TEAM ID : PNT2022TMID45173

Name: Angalaparameshwari A

Roll no :812019106004

Assignment 4 :

Write code and connections in wokwi for the ultrasonic sensor. Whenever the distance is less than 100 cms send an "alert" to the IBM cloud and display in the device recent events.

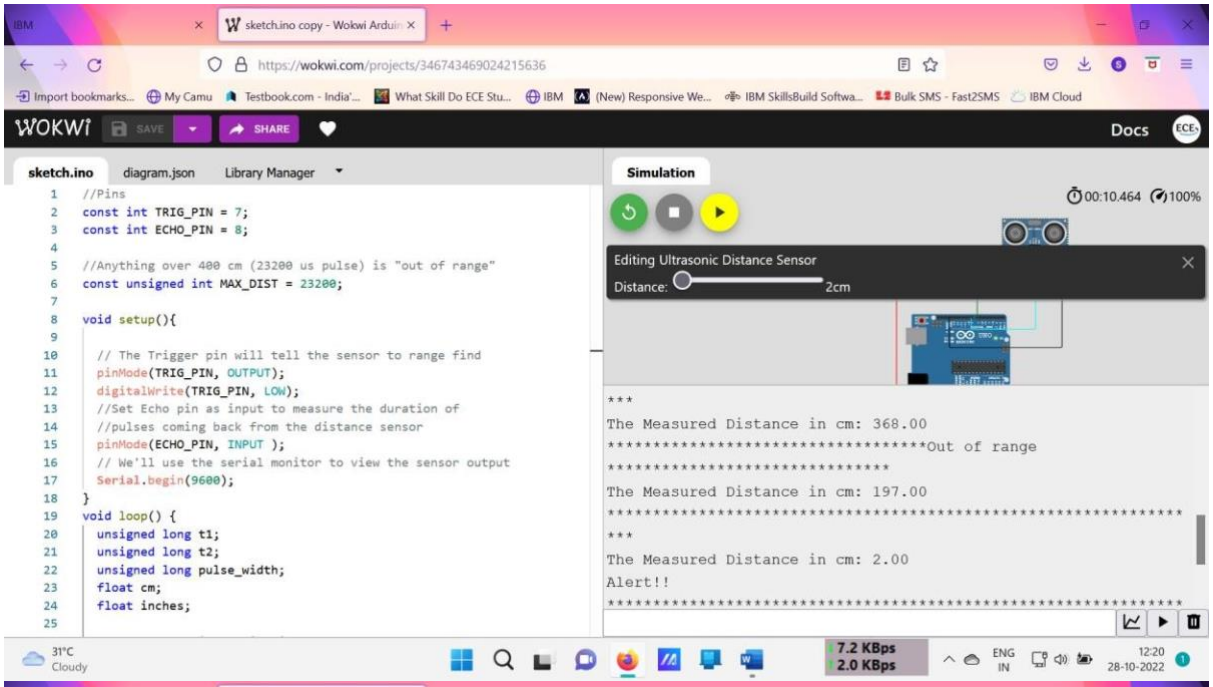
Program

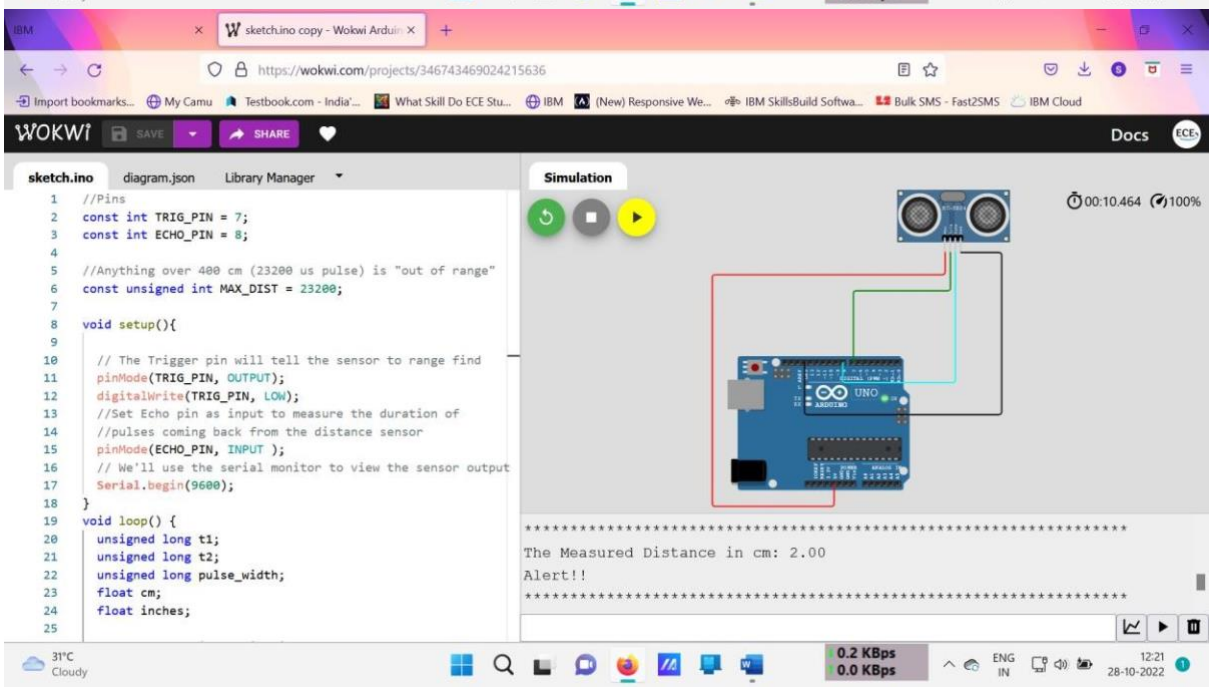
```
//Pins const int
TRIG_PIN = 7; const int
ECHO_PIN = 8;

//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 duration of
//pulses coming 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 ();
```

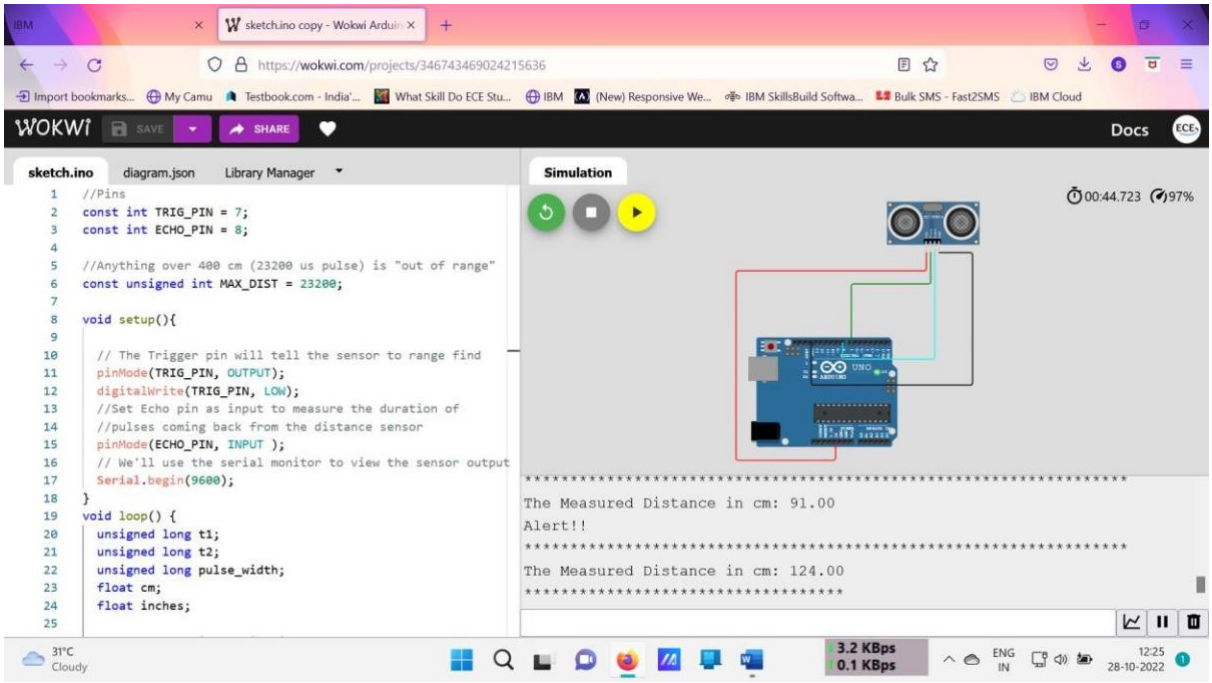
```
  pulse_width = t2-t1;
  // Calculate distance in centimeters and inches. The constants
  //are found in the datasheet, and calculated from the assumed speed
  // of sound in air at sea level (- 340m/s)
cm=pulse_width/ 58 ;   inches =
pulse_width/148.0;   // Print out results
if (pulse_width>MAX_DIST){
    Serial.println("Out of range");
    }
else{
      Serial.println("********************************");
      Serial.print("The Measured Distance in cm: ");
      Serial.println(cm);
             if( cm <
100 ){
        //while(true){
          Serial.println("Alert!!");
          //}
    }
    Serial.print("************************************");
    }
//wait at least 1000ms before next measurement delay(1000);
}
```

Output:

1. If the distance is less than 100 cms ,it alerts.


sketch.ino copy - Wokwi Arduin
https://wokwi.com/projects/346743469024215636
WOKWI
SAVE
SHARE
Docs
sketch.ino
diagram.json
Library Manager
Simulation
00:10.464
100%
Editing Ultrasonic Distance Sensor
Distance:
2cm
//Pins
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 duration of
//pulses coming 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;
***
The Measured Distance in cm: 368.00
**********Out of range
The Measured Distance in cm: 197.00
***
The Measured Distance in cm: 2.00
Alert!!
31°C
Cloudy
7.2 KBps
2.0 KBps
ENG
IN
12:20
28-10-2022


sketch.ino copy - Wokwi Arduin
https://wokwi.com/projects/346743469024215636
WOKWI
SAVE
SHARE
Docs
sketch.ino
diagram.json
Library Manager
Simulation
00:10.464
100%
//Pins
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 duration of
//pulses coming 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;
The Measured Distance in cm: 2.00
Alert!!
31°C
Cloudy
0.2 KBps
0.0 KBps
ENG
IN
12:21
28-10-2022



Link:
https://wokwi.com/projects/346743469024215636