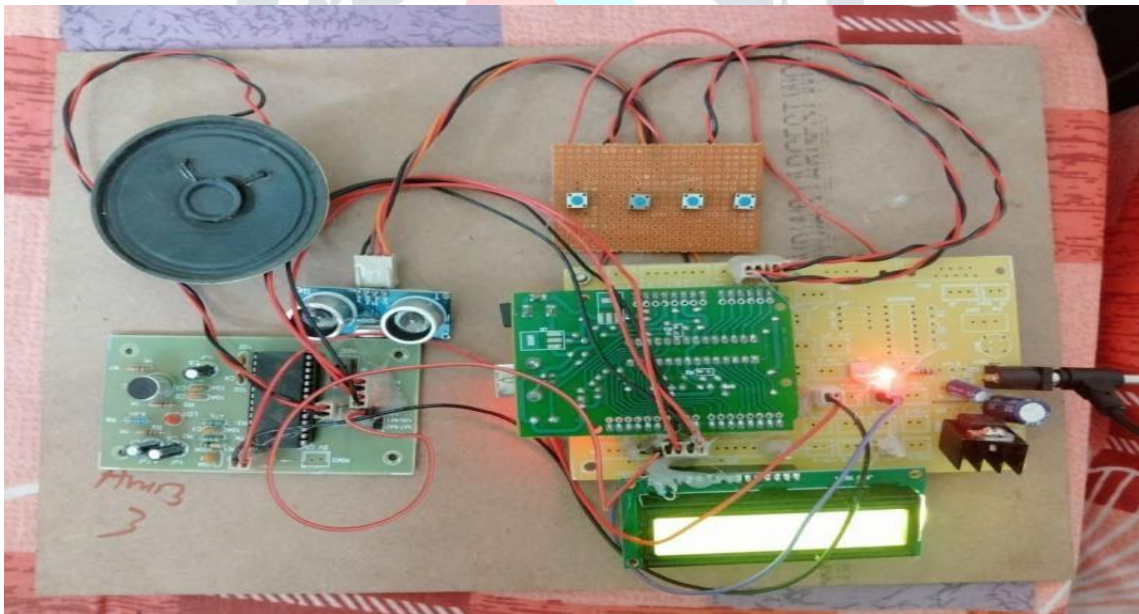


Figure.14 Complete view



## CONCLUSION

- Integrating features of all the hardware components used have been developed in it.
- Presence of every module has been reasoned out and placed carefully, thus contributing to the best working of the unit.
- Secondly, using highly advanced IC's with the help of growing technology, the project has been successfully implemented.
- Thus the project has been successfully designed and tested.

## FUTURE SCOPE

- Push-button interface, playback can be edge or level activated
- Automatic power- mode
- On-chip  $8\Omega$  speaker driver
- Signal 3V Power Supply
- Can be controlled both manually or by MCU
- Sample rate and duration chargeable by replacing a single resistor
- Record up to 20 seconds of audio
- Dimensions: 37 x 54 mm

## REFERENCES

- [1] Hussana Johar R.B, Priyanka A, Revathi Amrut M S, Suchitha K, Sumana K J “Multiple sign language translation into voice ”International Journal of Engineering and Innovative Technology(IJEIT),
- [2] Hussana Johar R.B, Priyanka A, Revathi Amrut M S, Suchitha K, Sumana K J “Multiple sign language translation into voice ”International Journal of Engineering and Innovative Technology(IJEIT), Volume 3, Issue 10, April 2014
- [3] Solanki Krunal M, “Indian Sign Languages using Flex Sensor Glove,” International Journal of Engineering Trends and Technology (IJETT)-Volume4 Issue6- June 2013 ISSN: 2231
- [4] Carlos Pesqueira Fiel, Cesar Cota Castro, Victor Velarde Arvizu, “Design of Translator Glove for Deaf-Mute Alphabet,” 3 rdInternational Conference on Electric and Electronics (EEIC2013)
- [5] Jamal Haydar, Bayan Dalal, Shahed Hussainy, Lina El Khansa, WalidFahs, “ASL Fingerspelling Translator Glove”, International Journal of Computer Science issues, Vol.9, Issue 6, No1, November2012.