Assignment 4

Date	22 October 2022
Team ID	PNT2022TMID17614
Project Name	Project - Smart Farmer - IoT Enabled Smart Farming Application
Maximum marks	4 Marks

Assignment 4 Title:

Write code and connections in Wokwi for ultrasonic sensor. Whenever distance is less than 100cms send “alert” to IBM cloud and display in device recent events.

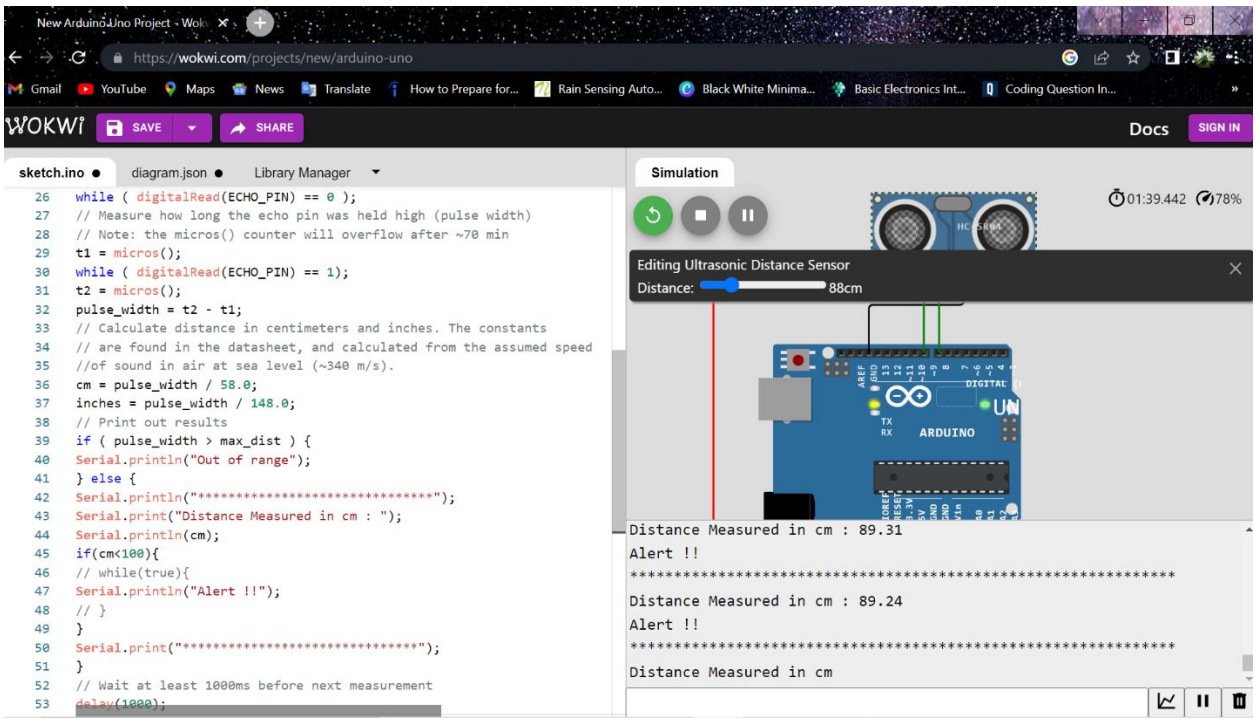
Program:

```
// ARDUINO PINS (TRIGGER PIN, ECHO PIN)
const int TRIG_PIN = 7;
const int ECHO_PIN = 8;
// Anything over 400 cm (23200 us pulse) is "out of range"
const unsigned int max_dist = 23200;
void setup() {
// The Trigger pin will tell the sensor to range find
pinMode(TRIG_PIN, OUTPUT);
digitalWrite(TRIG_PIN, LOW);
//Set Echo pin as input to measure the time duration of pulse returning back
from the distance sensor
pinMode(ECHO_PIN, INPUT);
// We'll use the serial monitor to view the sensor output
Serial.begin(9600);
}
void loop() {
unsigned long t1;
unsigned long t2;
unsigned long pulse_width;
float cm;
float inches;
// Hold the trigger pin high for at least 10 us
digitalWrite(TRIG_PIN, HIGH);
delayMicroseconds(10);
digitalWrite(TRIG_PIN, LOW);
// Wait for pulse on echo pin
while ( digitalRead(ECHO_PIN) == 0 );
// Measure how long the echo pin was held high (pulse width)
// Note: the micros() counter will overflow after ~70 min
t1 = micros();
while ( digitalRead(ECHO_PIN) == 1);
```

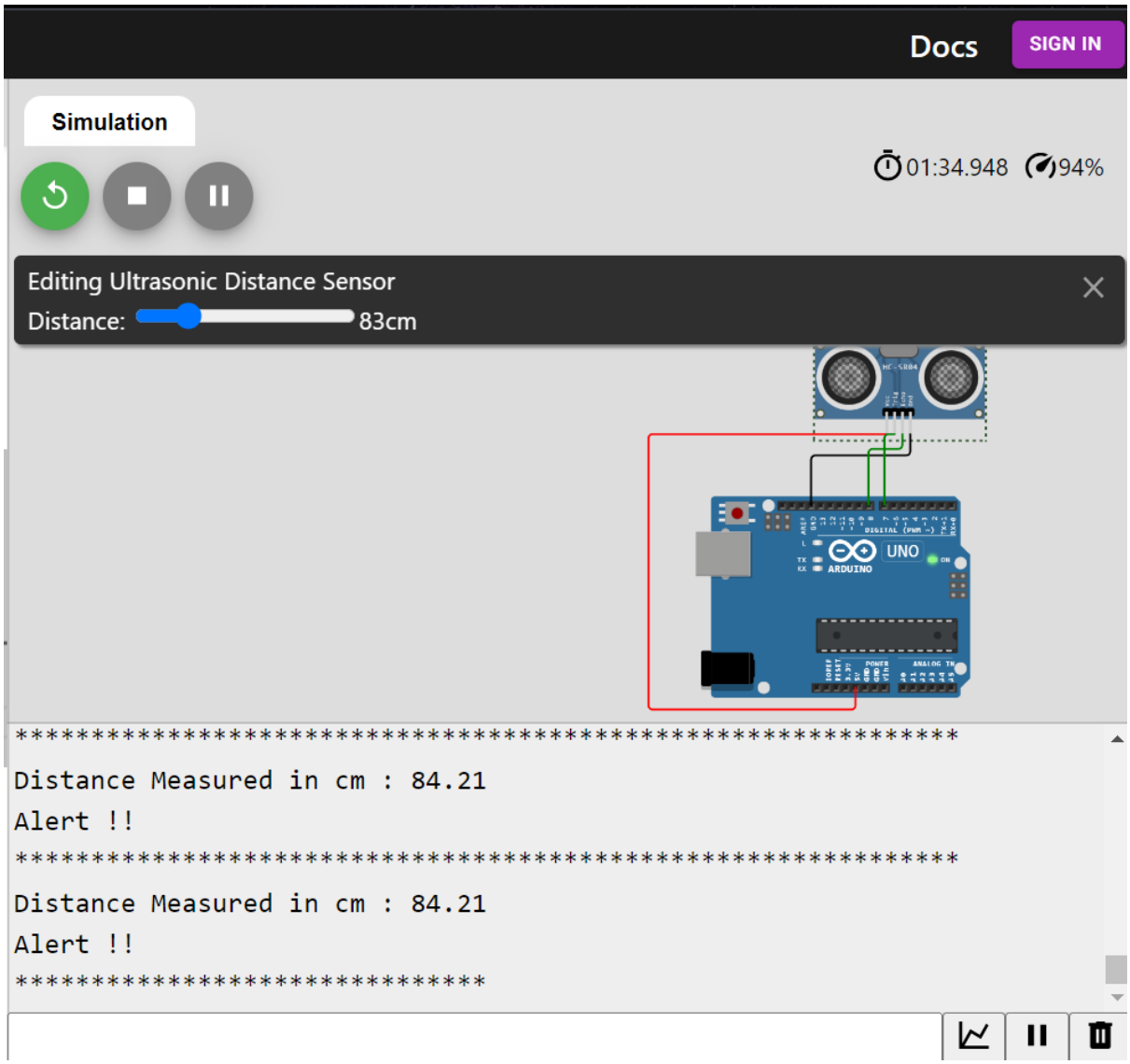
```
t2 = micros();
pulse_width = t2 - t1;
// Calculate distance in centimeters and inches. The constants
// are found in the datasheet, and calculated from the assumed speed
//of sound in air at sea level (~340 m/s).
cm = pulse_width / 58.0;
inches = pulse_width / 148.0;
// Print out results
if ( pulse_width > max_dist ) {
Serial.println("Out of range");
} else {
Serial.println("******************************");
Serial.print("Distance Measured in cm : ");
Serial.println(cm);
if(cm<100){
// while(true){
Serial.println("Alert !!");
// }
}
Serial.print("******************************");
}
// Wait at least 1000ms before next measurement
delay(1000);
}
```

Output:

i)



ii)



Assessment link:

https://wokwi.com/projects/347645919343149651