Assignment - 4

Assignment Date	22 October 2022
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Maximum Marks	2 Marks

Question-1:

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.

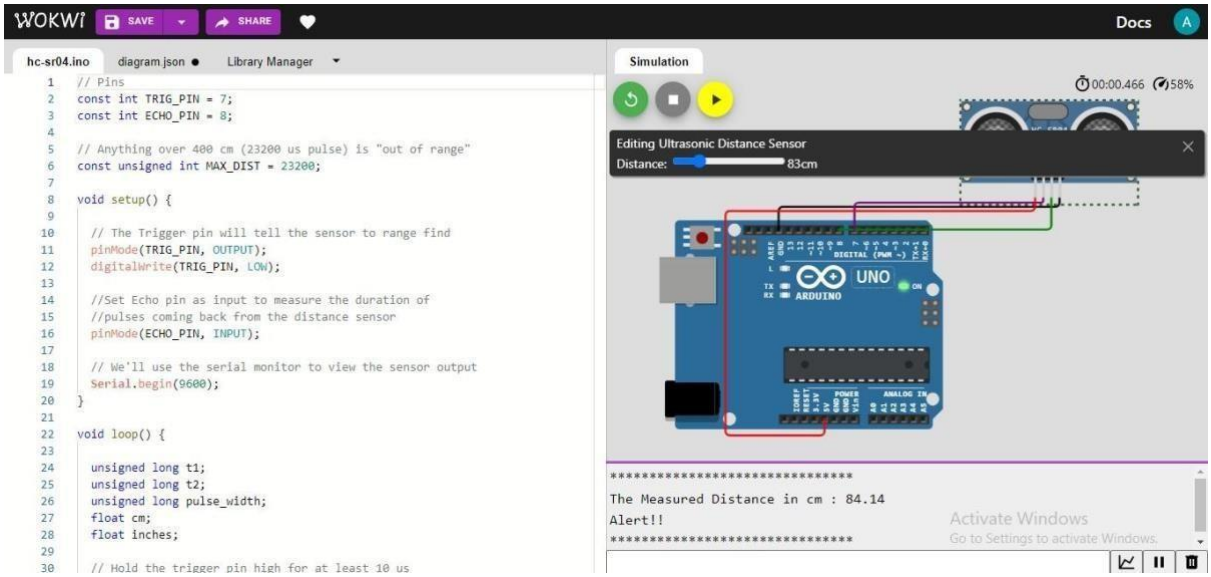
Solution:

```
// 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 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
```

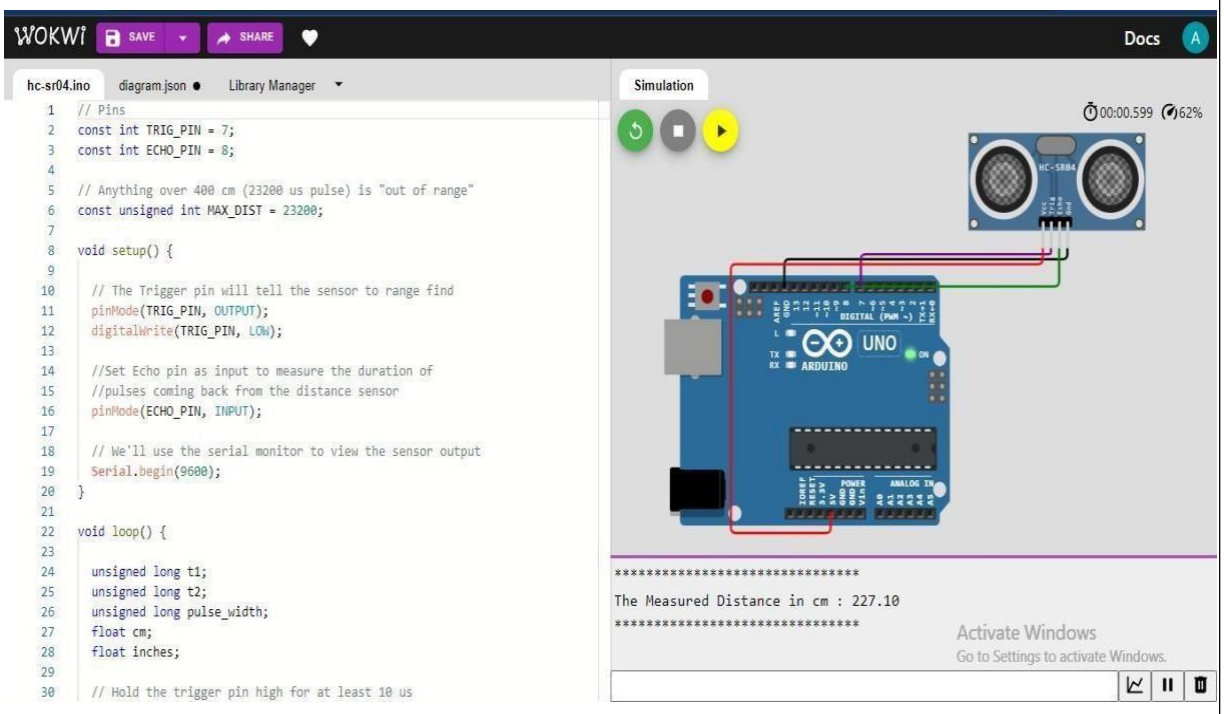
```
 digitalWrite(TRIG_PIN,
 HIGH); delayMicroseconds(10);
 digitalWrite(TRIG_PIN, LOW);

 // 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 (~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("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:

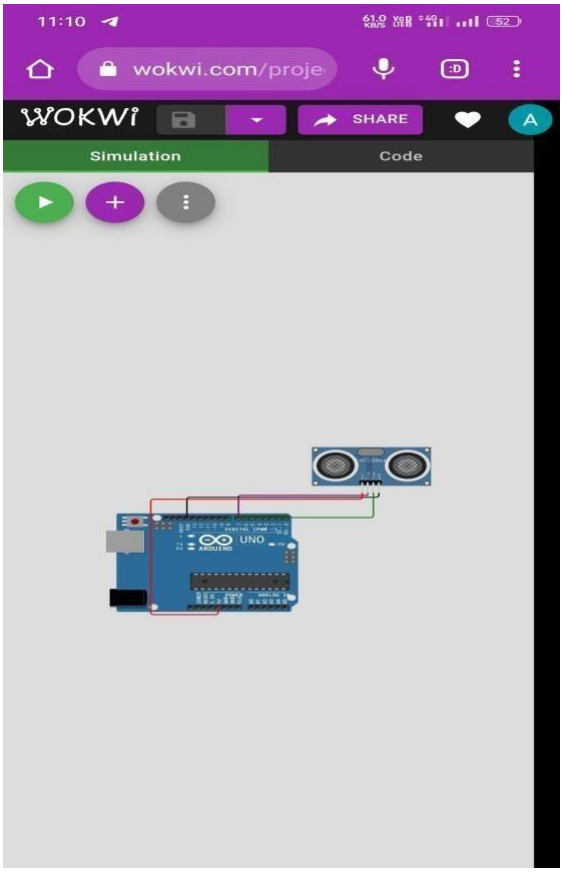
1) If the distance is less than 100 cms , it alerts.

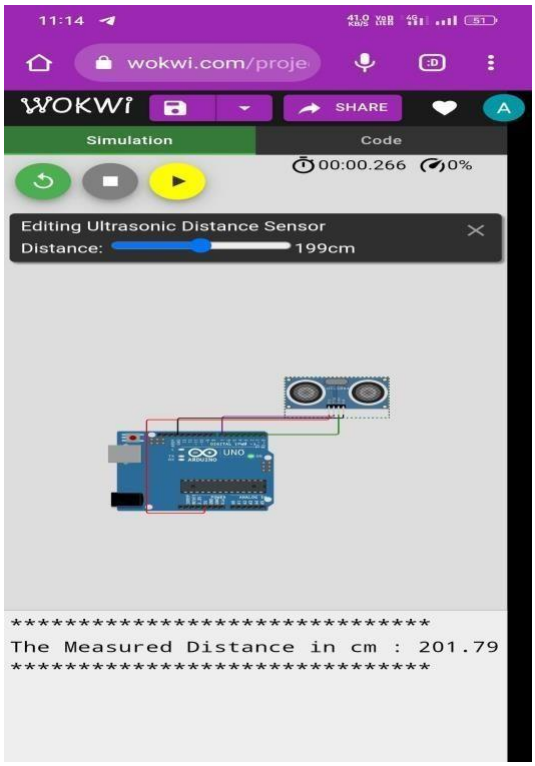


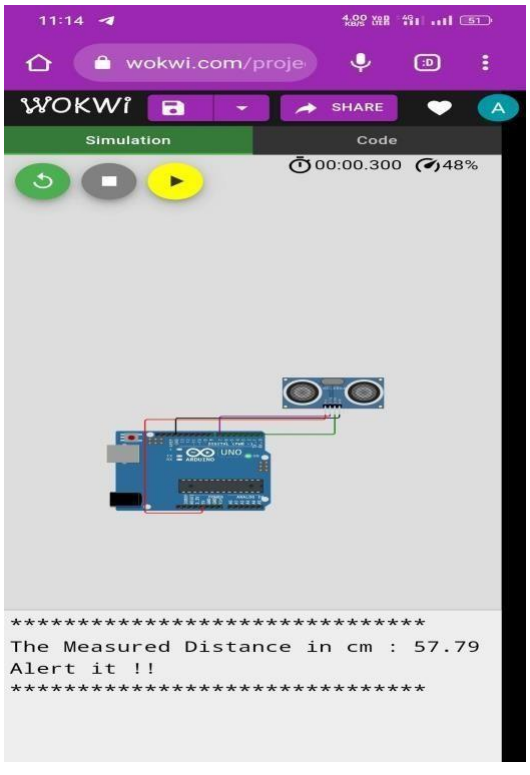
2) If the distance is more than 100 cms, it won't alert.



3) Simulation and code execution







Project Link:

https://wokwi.com/projects/346475395140289108