Assignment–4

Write code and connections in wokwi for ultrasonic sensor. Whenever distance islessthan100cmssend“alert”toibmcloudanddisplayindevicerecentevents

AssignmentDate	18 NOVEMBER 2022
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MaximumMarks	2Marks

PROGRAM:

```
//ARDUINOPINS(TRIGGER PIN,ECHOPIN)
constintTRIG_PIN=7;cons
tintECHO_PIN=8;

//Anything over400cm(23200 uspulse)
is"outofrange"constunsignedintmax_dist= 23200;

voidsetup(){

  //TheTrigger pinwilltell thesensor
  torangefindpinMode(TRIG_PIN,OUTPUT);
  digitalWrite(TRIG_PIN,LOW);

  //SetEchopinasinputtomeasure thetimeduration ofpulsereturningbackfromthe distancesensorpinMode(ECHO_PIN,INPUT);

  //We'll usetheserialmonitor toviewthesensoroutput
  Serial.begin(9600);
```

```
}

voidloop(){

  unsignedlongt1;un
  signedlongt2;
  unsignedlongpulse_width;fl
  oatcm;
  floatinches;

  //Holdthetrigger pinhigh foratleast
  10usdigitalWrite(TRIG_PIN,HIGH);delayMicrosecon
  ds(10);
  digitalWrite(TRIG_PIN,LOW);

  //Waitfor pulse onechopin
  while(digitalRead(ECHO_PIN)==0);

  //Measure howlongtheecho pinwasheld high(pulsewidth)
  //Note:themicros()counterwilloverflowafter~70mint1=micros();
  while(digitalRead(ECHO_PIN)==1);t2=
  micros();
  pulse_width=t2- t1;

  //Calculatedistanceincentimetersandinches.Theconstants
  //arefoundinthedatasheet,and calculatedfromtheassumedspeed
  //ofsound inairatsealevel(~340m/s).cm=
  pulse_width/58.0;
  inches=pulse_width/148.0;

  //Printoutresults
```

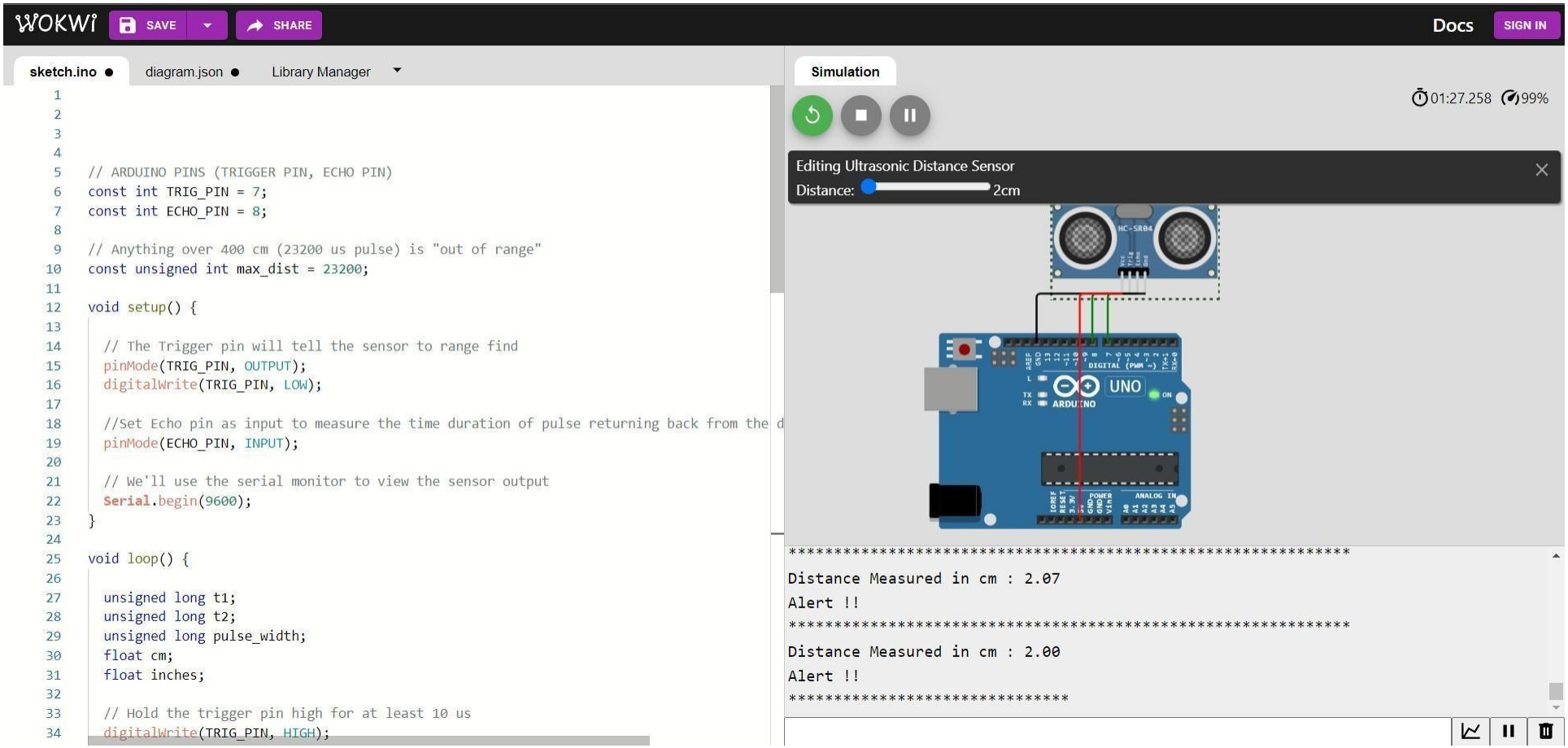
```
  if(pulse_width>max_dist) {
    Serial.println("Outofrange");
  }else
    {Serial.println("******************************")
    ;Serial.print("DistanceMeasured incm:");
    Serial.println(cm);

    if(cm<100){
      //while(true){
      Serial.println("Alert!!");
      //}
    }

    Serial.print("******************************");
  }

  //Waitatleast1000msbefore
  nextmeasurementdelay(1000);
}
```

OUTPUT :


WOKWi
SAVE
SHARE
Docs
SIGN IN
sketch.ino
diagram.json
Library Manager
// 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 d
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);
Simulation
01:27.258
99%
Editing Ultrasonic Distance Sensor
Distance:
2cm
HC-SR04
UNO
ARDUINO
****
Distance Measured in cm : 2.07
Alert !!
****
Distance Measured in cm : 2.00
Alert !!
****

WOKWi SAVE SHARE Docs SIGN IN

sketch.ino ● diagram.json ● Library Manager

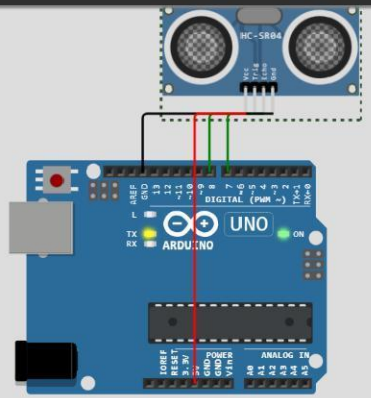
```
1
2
3
4
5   // ARDUINO PINS (TRIGGER PIN, ECHO PIN)
6   const int TRIG_PIN = 7;
7   const int ECHO_PIN = 8;
8
9   // Anything over 400 cm (23200 us pulse) is "out of range"
10  const unsigned int max_dist = 23200;
11
12  void setup() {
13
14    // The Trigger pin will tell the sensor to range find
15    pinMode(TRIG_PIN, OUTPUT);
16    digitalWrite(TRIG_PIN, LOW);
17
18    //Set Echo pin as input to measure the time duration of pulse returning back from the d
19    pinMode(ECHO_PIN, INPUT);
20
21    // We'll use the serial monitor to view the sensor output
22    Serial.begin(9600);
23  }
24
25  void loop() {
26
27    unsigned long t1;
28    unsigned long t2;
29    unsigned long pulse_width;
30    float cm;
31    float inches;
32
33    // Hold the trigger pin high for at least 10 us
34    digitalWrite(TRIG_PIN, HIGH);
```

Simulation

00:47.106 100%

Editing Ultrasonic Distance Sensor

Distance: 268cm




```
Distance Measured in cm : 271.79
************************************************************
Distance Measured in cm : 271.72
************************************************************
Distance Measured in cm : 271.72
************************************************************
Distance Measured in cm : 271.79
```