GROUP ID: - 08

SMART HELMET

-FOR BLIND PEOPLE

NAME	ROLL NO
AKHIL KUMAR.S	19881A0504
DAGAM MYTHILI	19881A0515
GANDHAM SRI NITHYA	19881A0518
VAMALA ANKITHA	19881A0553
VASAMSETTI RAMYA SRI SUSHMA	19881A0557

CONTENTS:-

INTRODUCTION:-

- The aim of this IOT project is to design a voice based alerting system for the blind people .
- In this project **Ultrasonic Sensor** is used to detect obstacles in its path by continuously transmitting the ultrasonic waves .
- Arduino is used to control this project .
- This project is useful for blind people .

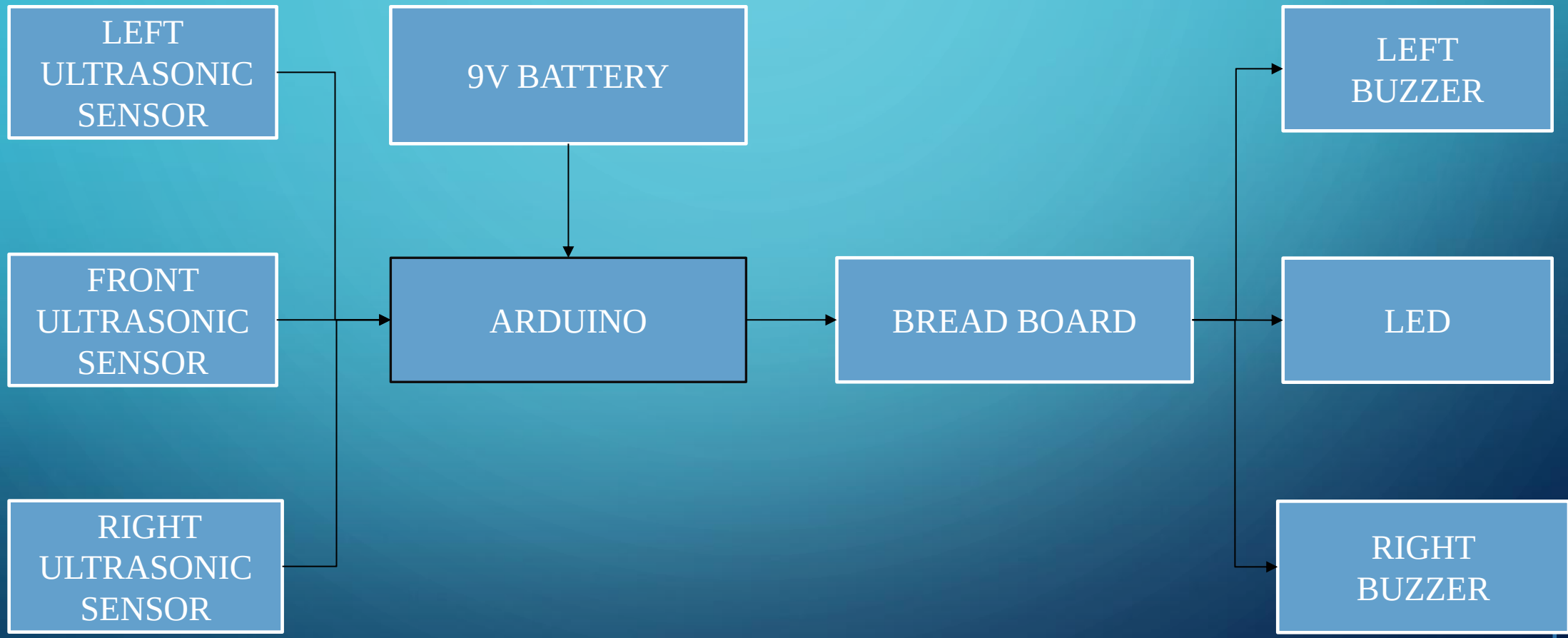
OBJECTIVES:-

- Obstacle detection .
- Affordable and Low budget.
- Voice/beep based alerts .
- Low power consumption .

PROBLEM STATEMANT:-

- This IOT project can also be used by patients suffering with various eye ailments like cataract, exophthalmia, post eye operative situations and others .
- This system can be modified into a more sophisticated version of itself by using high intensity ultrasonic waves to be uses as a navigation system for geological explorations .

BLOCK DIAGRAM:-



DESCRIPTION:-

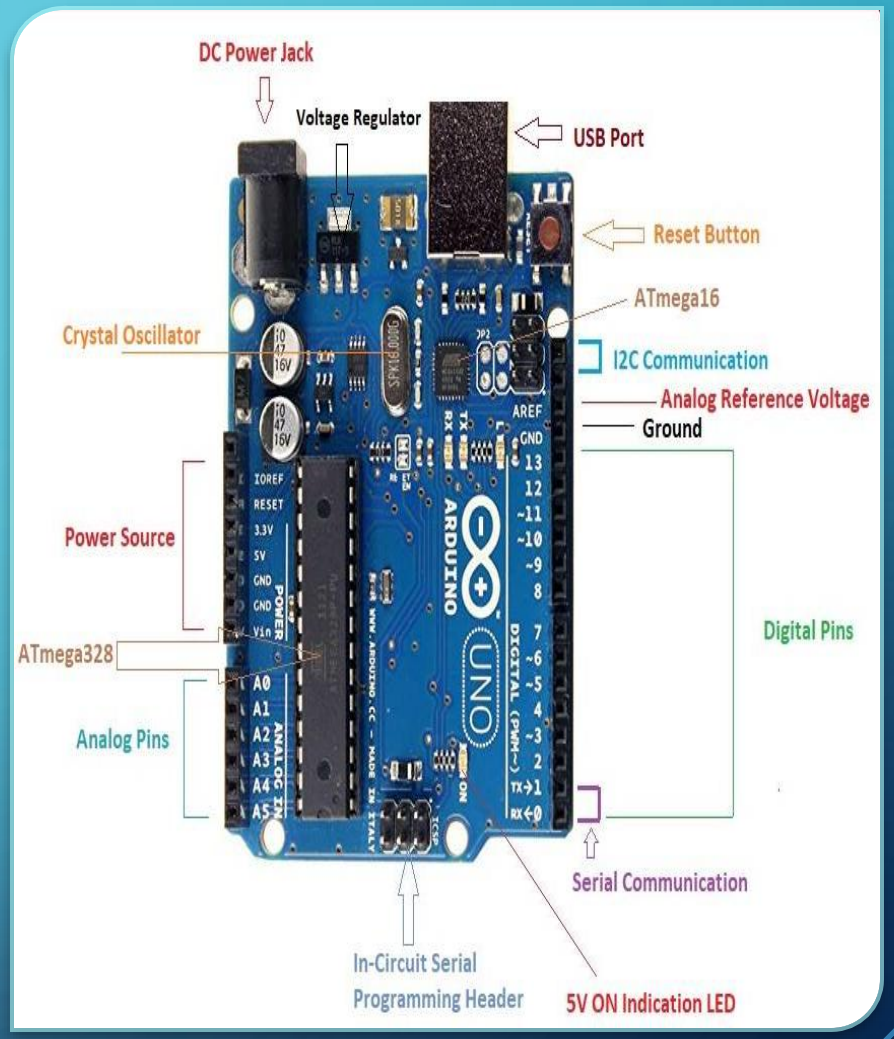
- The block diagram explains how the device works .
- The helmet for visually impaired and blind people explains the interfacing section of each component with Arduino and ultrasonic sensor .
- 9V Battery is also connected to Arduino and LED is also connected to Arduino through resistors .

EQUIPMENTS USED:-

- Arduino - 1 .
- Bread board – 1 .
- 9V Battery - 1 .
- Ultrasonic sensors - 3 .
- LED – 1 .
- Buzzer - 2 .
- Jumper wires - 22 .

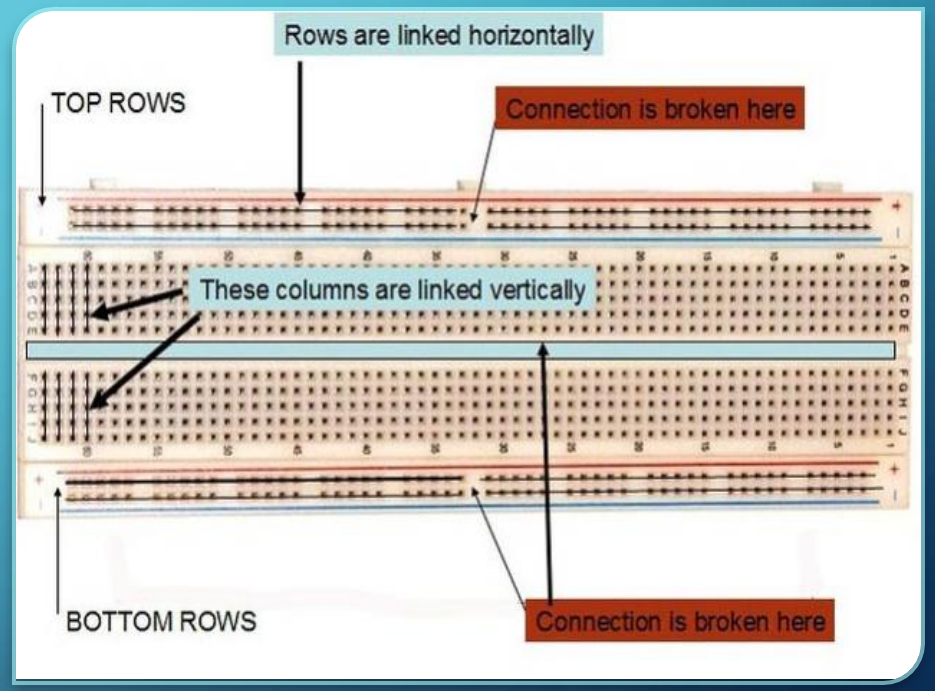
ARDUINO:-

- It is an open source electronics platform based on easy-to-use hardware and software .
- Arduino boards are able to read inputs [light on a sensor , a finger on a button…etc.] and turn it into an output [activating a motor , turning on an LED…etc.] .



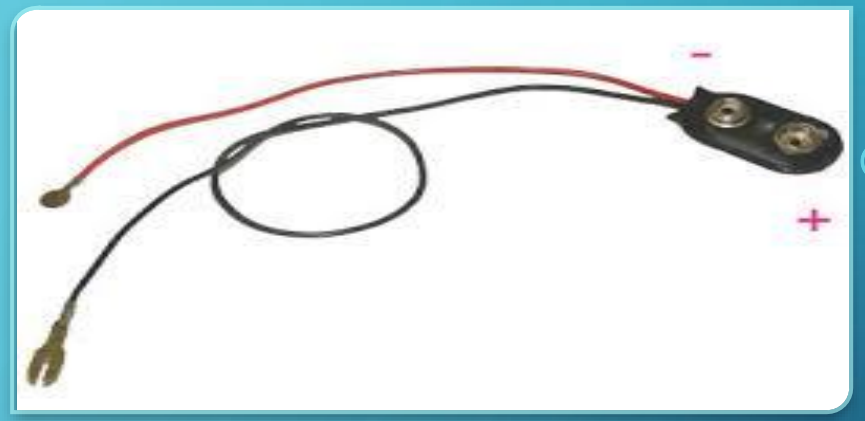
BREAD BOARD:-

- A breadboard is a rectangular plastic **board** with a bunch of tiny holes in it.
- These holes let you easily insert electronic components to prototype an electronic circuit, like this one with a battery, switch, resistor, and an LED



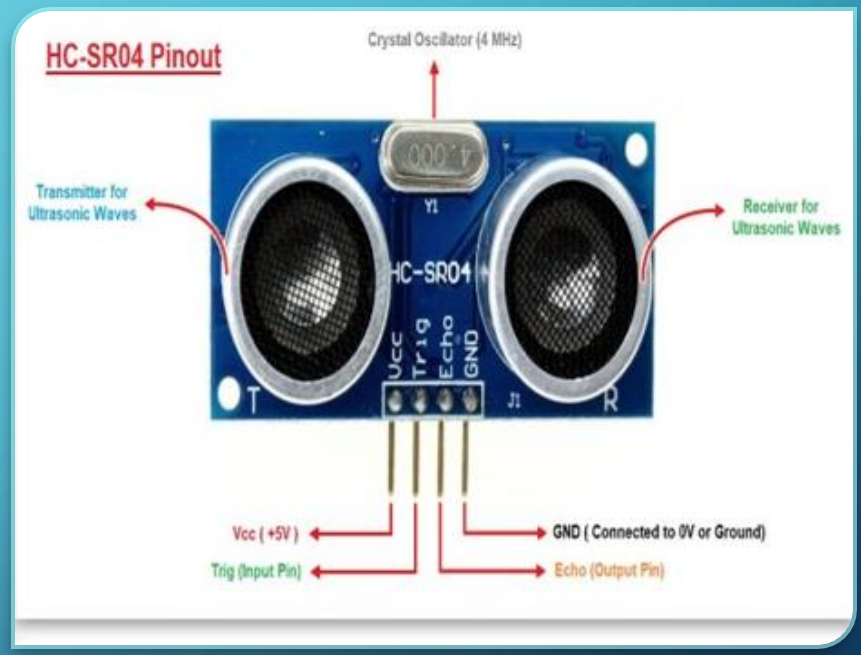
9V BATTERY:-

- It has a rectangular prism shape with rounded edges and a polarized snap connector at the top .
- This type is commonly **used** in smoke detectors, gas detectors, clocks, walkie-talkies, electric guitars and effects units.



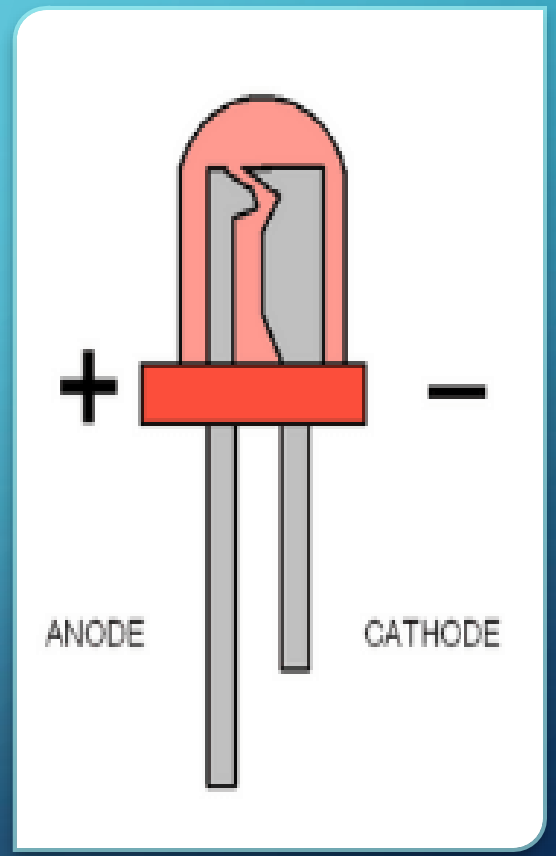
ULTRASONIC SENSOR:-

- It is used to measure the distance between the sensor and the object .
- It is gives perfect measurements between moving or stationary object .



LED(LIGHT EMITTING DIODE):-

- A device that produces a light on electrical and electronic equipment .
- Long node is known as positive, which is also known as anode .
- Small node is known as negative, which is also known as cathode .

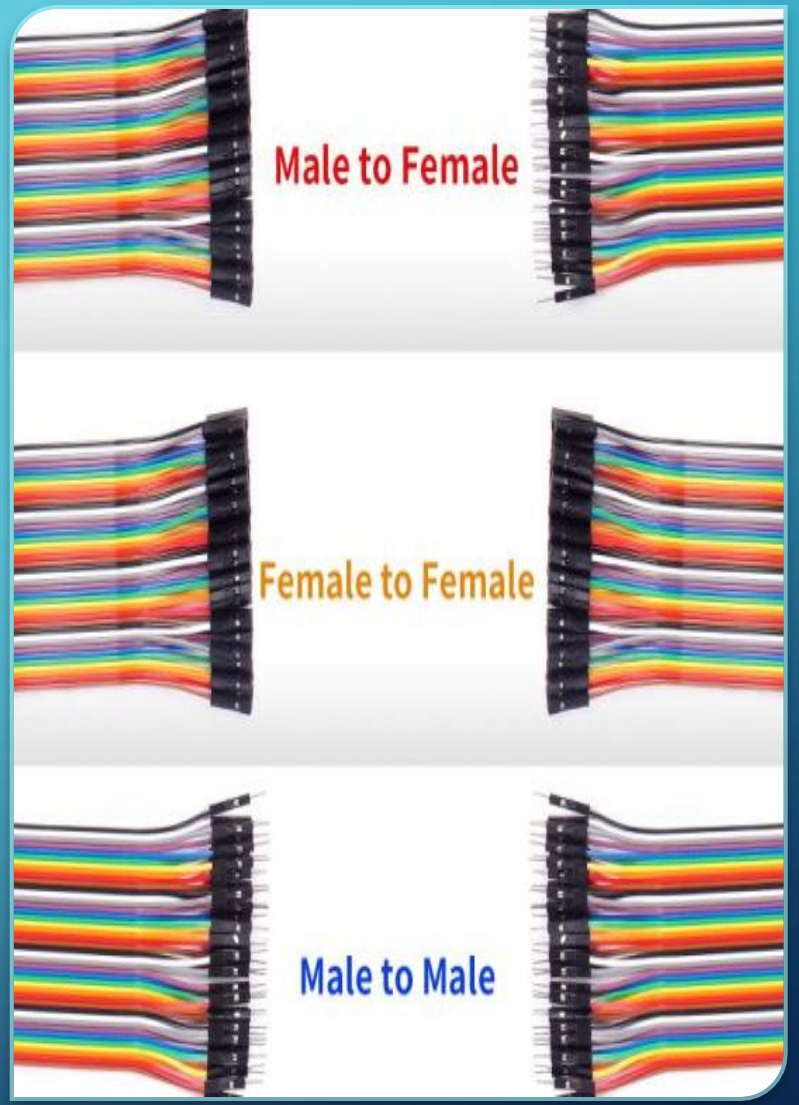


BUZZER (OR) BEEPER:-

- It is an audio signaling device, which may be mechanical, electronical, piezo .
- Typical uses of buzzers and beepers include alarm devices, timers, and confirmation of user input such as a mouse click or keystroke .

JUMPER WIRES:-

- **Jumper** cables is a smaller and more bendable corrugated cable which is used to connect antennas and other components to network cabling.
- There are three types of jumper wires as we see in the picture.



CIRCUIT DIAGRAM:-

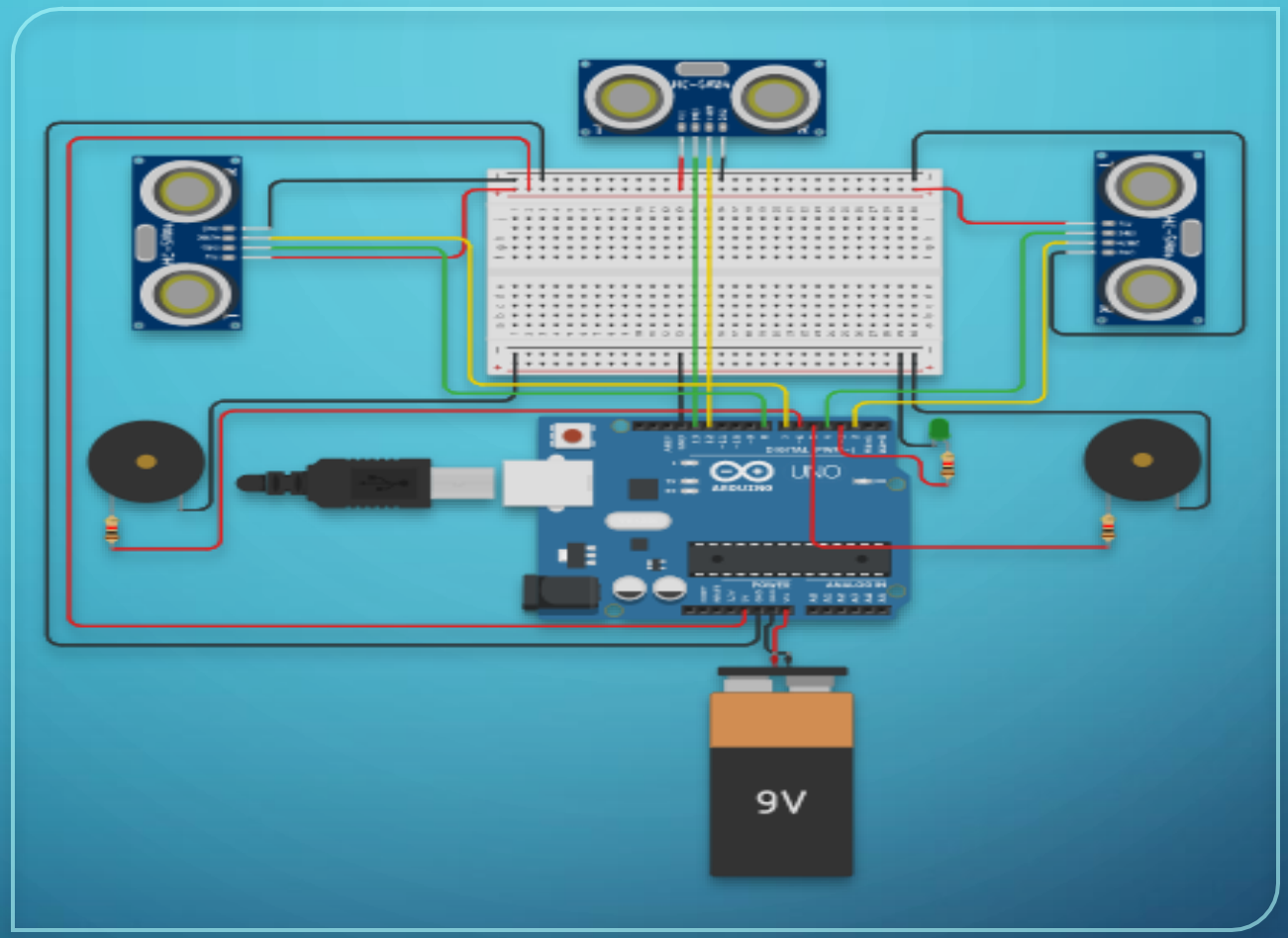


Figure:-This Circuit diagram represents about SMART HELMET IOT project .

CODE:-

```
#define trigPin1 (13)

#define trigPin2 (8)

#define trigPin3 (4)

#define echoPin1 (12)

#define echoPin2 (7)

#define echoPin3 (2)

#define buzzer1 (6)

#define buzzer2 (5)

#define LED (3)
```

```
void setup(){
        pinMode(trigPin1,OUTPUT);
        pinMode(echoPin1,INPUT);
        pinMode(trigPin2,OUTPUT);
        pinMode(echoPin2,INPUT);
        pinMode(trigPin3,OUTPUT);
        pinMode(echoPin3,INPUT);
        pinMode(buzzer1,OUTPUT);
        pinMode(buzzer2,OUTPUT);
         pinMode(LED,OUTPUT);
}
```

```
void loop(){
        long t1,t2,t3,d1,d2,d3;
        digitalWrite(trigPin1,LOW);
        delayMicroseconds(2);
        digitalWrite(trigPin1,HIGH);
        delayMicroseconds(10);
        digitalWrite(trigPin1,LOW);
        t1=pulseIn(echoPin1,HIGH);
        d1=(t1*0.034)/2;
        digitalWrite(trigPin2,LOW);
        delayMicroseconds(2);
```

```
digitalWrite(trigPin2,HIGH);
delayMicroseconds(10);
digitalWrite(trigPin2,LOW);
t2=pulseIn(echoPin2,HIGH);
d2=(t2*0.034)/2;
digitalWrite(trigPin3,LOW);
delayMicroseconds(2);
digitalWrite(trigPin3,HIGH);
delayMicroseconds(10);
digitalWrite(trigPin3,LOW);
t3=pulseIn(echoPin3,HIGH);
```

```
d3=(t3*0.034)/2;
if (d1<80){
        digitalWrite(buzzer1,HIGH);
        digitalWrite(buzzer2,HIGH);
        digitalWrite(LED,HIGH);
}
else{
        digitalWrite(buzzer1,LOW);
        digitalWrite(buzzer2,LOW);
        digitalWrite(LED,LOW);
}
```

```
delay(500);
if (d2<80){
        digitalWrite(buzzer1,HIGH);
        digitalWrite(LED,HIGH);
}
else{
        digitalWrite(buzzer1,LOW);
        digitalWrite(LED,LOW);
}
delay(500);
if (d3<80){
```

```
            digitalWrite(buzzer2,HIGH);
            digitalWrite(LED,HIGH);
        }
        else{
            digitalWrite(buzzer2,LOW);
            digitalWrite(LED,LOW);
        }
        delay(500);
    }
```

ADVANTAGES:-

- It guides blind people .
- Alerts through voice(beep) based sounds .
- It can detect obstacle using ultrasonic sensor .
- Low power consumption .
- Affordable and Low cost design .

CONCLUSION:-

- This IOT project will help the blind people to be more alert about the obstacles .
- This project can be also used in low visibility conditions like winter morning example: fog .
- This project is mainly for the blind people to avoid obstacles by themselves .

THANK YOU