Assignment 4

DATE	31 OCTOBER 2022
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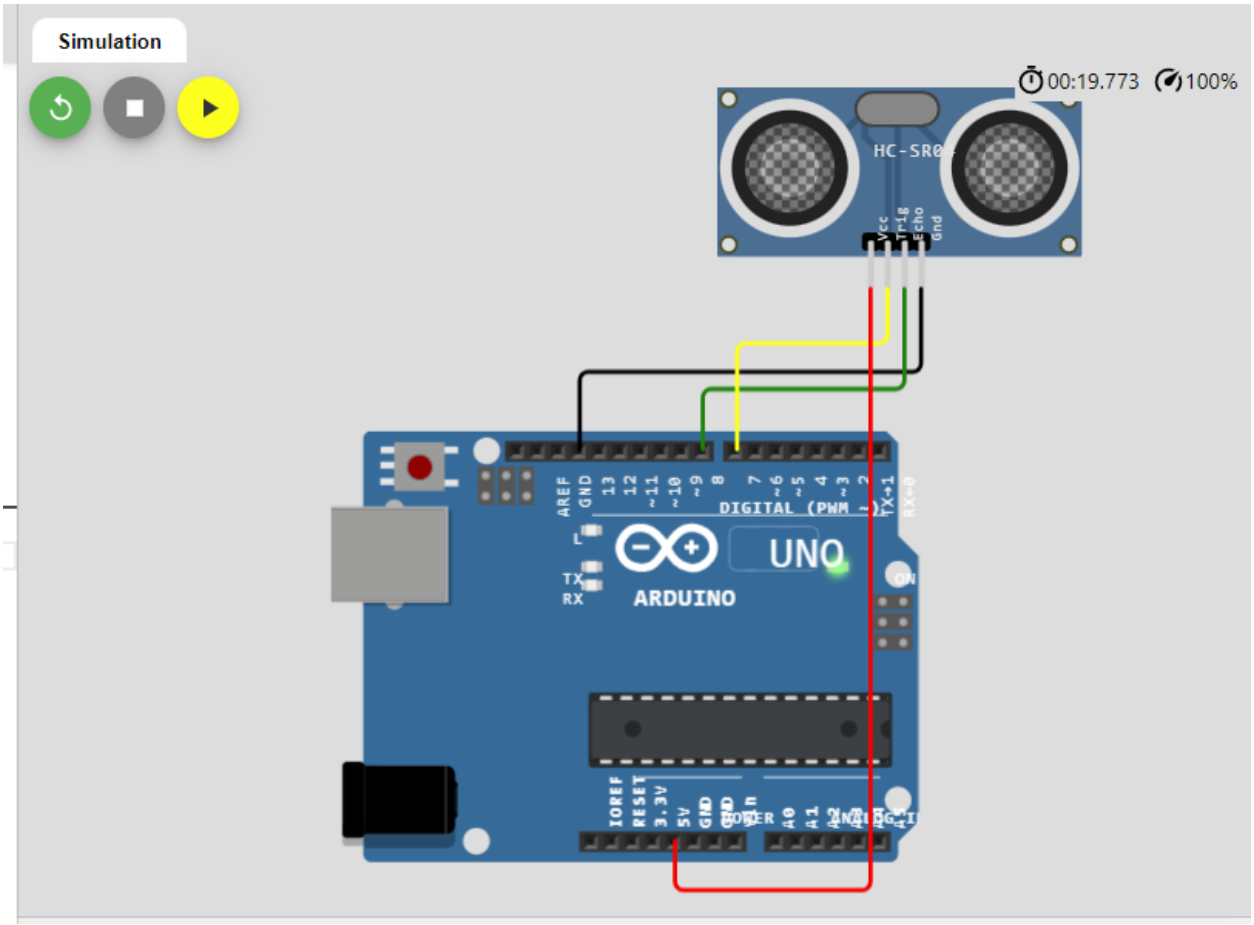
Write Code and connections in wokwi for ultrasonic sensor. Whenever distance is less than 100 cms send “Alert” to ibm cloud and display in device recent events.

Program code:

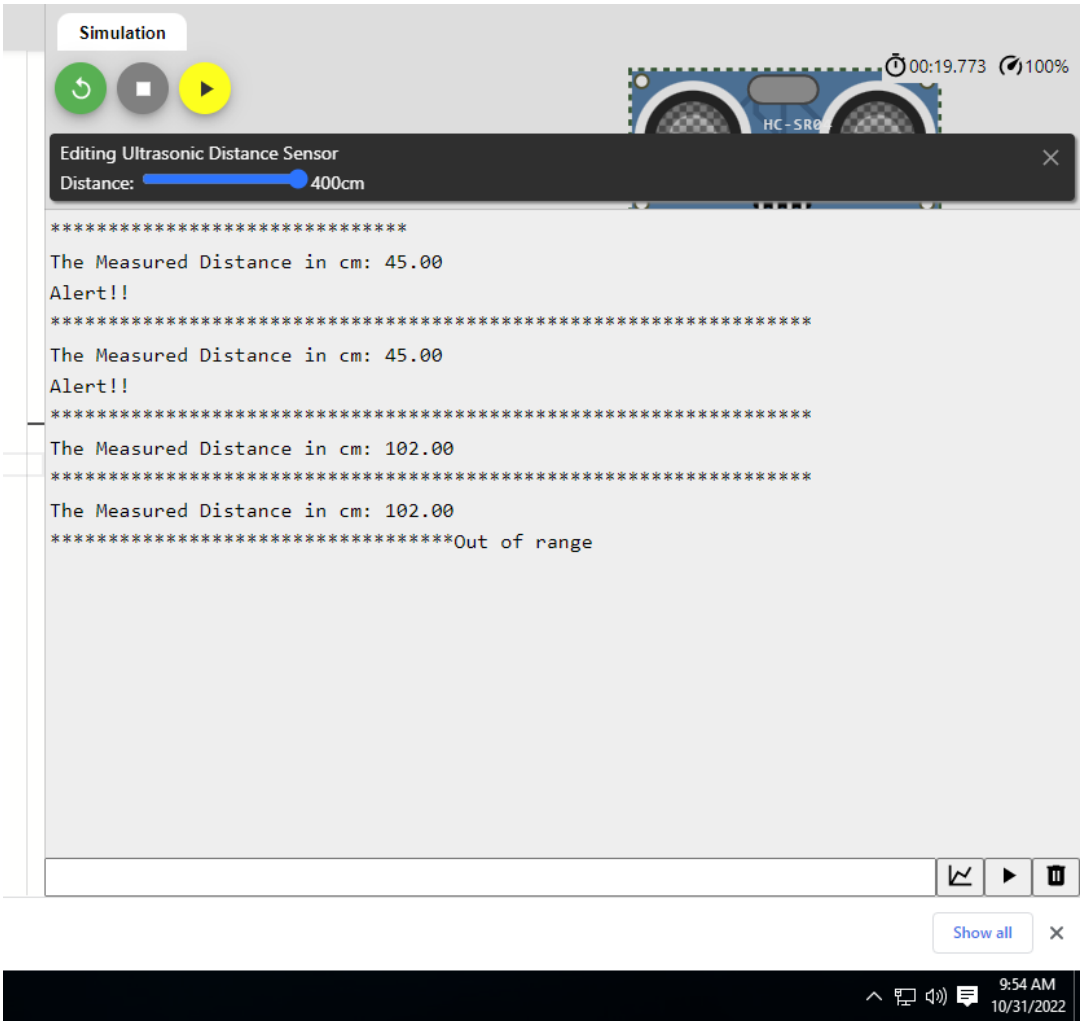
```
const int TRIG_PIN = 7 ;
const int ECHO_PIN = 8;
const unsigned int MAX_DIST = 23200;
void setup()
{
  pinMode(TRIG_PIN, OUTPUT);
  digitalWrite(TRIG_PIN, LOW);
  pinMode(ECHO_PIN, INPUT ) ;
  Serial.begin(9600);
}
void loop()
{
  unsigned long t1;
  unsigned long t2;
  unsigned long pulse_width;
  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);
 }

```