Assignment 4

DATE	31 OCTOBER 2022
NAME	GAYATHRI R.A
REGISTER NUMBER	962819106015
TEAM ID	PNT2022TMID34905

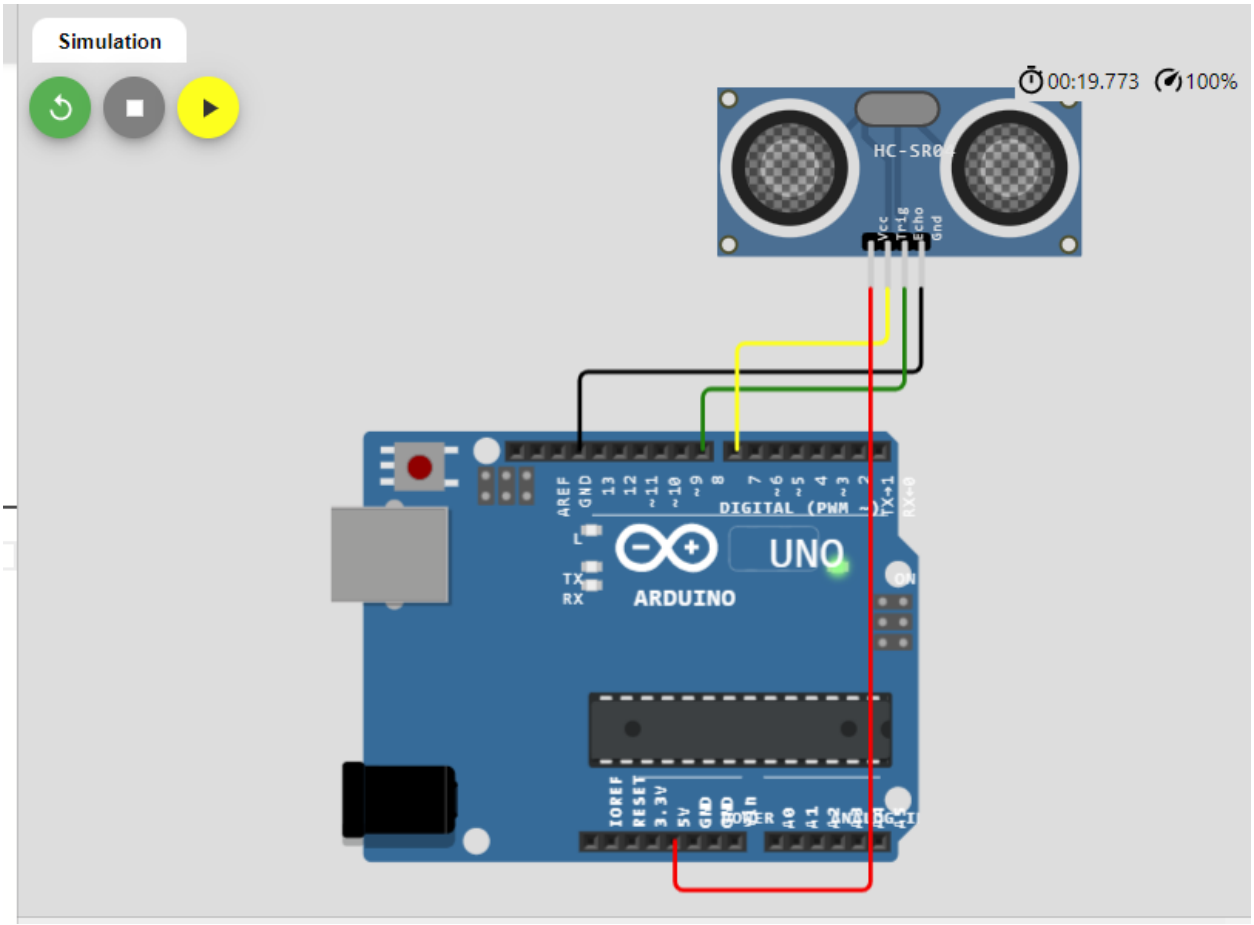
Write Code and connections in wokwi for ultrasonic sensor. Whenever distance is less than 100 cms send “Alert” to ibm cloud and display in device recent events.

Program code:

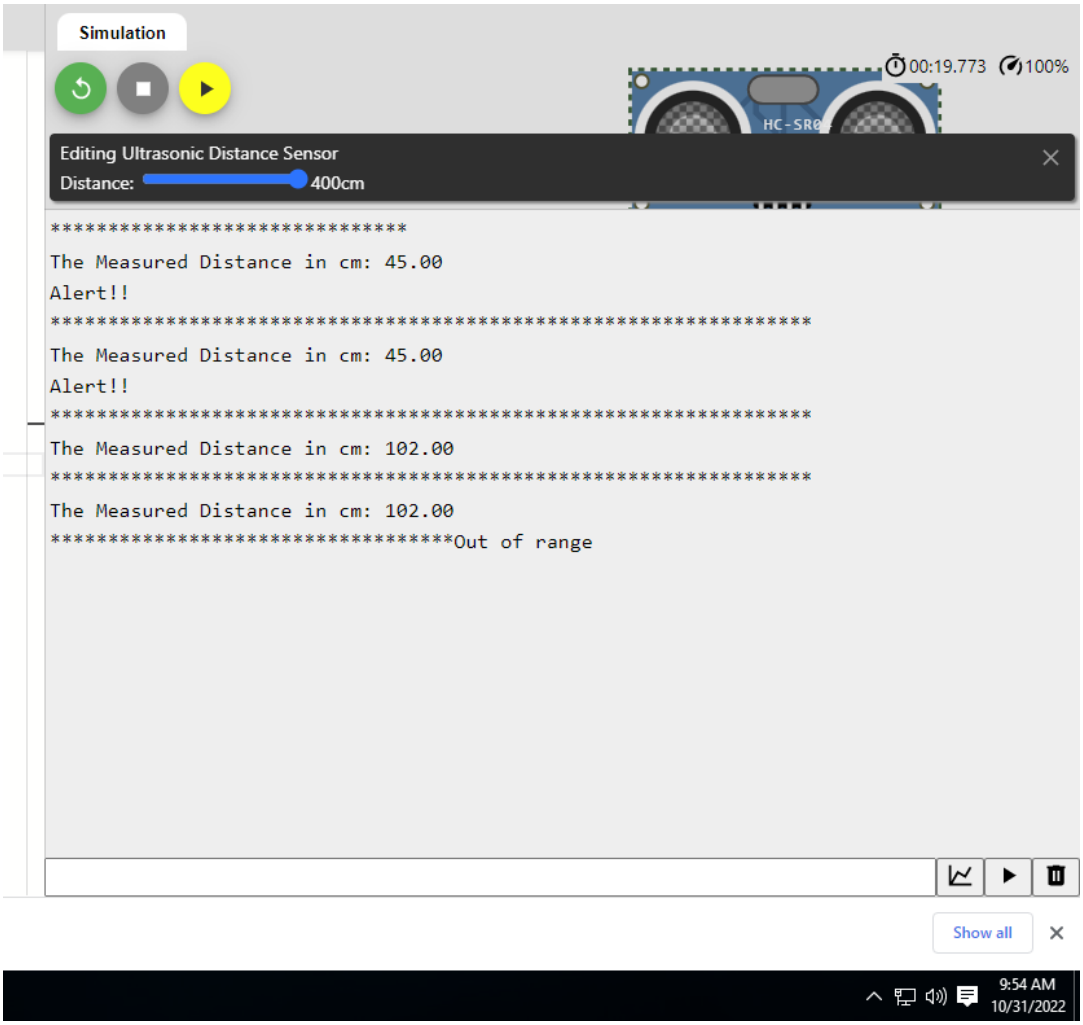
```
const int TRIG_PIN = 7 ;
const int ECHO_PIN = 8;
const unsigned int MAX_DIST = 23200;
void setup()
{
  pinMode(TRIG_PIN, OUTPUT);
  digitalWrite(TRIG_PIN, LOW);
  pinMode(ECHO_PIN, INPUT ) ;
  Serial.begin(9600);
}
void loop()
{
  unsigned long t1;
  unsigned long t2;
  unsigned long pulse_width;
  float cm;
  float inches;
  digitalWrite(TRIG_PIN, HIGH);
  delayMicroseconds(10);
  digitalWrite(TRIG_PIN, LOW);
  while (digitalRead( ECHO_PIN )==0 );
  t1= micros ();
  while (digitalRead(ECHO_PIN) == 1);
  t2= micros ();
  pulse_width = t2-t1;
  cm=pulse_width / 58 ;
  inches = pulse_width/148.0;
  if (pulse_width >MAX_DIST )
  {
  Serial.println("Out of range");
  }
```

```
  else
  {
     Serial.println("*********************************");
     Serial.print("The Measured Distance in cm: ");
     Serial.println(cm);
     if( cm < 100 )
  {
    Serial.println("Alert!!");
  }
     Serial.print("*********************************");
  }
  delay(1000);
}
```

Circuit:



Output:


Simulation
00:19.773
100%
HC-SR0
Editing Ultrasonic Distance Sensor
Distance:
400cm
****
The Measured Distance in cm: 45.00
Alert!!
****
The Measured Distance in cm: 45.00
Alert!!
****
The Measured Distance in cm: 102.00
****
The Measured Distance in cm: 102.00
**********Out of range
Show all
9:54 AM
10/31/2022

Wokwi code:

sketch.ino ● diagram.json ● Library Manager

```
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void setup()
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 pinMode(TRIG_PIN, OUTPUT);
 digitalWrite(TRIG_PIN, LOW);
 pinMode(ECHO_PIN, INPUT ) ;
 Serial.begin(9600);
}
void loop()
{
unsigned long t1;
unsigned long t2;
unsigned long pulse_width;
float cm;
float inches;
digitalWrite(TRIG_PIN, HIGH);
delayMicroseconds(10);
digitalWrite(TRIG_PIN, LOW);
while (digitalRead( ECHO_PIN )==0 );
t1= micros ();
while (digitalRead(ECHO_PIN) == 1);
t2= micros ();
pulse_width = t2-t1;
cm=pulse_width / 58 ;
inches = pulse_width/148.0;
if (pulse_width >MAX_DIST )
{
Serial.println("Out of range");
}
else
{
Serial.println("*********************************");
 {
 Serial.println("Out of range");
 }
 else
 {
 Serial.println("*********************************");
 Serial.print("The Measured Distance in cm: ");
 Serial.println(cm);
 if( cm < 100 )
 {
   Serial.println("Alert!!");
 }
 Serial.print("*********************************");
 }
 delay(1000);
 }

```