Assignment-4

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1. Write Code and connections in wokwi for ultrasonic sensor. whatever distance is less than 100 cm send “Alert” to IBM cloud and display in devicerecent events.

Solution:

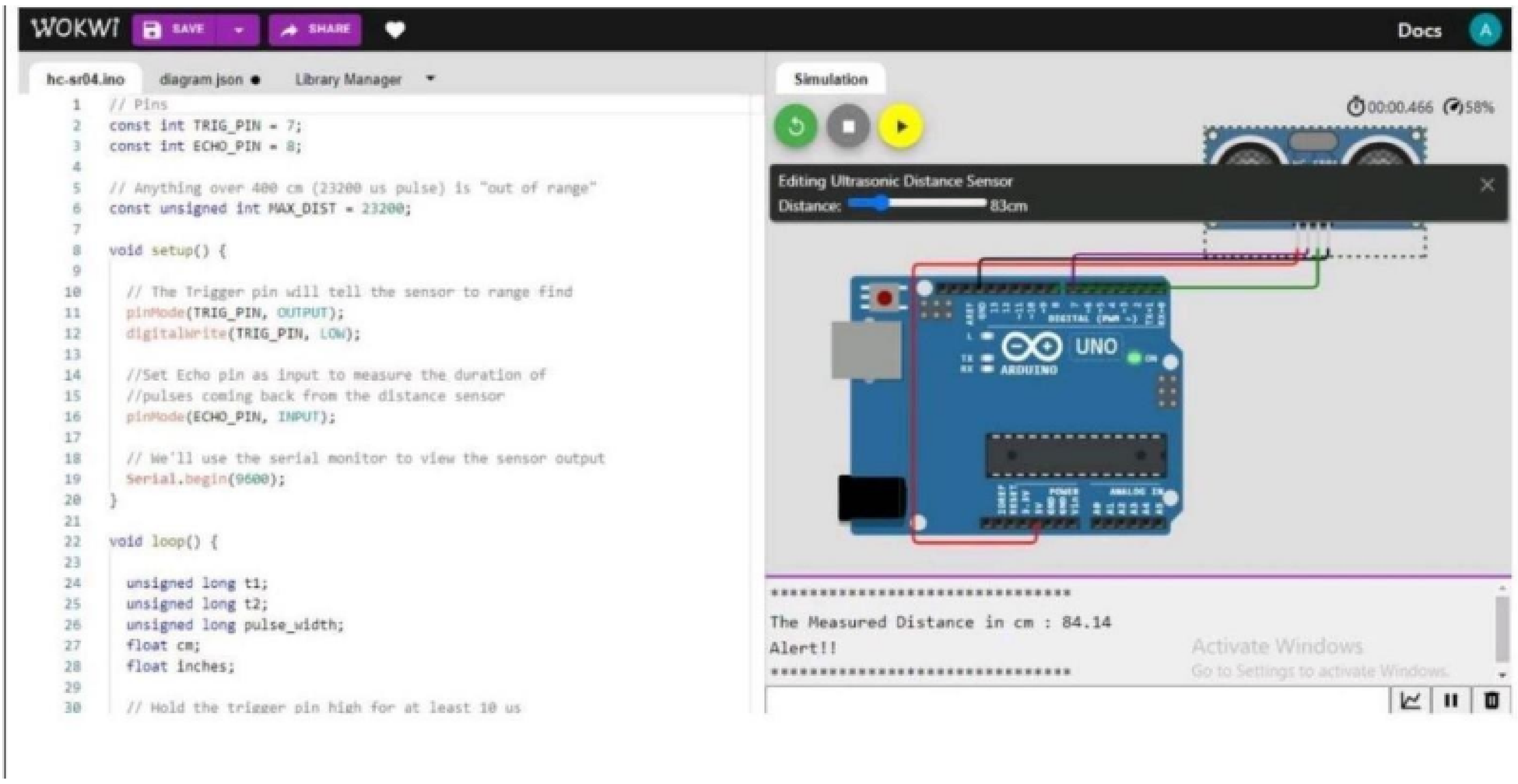
```
//Pins
const int TRIG_PIN = 7 ;
const int ECHO_PIN = 8;

//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
 findPin Mode(TRIG_PIN, OUTPUT);
digital Write(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
 usdigitalWrite(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
mint1= micros ();
 while (digitalRead(ECHO_PIN) ==
  1);t2= micros ();
  pulse_width = t2-t1;

// Calculate distance in centimeters and inches. The constants
```

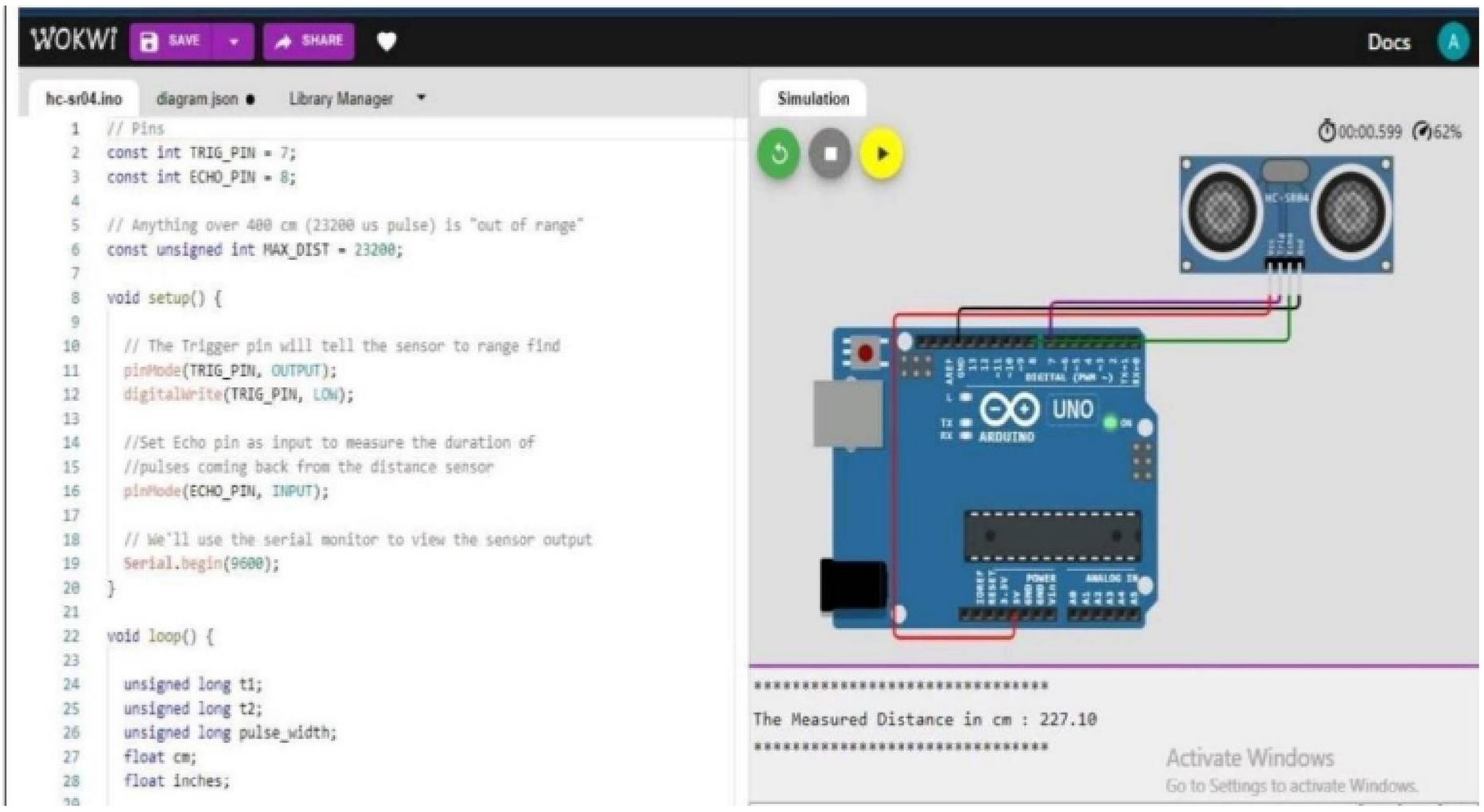
```
//are found in the datasheet, and calculated from the assumed speed
// of sound in air at sea level (-
340m/s)cm=pulse_Width / 58 ;
inches = pulse_width/148.0;
// Print out results
if (pulse_width >MAX _
DIST ){Serial.println("Out of
range");
} else {
Serial.println("*******************************”);
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
measurementDelay(1000);
}
```

Output:

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



2. If the distance is more than 100 cm, it won’t alert



3. Simulation and code execution