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Batch C1

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MAIoT Lab Assignment 5

Problem statement:
To stimulate an operation of obstacle detection and notifying it with a buzzer or LED using Raspberry-Pi/Beaglebone black board/TinkerCAD Arduino, etc.

Objectives:
To develop an obstacle detection system using Arduino, ultra-sonic sensor, buzzer and LED.
To demonstrate when the ultrasonic sensor detects an obstacle at a distance (3 cm) the arduino orders the buzzer to ring and the LED to light up.

Theory:
Algorithm
step 1: Start
step 2: Make neccessary connections of ultrasonic sensor and buzzer with arduino board
step 3: Read digital input from sensor.
step 4: When distance is less than 3 cm, keep buzzer high.
step 5: Wait, some time and repeat from step 3.
step 6: End

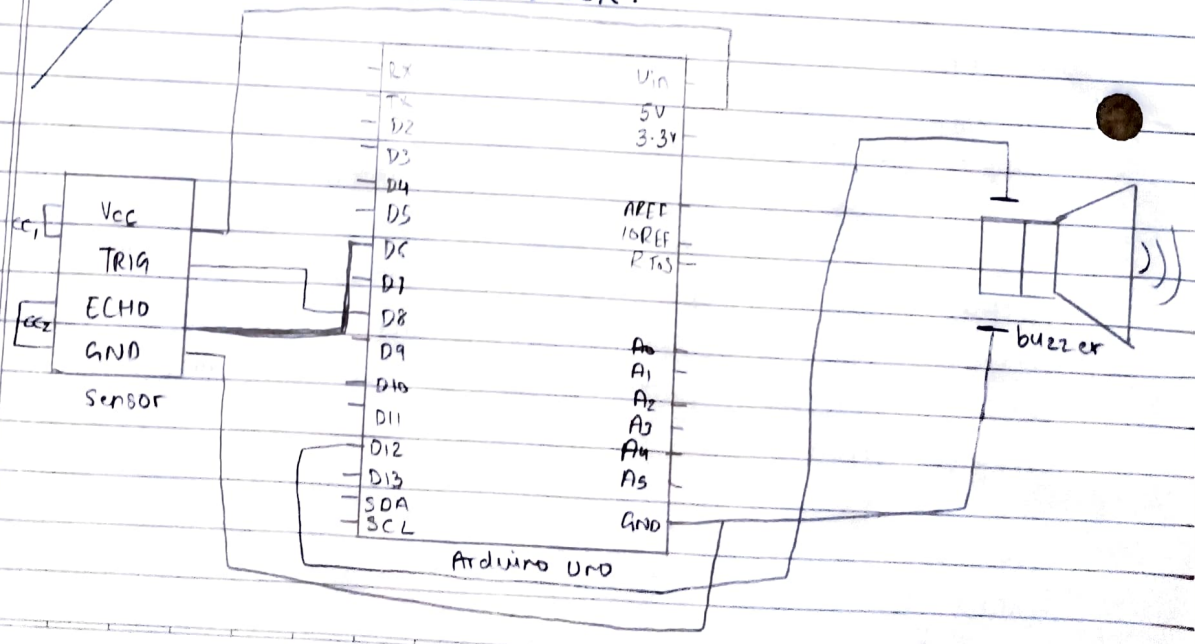
Code:
```
long inch, cm, duration;
  void setup() {
```

Teacher's Sign.:

```
pinMode(6, Input);
pinMode(8, output);
Serial.begin(9600);
}
void loop() {
  duration = pulseIn(6, HIGH);
  cm = (duration/29)/2;
  Serial.println(inch);
  if (cm > 3) {
     tone(12, 100);
  }
  else {
     notone(12); }
  delay(1000);
}
```

FAQ's

1) Draw the block diagram of Ultrasonic sensor AC SR04 interface with Arduino block.



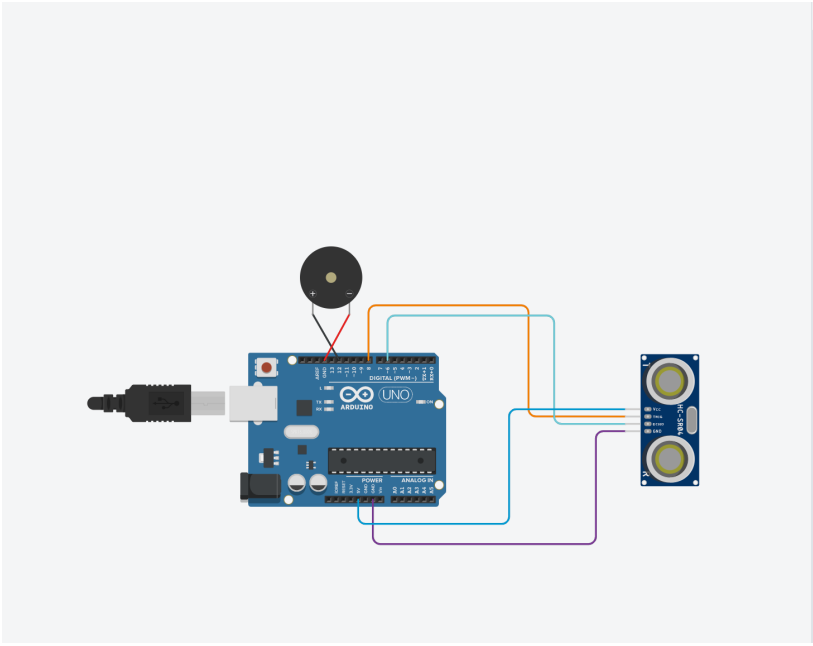
Teacher's Sign.:

2) Describe the ultrasonic sensor ~~HCR~~ HC5R04 sensor works.

→ The HC5R04 ultrasonic sensor uses sonar to determine the distance of an object just like bats do. It offers excellent non contact range detection with high accuracy and stable reading is an easy-to-use package from 2cm to 400 cm or 1" to 13 feet.

3) State application based on ultrasonic sensor HC5R04.

→1) Used in wireless charging
2) Measure distance between 2 objects.
3) Humidifiers.
4) Burglar alarms.
5) To find depth of pits, wells by transmitting waves through water.



```
long inch,cm,duration;
void setup()
{

pinMode(6,INPUT);
pinMode(8,OUTPUT);

 Serial.begin(9600);

}

void loop()

{
    digitalWrite(8,LOW);
    delayMicroseconds(2);
    digitalWrite(8,HIGH);
    delayMicroseconds(2);
    digitalWrite(8,LOW);

    duration = pulseIn(6,HIGH);
    inch = (duration/74)/2;
    cm = (duration/29)/2;

    Serial.print(inch);
    Serial.print("INches :");
    Serial.println();
    Serial.print(cm);
    Serial.print("Cm :");
    Serial.println();
    delay(100);

}
```