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CERTIFICATE

This is to certify that Mr. Namdas Rahul Eknath of Diploma (6th Semester) in Computer Engineering, Enrolment Number : 156010307042 has satisfactorily completed his Project entitled "**Motion Based Message Conveyer For Paralytic/Disabled People**" for term ending in April - May 2018.

DATE: _____

Signature of Guide

Signature of Principal

Signature of H.O.D

Signature of External Examiners

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CERTIFICATE

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Signature of Principal

Signature of H.O.D

Signature of External Examiners

ABSTRACT

We come across hospitals and NGO's serving disabled people. Now these people are not capable of full body movement as compared to a normal person. In such a situation we propose a system that helps disabled person display a message & voice by just simple motion of any part of his/her body. Our proposed system works by reading the tilt direction of the user part. This device needs to be mounted on user finger of hand. The user now just needs to tilt the device in particular angle with respect to Horizontal axis and Vertical axis to convey a message. Tilting the device in different directions conveys a different message. here we use Accelerometer in order to measure the statistics of motion

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1. Introduction

1.1 Problem Title

1.2 About Company

1.3 Objective of Project

1.4 Problem Summary

1. Introduction

1.1 PROBLEM TITLE

“Understanding Movement Of Paralytic Person”

1.2 ABOUT COMPANY VISITED

As we are having project in GTU curriculum of final year in Diploma Computer Engineering, We have worked around for the same and searched IDP for the project. We have Visited the emphasis Such as “TEQ Launch”.

Finally, we got the IDP for our project which is suggested by our project guide in Collage Mr. Nikunj C. Tailor suggested us the “Motion Based Message Conveyor for Paralytic/Disabled people” and Mr. Hemal Shah from TEQ Launch helps us to understand the Problematic and Requirements.

TEQ Launch was founded By Hemal Shah and Abhay Shah. TEQ Launch was began with a vision to connect people and business from around the world into community that could work together. After Three years they have made various hardware project and have participate in various competition and won many prizes. TEQ Launch have made simple hardware project as well complex project.



1.3 OBJECTIVE OF PROJECT

The main objective behind creating this project is to help Paralytic/Disabled People from there disease. As we all know there are many people in India who are suffering from the Paralytic Disease.

The main problem with them is they are not able to convey there message to Nurse or Family Member. Using this device the Patient can easily convey there message.

To convey message the patient should tilt his/her hand or moving part of the body in some angle.

When the patient move hand the message is send wirelessly to the Nurse, So that the nurse can fulfil the need of the patient as soon as possible.

1.4 PROBLEM SUMMARY DETAILS

In World wide, there are many people who are suffering from Paralysis. Due to the Paralysis the patient and the nurse or the patient's family member are not able to get what the patient want to say. By using our device the Nurse or the Patient's family member can easily understand what the patient want to say. By getting a text message on LCD Screen and a voice coming from speaker.



2. Project Management

2.1 Project Scheduling

2. Project Management

2.1 PROJECT SCHEDULING ★ PLANNING

* AUGUST :

- ✓ Creating Abstract, Introduction and Basic research about project.

* SEPTEMBER :

- ✓ Analysis and Data collection (Like Circuit) for project.

* OCTOBER :

- ✓ Study the different types of Circuits Component (Like Diode, Register Etc....)
- ✓ Creating a sample Circuit.

* NOVEMBER :

- ✓ Documentation.

* DECEMBER - JANUARY - FEBRUARY :

- ✓ Implements Radio-Frequency (R.F.) Transmitter and Receiver.
- ✓ Implements Accelerometer and Arduino for Input.
- ✓ Implements LCD Display and Recorder Circuit for Output.

* MARCH - APRIL :

- ✓ Final Documentation



3. Development Tools & Programming Languages

3.1 Hardware

3.2 Software

3. Development tools & Programming Languages

3.1 HARDWARE

- **8051 Micro-Controller.**
- **RF Transmitter & Receiver.**
- **PCB/GPP.**
- **Record Circuit.**
- **Register , Capacitor, Diode.**
- **LED, Voltage Regulator**
- **Jumper Wire**
- **LCD Display**
- **Push Button**
- **Arduino UNO**
- **Accelerometer**

3.2 SOFTWARE

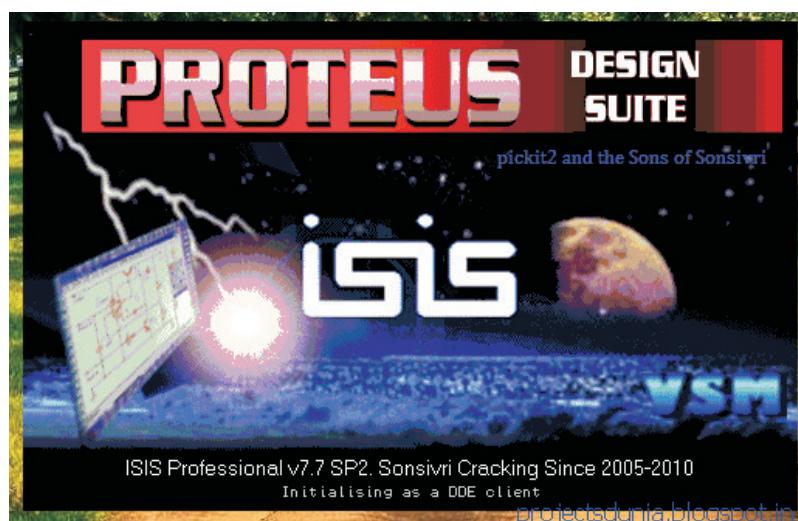
Keil µVision:



Keil was founded in 1982 by Günter and Reinhard Keil, initially as a German. Keil implemented the first C Compiler designed from the ground-up specifically for the 8051 micro-controller. Keil provides a broad range of development tools like ANSI C compiler, Macro assemblers, Debuggers and Simulators, Linkers, IDE, Library Managers, Real-Time os and evaluation boards for Intel 8051, Intel MCS-251, ARM

3.2 SOFTWARE

Proteus



The Proteus Design Suite is a proprietary software tool suite used primarily for electronic design automation. The software is used mainly by electronic design engineers and technicians to create schematics and electronic prints for manufacturing printed circuit boards.

It was developed in Yorkshire, England by Labcenter Electronics Ltd and is available in English, French, Spanish and Chinese languages.

4. Literature Survey

4.1 Survey

4. Literature Survey

4.1 SURVEY

We studied the papers related to our topic. we got the information about different project related to our topic that is following:

1. In paper of “*ZigBee Based Centralized Patient Monitoring System*” which is developed by the Sakshi Sharma, Rashmi Vashisth in 2015. The main objective of this paper is to make centralized patient monitoring system using wireless transmission mesh network. ZigBee is a wireless transmission technology is adopted.
2. In the System, “*Real Time Health Monitoring System using Arduino*” which is develop by Rajalakshmi . S, S Nikilla, The method implement a prototype model for the real time patient monitoring system. The proposed method is used to measure the physical parameter like body temperature, heart beat rate and oxygen level monitoring with the help of Bio-sensors.
3. By the paper of Hand Gesture Recognition Application for Physically Disabled People which is developed by D.Vishnu Vardhan, P.Penchala Prasad we get information that is using a communication system which converts signal , used by dumb people, It is done based on a narrative hand gesture recognition technique. The solution approach consists of a hardware module and software module.



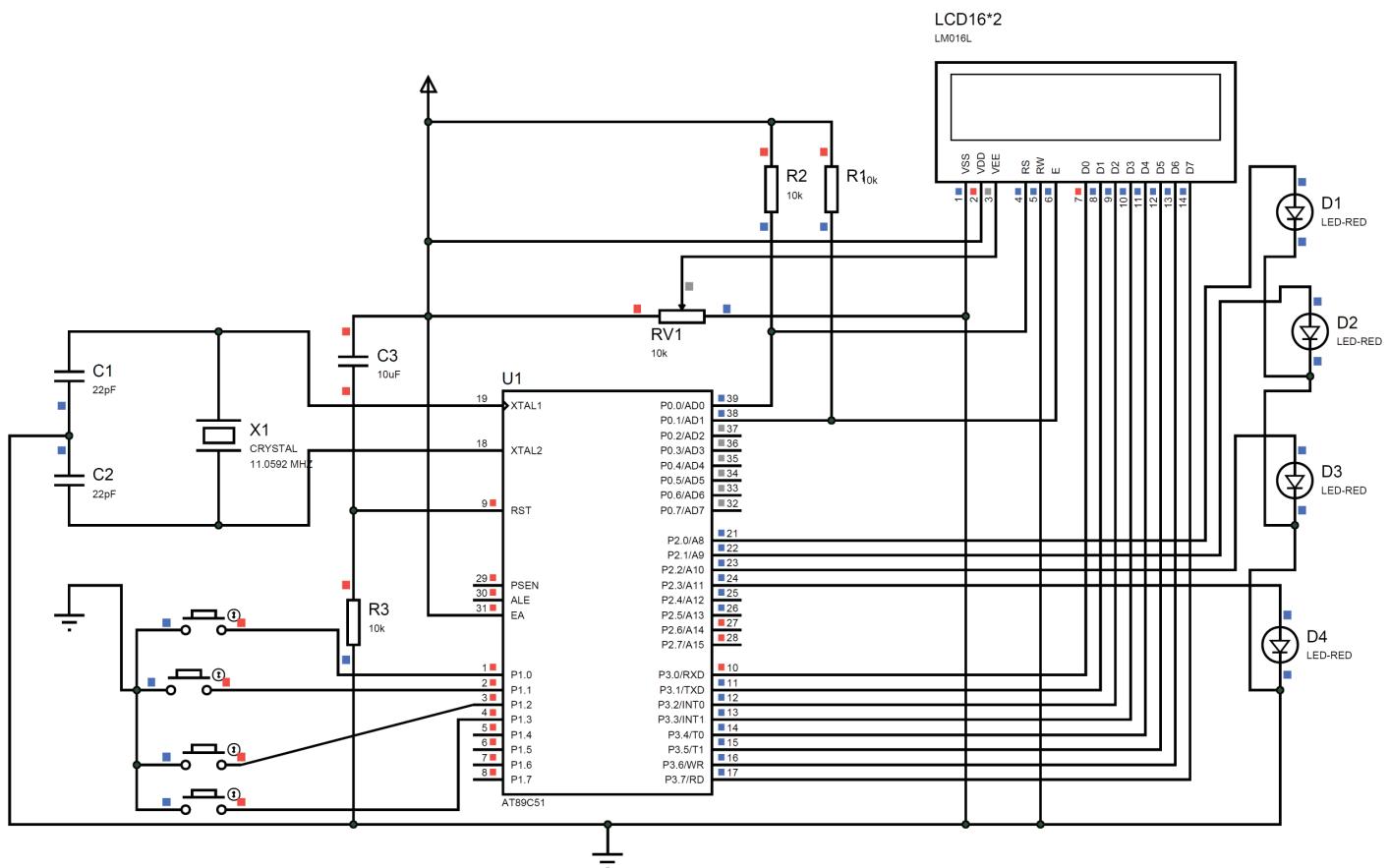
5. Implementation Details

5.1 Circuit Diagram

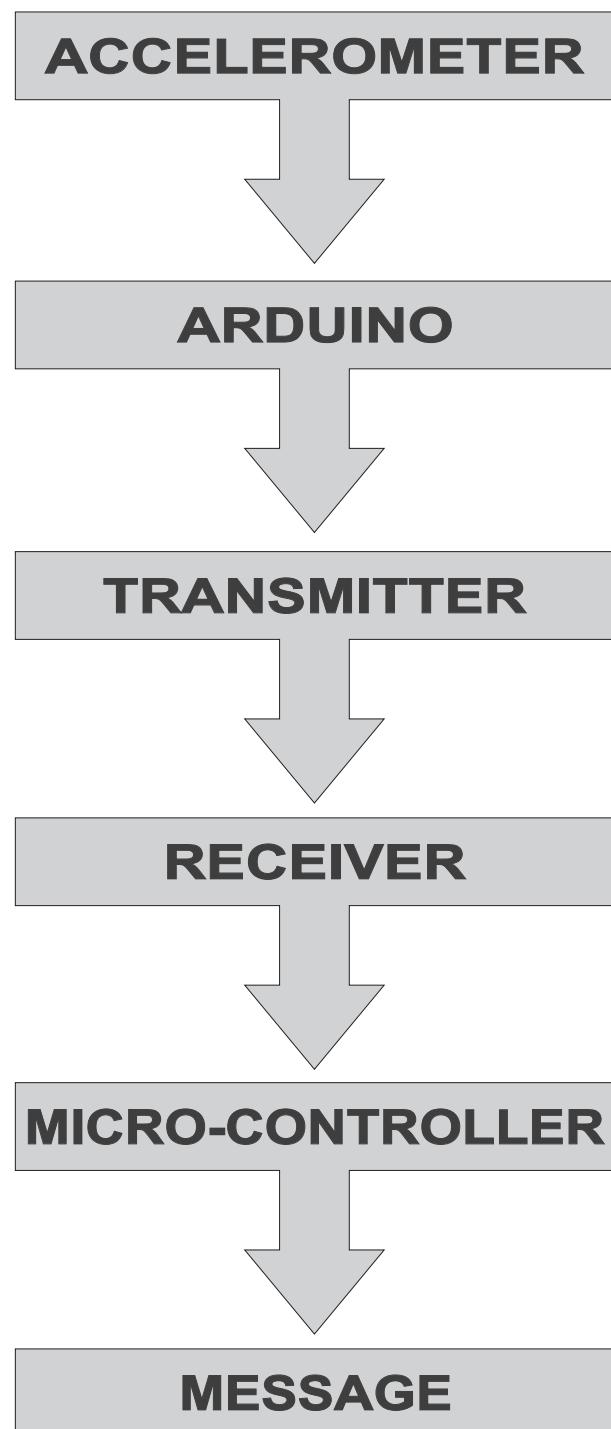
5.2 Block Diagram

5. Implementation Details

5.1 CIRCUIT DIAGRAM



5.2 BLOCK DIAGRAM



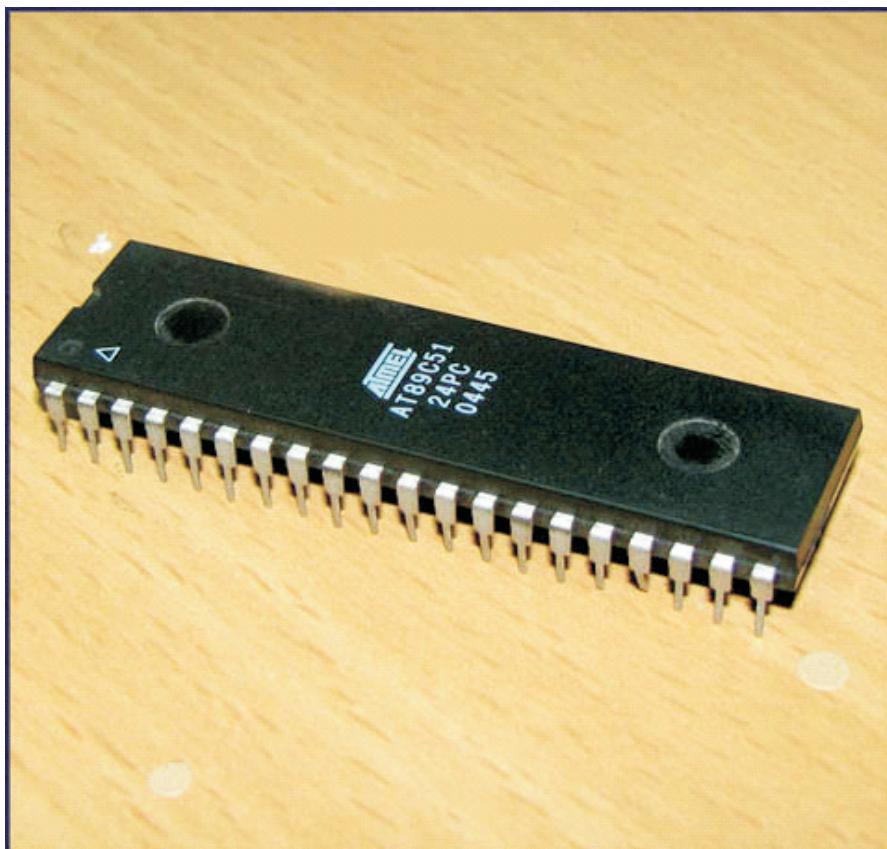
6. Detail Description

- 6.1 Micro-Controller
- 6.2 RF Transmitter & Receiver
- 6.3 Arduino
- 6.4 Lcd Display
- 6.5 Accelerometer
- 6.6 Excepted Output
- 6.7 Pictures of Circuits
- 6.8 Sample Code

6. Detail Description

6.1 MICRO-CONTROLLER

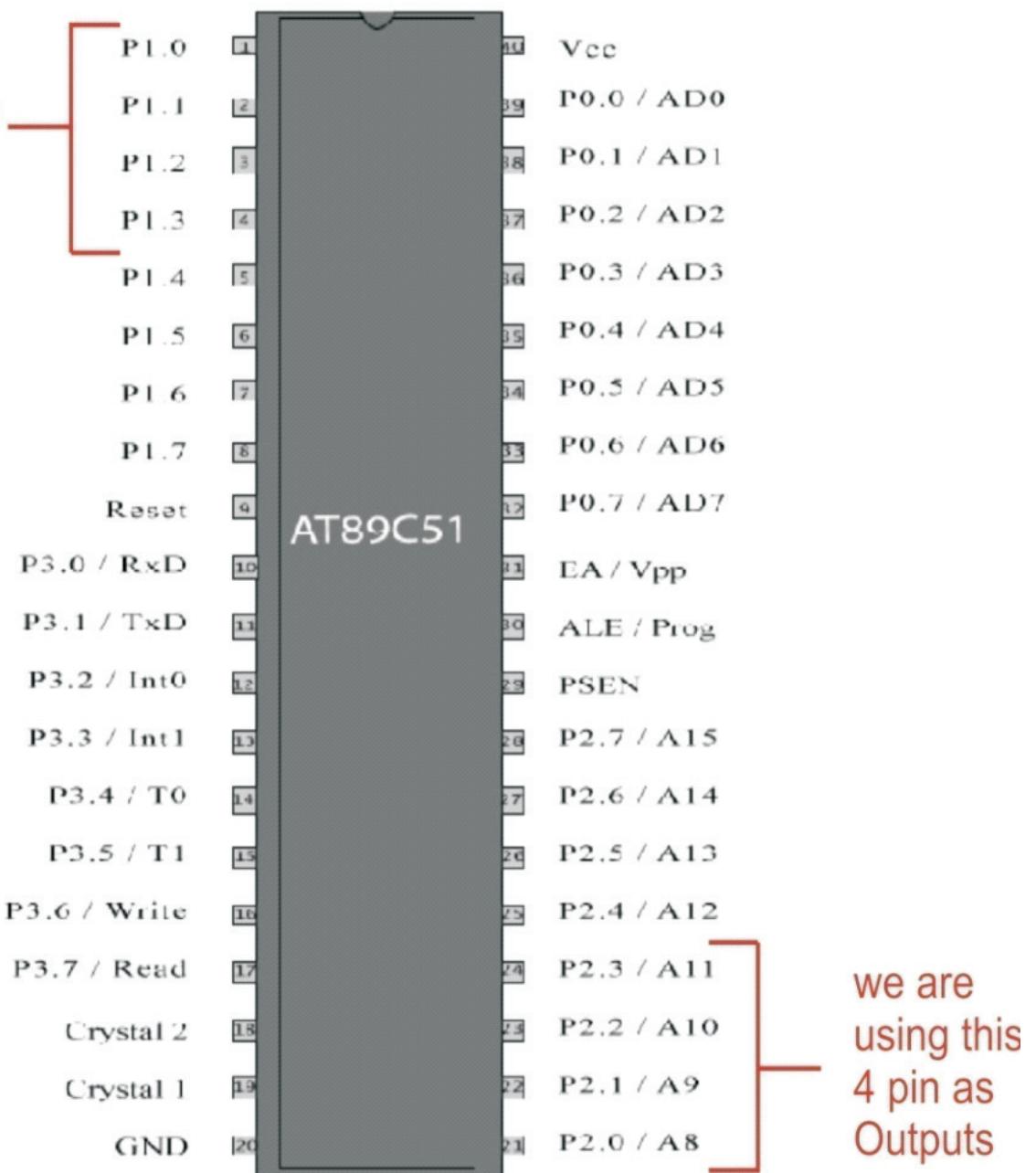
- AT89C51 is an 8-bit Microcontroller and belongs to Atmel's 8051 family. ATMEAL 89C51 has 4KB of Flash programmable and erasable read only memory (PEROM) and 128 bytes of RAM. It can be erased and program to a maximum of 1000 times.
- There are 40 Pins in AT89C51, there are four designed as P1,P2,P3 and P0. All these ports are 8-bit bi-directional ports ,i.e., they can be used as both input and output ports.



MICRO-CONTROLLER PIN DIAGRAM

Pin Diagram

we are
using this
4 pin as
Inputs

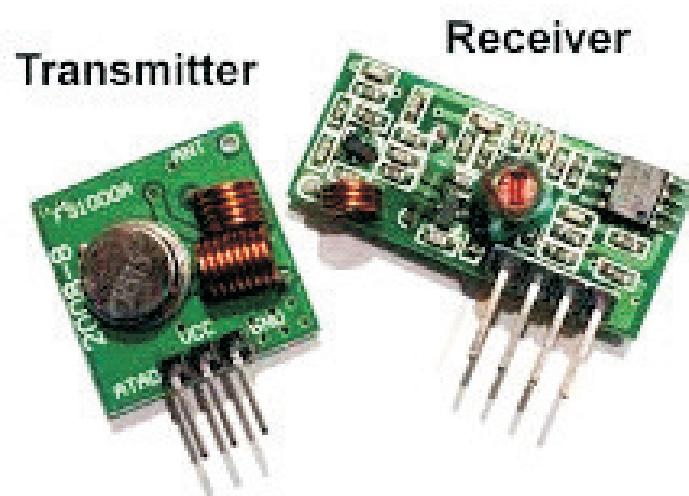


MICRO-CONTROLLER PIN DESCRIPTION

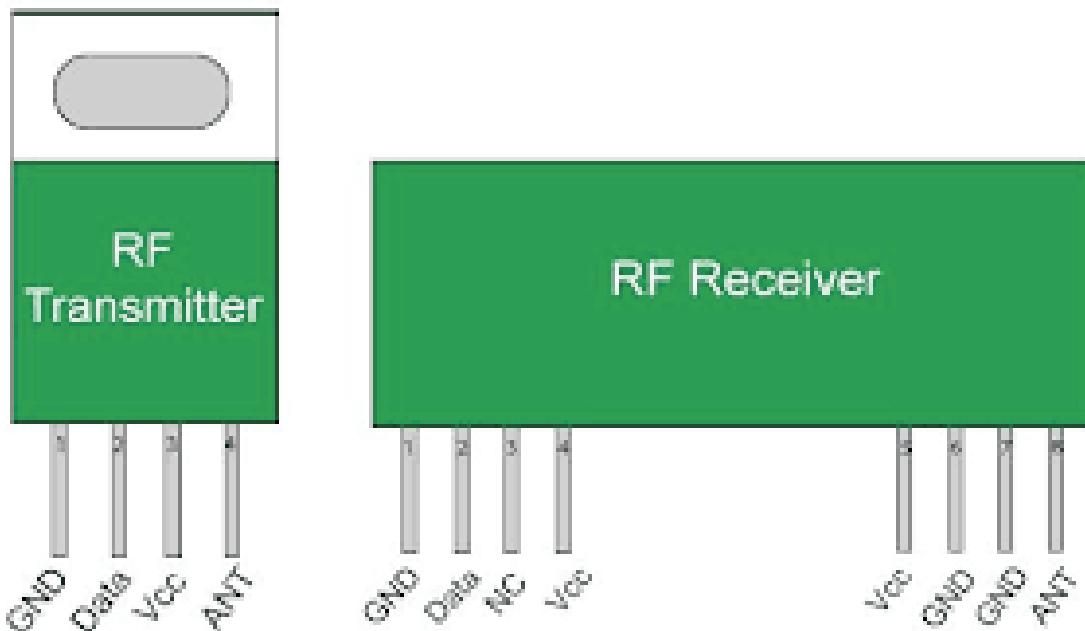
Pin No	Function		Name
1			P ₁ .0
2			P ₁ .1
3			P ₁ .2
4	8 Bit input/output port(P ₁) pins		P ₁ .3
5			P ₁ .4
6			P ₁ .5
7			P ₁ .6
8			P ₁ .7
9	Reset pin; Active High		Reset
10	Input (receiver) for serial communication	RxD	P ₃ .0
11	Output (transmitter) for serial communication	TxD	P ₃ .1
12	External interrupt 1	Int0	P ₃ .2
13	External interrupt 2	Int1	P ₃ .3
14	Timer1 external input	T0	P ₃ .4
15	Timer2 external input	T1	P ₃ .5
16	Write to external data memory	Write	P ₃ .6
17	Read from external data memory	Read	P ₃ .7
18	Quartz crystal oscillator (up to 24 MHZ)		Crystal 2
19			Crystal 1
20	Ground (0V)		Ground
21			P ₂ .0 / A8
22			P ₂ .1 / A9
23	8 bit input/output port (P2) pins		P ₂ .2 / A10
24	/		P ₂ .3 / A11
25	High-order address bits when interfacing with external memory		P ₂ .4 / A12
26			P ₂ .5 / A13
27			P ₂ .6 / A14
28			P ₂ .7 / A15
29	Program store enable; Read from external program memory		PSEN
30	Address Latch Enable		ALE
	Program pulse input during Flash programming		Prog
31	External Access Enable; Vcc for internal program executions		EA
	Programming enable voltage; 12V (during Flash programming)		Vpp
32	8 bit input/output port (P0) pins		P0. ₇ / AD7
33			P0. ₆ / AD6
34			P0. ₅ / AD5
35			P0. ₄ / AD4
36	Low-order address bits when interfacing with external memory		P0. ₃ / AD3
37			P0. ₂ / AD2
38			P0. ₁ / AD1
39			P0. ₀ / AD0
40	Supply voltage; 5V (up to 6.6V)		Vcc

6.2 RF TRANSMITTER & RECEIVER

- An **RF module (radio frequency module)** is a (usually) small electronic device used to transmit and/or receive radio signals between two devices. In an embedded system it is often desirable to communicate with another device wirelessly. This wireless communication may be accomplished through optical communication or through radio frequency (RF) communication.
- Transmission through RF is better than IR (infrared) because of many reasons. Firstly, signals through RF can travel through larger distances making it suitable for long range applications. Also, while IR mostly operates in line-of-sight mode, RF signals can travel even when there is an obstruction between transmitter & receiver. Next, RF transmission is more strong and reliable than IR transmission. RF communication uses a specific frequency unlike IR signals which are affected by other IR emitting sources.



RF TRANSMITTER & RECEIVER PIN DIAGRAM & PIN DESCRIPTION



Transmitter

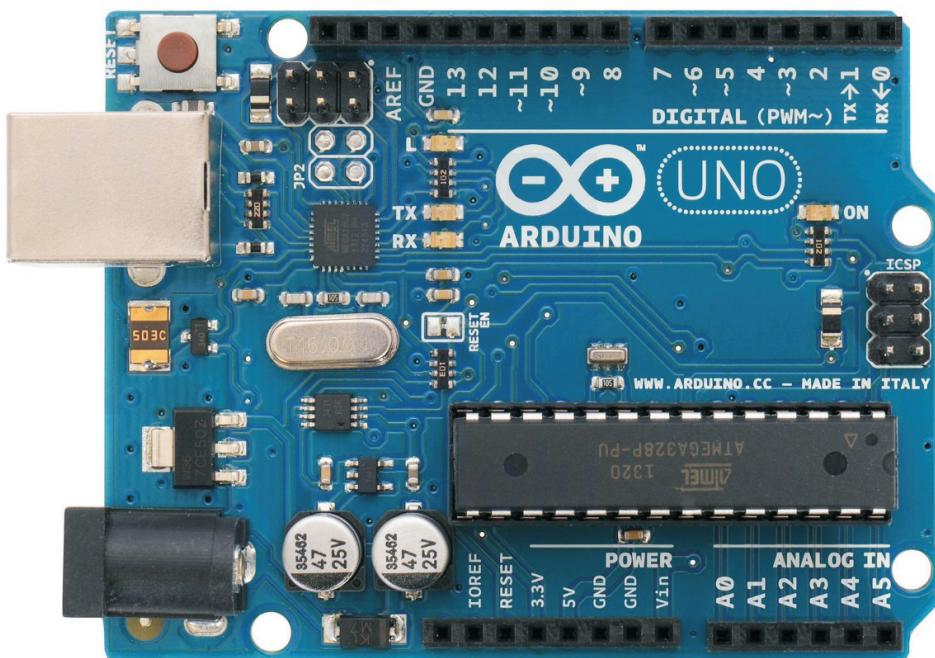
Pin No	Function	Name
1	Ground (0V)	Ground
2	Serial data input pin	Data
3	Supply voltage; 5V	Vcc
4	Antenna output pin	ANT

For Receiver

Pin No	Function	Name
1	Ground (0V)	Ground
2	Serial data output pin	Data
3	Linear output pin; not connected	NC
4	Supply voltage; 5V	Vcc
5	Supply voltage; 5V	Vcc
6	Ground (0V)	Ground
7	Ground (0V)	Ground
8	Antenna input pin	ANT

6.3 ARDUINO

- **Arduino** is an open-source platform used for building electronics projects. Arduino consists of both a physical programmable circuit board (often referred to as a microcontroller and a piece of software, or IDE (Integrated Development Environment) that runs on your computer, used to write and upload computer code to the physical board.

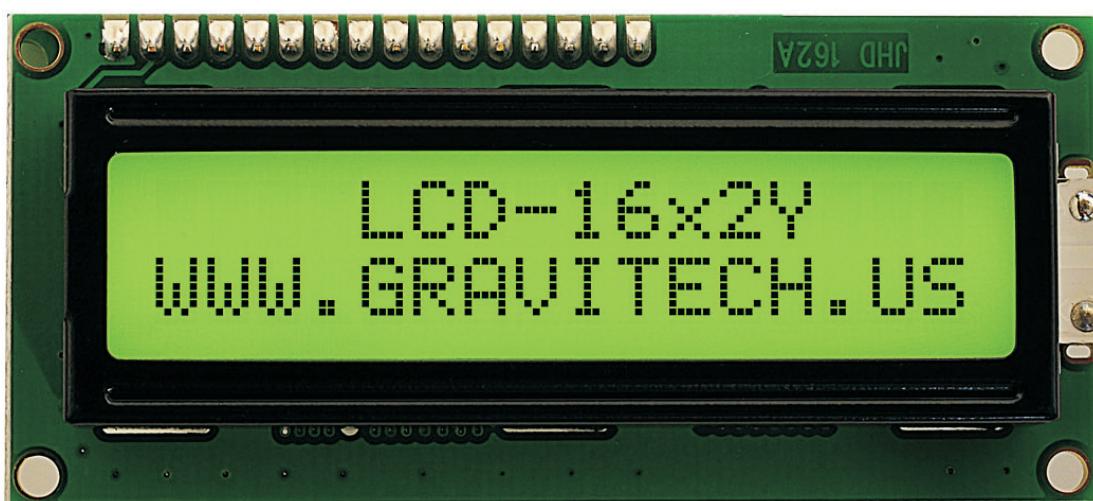


6.4 LCD DISPLAY

LCD (Liquid Crystal Display) screen is an electronic display module and find a wide range of applications. A 16x2 LCD display is very basic module and is very commonly used in various devices and circuits. These modules are preferred over seven segments and other multi segment LEDs. The reasons being: LCDs are economical; easily programmable; have no limitation of displaying special & even custom characters (unlike in seven segments), animations and so on.

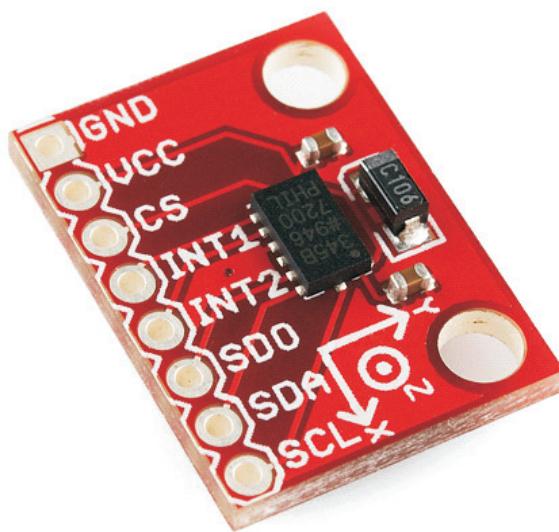
A 16x2 LCD means it can display 16 characters per line and there are 2 such lines. In this LCD each character is displayed in 5x7 pixel matrix. This LCD has two registers, namely, Command and Data.

The command register stores the command instructions given to the LCD. A command is an instruction given to LCD to do a predefined task like initializing it, clearing its screen, setting the cursor position, controlling display etc. The data register stores the data to be displayed on the LCD. The data is the ASCII value of the character to be displayed on the LCD.



6.5 ACCELEROMETER

- An accelerometer is an electromechanical device used to measure acceleration forces.
- Accelerometers are available that can measure acceleration in one, two, or three orthogonal axes.
- Most accelerometers are Micro-Electro-Mechanical
- They are typically used in one of three modes:
- As an inertial measurement of velocity and position;
- As a sensor of inclination, tilt, or orientation in 2 or 3 dimensions.
- As a vibration or impact (shock) sensor.



6.6 EXPECTED OUTCOME

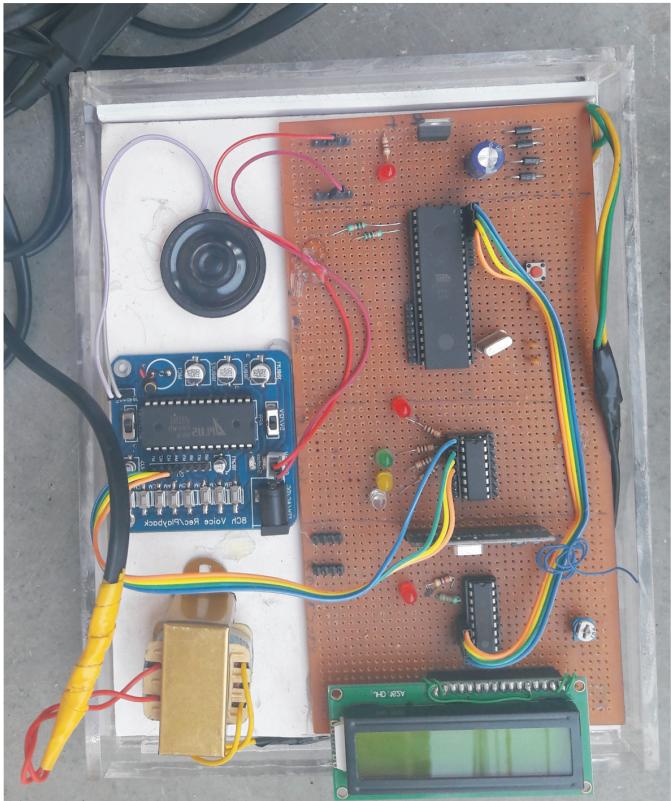
As we selected “Motion Based Message Conveyor For Paralytic/Disabled people” as our project we would like to implement and solve the problems that we identify in many Hospitals.

Lakhs of Hospitals can use this device for helping Paralysis Patient in India.

After completion of this project, we can easily identify What the patient want. So that the nurse can fulfil there need in faster way. And the patient can get better treatment from nurse.



RECEIVER CIRCUIT



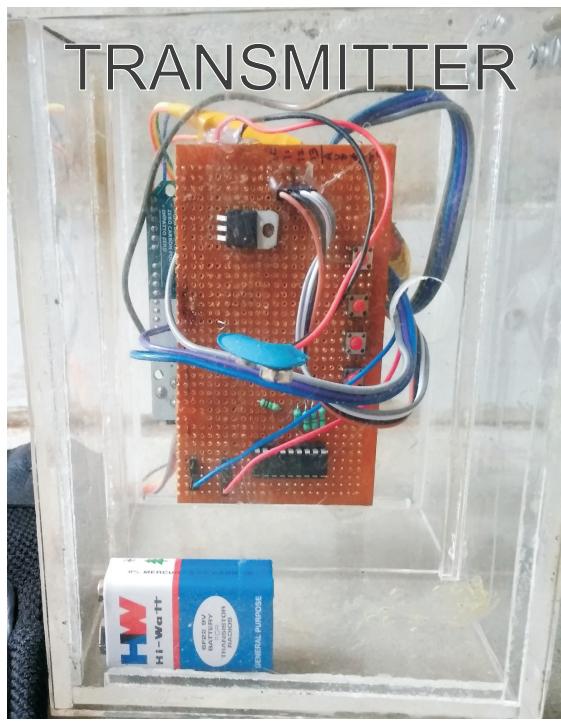
ARDUINO



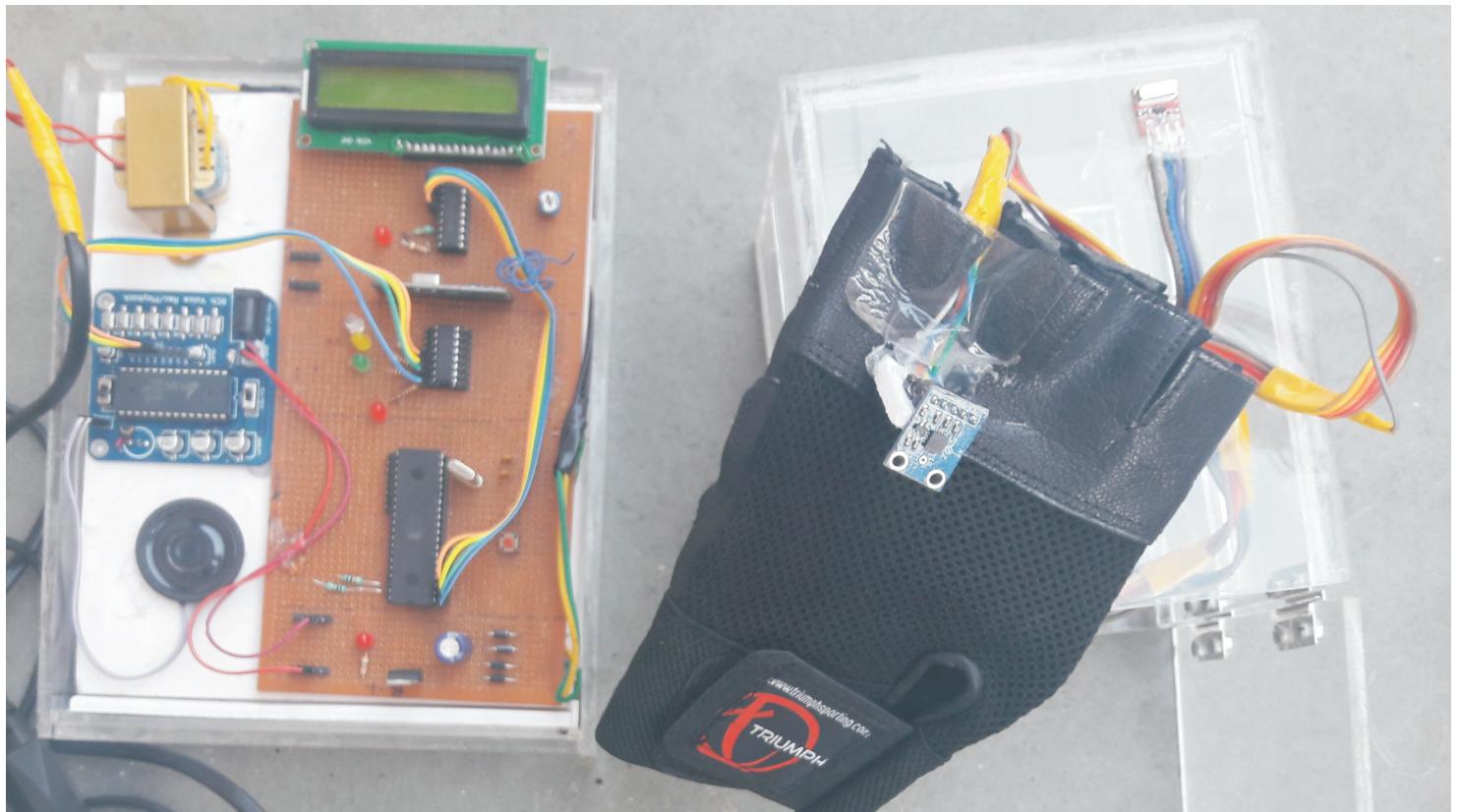
6.7 PICTURES OF CIRCUITS



TRANSMITTER



6.7 PICTURES OF CIRCUITS



6.8 SAMPLE CODE

Code for Micro-Controller

```
#include<reg52.h> //including sfr registers for ports of the controller
#include<lcd.h> // INCLUDE HEADER FILE

//LCD Module Connections
sbit RS = P0^0;
sbit EN = P0^1;
sbit D0 = P3^0;
sbit D1 = P3^1;
sbit D2 = P3^2;
sbit D3 = P3^3;
sbit D4 = P3^4;
sbit D5 = P3^5;
sbit D6 = P3^6;
sbit D7 = P3^7;

sbit p = P2^0;
sbit q = P2^1;
sbit r = P2^2;
sbit s = P2^3;
sbit t = P2^4;
sbit u = P2^5;

//accelerometer connection
sbit a=P1^0; // FOR X-AXIS VIBRATION
sbit b=P1^1; // FOR Y-AXIS VIBRATION
sbit c=P1^2; // FOR Z-AXIS VIBRATION
sbit d=P1^3;
```



```

//End LCD Module Connections
void Delay(int a)
{
    int j;
    int i;
    for(i=0;i<a;i++)
    {
        for(j=0;j<100;j++)
        {
        }
    }
}
void main()
{
    int i;

    Lcd8_Init();
    a=b=c=d=1;
    while(1)
    {
        p=q=r=s=t=u=0;
        if (a==1 && b==1 && c==1 && d==1)
        {
            p=q=r=s=t=u=0;
            Lcd8_Set_Cursor(1,0);
            Lcd8_Write_String(" WELCOME TO ");
            Lcd8_Set_Cursor(2,0);
            Lcd8_Write_String(" A.Y.D.T.I ");
            Delay(1000);
            Lcd8_Clear();
            Delay(1000);
        }
        else if (a==0 && b==1 && c==1 && d==1)
        {
            p=1;
            q=r=s=t=u=0;
            Lcd8_Set_Cursor(1,0);
            Lcd8_Write_String("PLEASE CALL");
            Lcd8_Set_Cursor(2,0);
            Lcd8_Write_String("DOCTOR");
            Delay(1000);
            Lcd8_Clear();
            Delay(1000);
        }
        else if (a==1 && b==0 && c==1 && d==1)
        {

```



```

q=1;
p=r=s=t=u=0;
Lcd8_Set_Cursor(1,0);
    Lcd8_Write_String("PLEASE GIVE ME");
Lcd8_Set_Cursor(2,0);
    Lcd8_Write_String("JUICE");
    Delay(1000);
    Lcd8_Clear();
    Delay(1000);
}
else if (a==1 && b==1 && c==0 && d==1)
{
r=1;
p=q=s=t=u=0;
Lcd8_Set_Cursor(1,0);
    Lcd8_Write_String("PLEASE GIVE ME");
Lcd8_Set_Cursor(2,0);
    Lcd8_Write_String("MEDICINE");
    Delay(1000);
    Lcd8_Clear();
    Delay(1000);
}
else if (a==1 && b==1 && c==1 && d==0)
{
s=1;
p=q=r=t=u=0;
Lcd8_Set_Cursor(1,0);
    Lcd8_Write_String("PLEASE GIVE ME");
Lcd8_Set_Cursor(2,0);
    Lcd8_Write_String("WATER");
    Delay(1000);
    Lcd8_Clear();
    Delay(1000);
}
}
}

```



6.8 SAMPLE CODE

Code for Arduino

```
// these constants describe the pins. They won't change:  
const int groundpin = 18;          // analog input pin 4 -- ground  
const int powerpin = 19;           // analog input pin 5 -- voltage  
const int xpin = A3;               // x-axis of the accelerometer  
const int ypin = A2;               // y-axis  
const int zpin = A1;               // z-axis (only on 3-axis models)  
  
int ledPin1 = 10;  
int ledPin2 = 11;  
int ledPin3 = 12;  
int ledPin4 = 13;  
  
void setup()  
{  
    // initialize the serial communications:  
    Serial.begin(9600);  
  
    // Provide ground and power by using the analog inputs as normal  
    // digital pins. This makes it possible to directly connect the  
    // breakout board to the Arduino. If you use the normal 5V and  
    // GND pins on the Arduino, you can remove these lines.  
    pinMode(ledPin1, OUTPUT);  
    pinMode(ledPin2, OUTPUT);  
    pinMode(ledPin3, OUTPUT);  
    pinMode(ledPin4, OUTPUT);  
    pinMode(groundpin, OUTPUT);  
    pinMode(powerpin, OUTPUT);  
    digitalWrite(groundpin, LOW);  
    digitalWrite(powerpin, HIGH);  
    digitalWrite(ledPin1, LOW);  
    digitalWrite(ledPin2, LOW);  
    digitalWrite(ledPin3, LOW);  
    digitalWrite(ledPin4, LOW);  
}
```



```
void loop()
{
    // print the sensor values:
    Serial.print(analogRead(xpin));
    // print a tab between values:
    Serial.print("\t");
    Serial.print(analogRead(ypin));
    // print a tab between values:
    Serial.print("\t");
    Serial.print(analogRead(zpin));
    Serial.println();
    // delay before next reading:
    delay(100);
    if (analogRead(ypin) <300)
    {
        digitalWrite(ledPin1, HIGH);
        digitalWrite(ledPin2, LOW);
        digitalWrite(ledPin3, LOW);
        digitalWrite(ledPin4, LOW);
    }

    else if (analogRead(ypin) >380)
    {
        digitalWrite(ledPin1, LOW);
        digitalWrite(ledPin2, HIGH);
        digitalWrite(ledPin3, LOW);
        digitalWrite(ledPin4, LOW);
    }
    else if (analogRead(xpin) <300)
    {
        digitalWrite(ledPin1, LOW);
        digitalWrite(ledPin2, LOW);
        digitalWrite(ledPin3, HIGH);
        digitalWrite(ledPin4, LOW);
    }

    else if (analogRead(xpin) >370)
    {
        digitalWrite(ledPin1, LOW);
        digitalWrite(ledPin2, LOW);
        digitalWrite(ledPin3, LOW);
        digitalWrite(ledPin4, HIGH);
    }
}
```



```
else if ((analogRead(ypin) >300) && (analogRead(ypin) <380)
&& (analogRead(xpin) >300) && (analogRead(xpin) <370))
{
    digitalWrite(ledPin1, LOW);
    digitalWrite(ledPin2, LOW);
    digitalWrite(ledPin3, LOW);
    digitalWrite(ledPin4, LOW);
}
}
```



7. Pros & Cons

7.1 *Advantages*

7.2 *Disadvantage*

7. Pros & Cons

7.1 Advantages

- Using this device we can find what the patient want to say more importantly user can communicate with Nurse /Doctor / Family Member.
- It is low Cost. If we made device more in Quantity.
- It is easy to use and it is user friendly device.
- No longer wire is needed to send data from patient to nurse.

7.2 Disadvantages

- This device can give only four output at this stage. In future we can make more Output.
- It will not work for those person whose hand is not working because we have made device for only hand. In future it can be developed for other working body part also.



8. Bibliography

8.1 Website

8. Bibliography

8.1 Websites

1. <http://www.atmel.com/images/doc0265.pdf>
This link contains information about 8051 Micro- Controller.
2. <https://www.engineersgarage.com/electronic-components/rf-module-transmitter-receiver>
This link contains information about 8051 RF Transmitter & Receiver.
3. <http://datasheet.octopart.com/A000066-Arduino-datasheet-38879526.pdf>
This link contains information about Arduino
4. <https://www.sparkfun.com/datasheets/Components/SMD/adxl335.pdf>
This link contains information about Accelerometer.

