SMART SOLUTION FOR RAILWAYS

ASSIGNMENT-4

Date	31 October 2022
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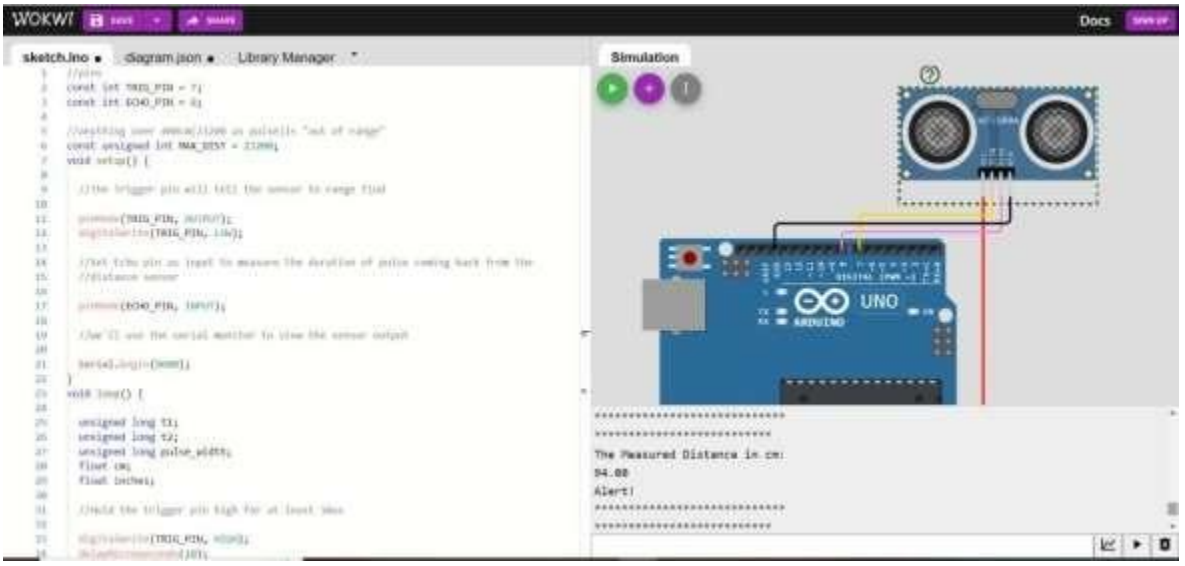
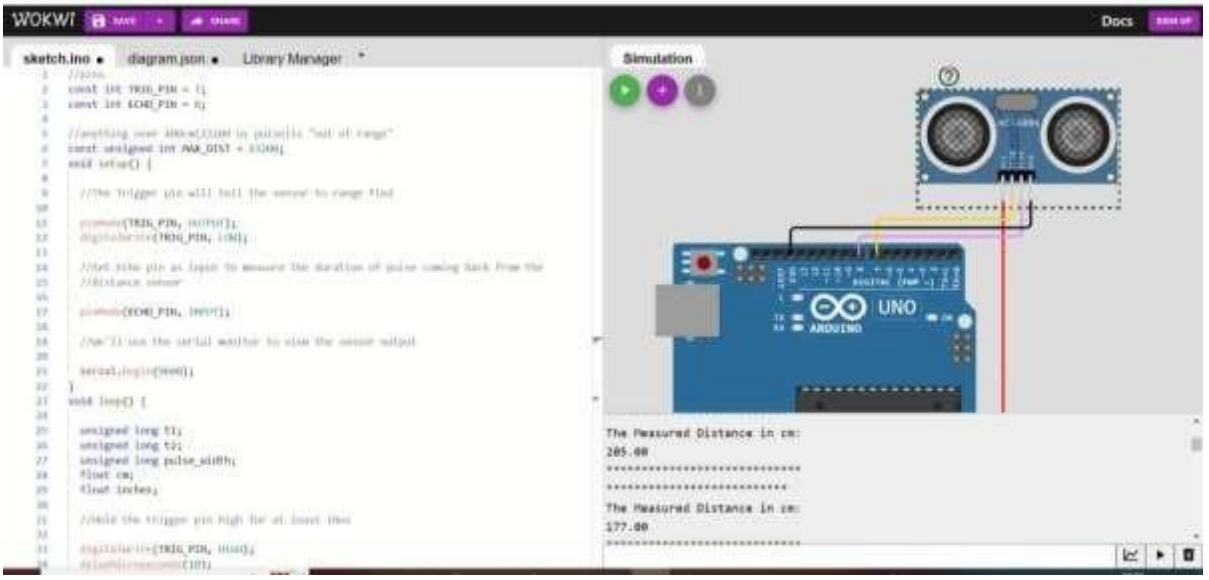
QUESTION:

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

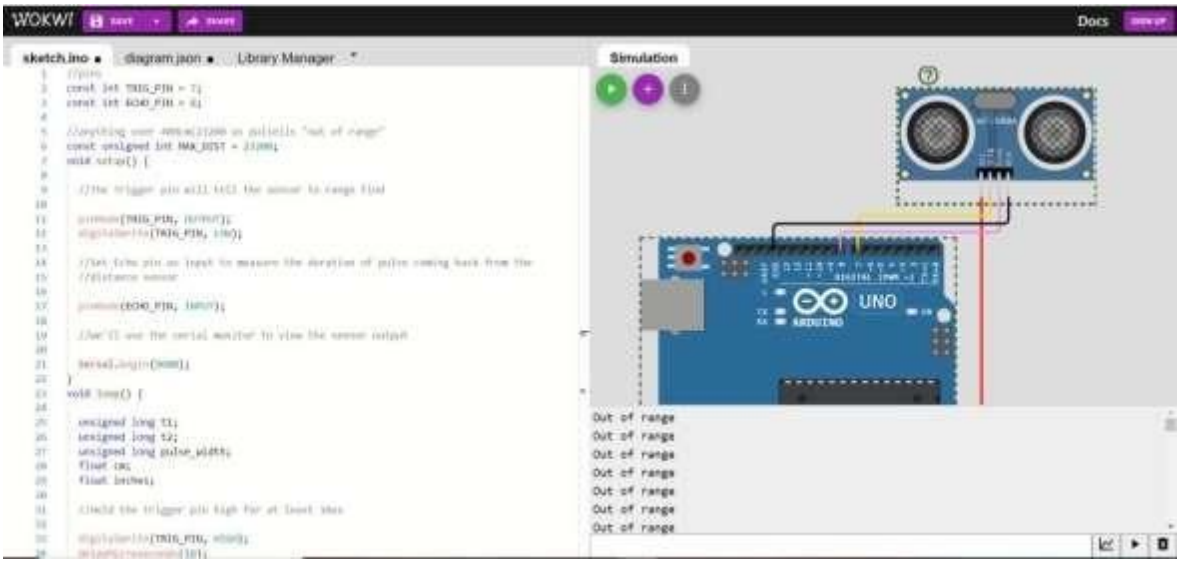
CASE 1: Distance less than 100cm ➔ It Alerts



CASE 2: Distance more than 100cm ➔ It won't Alert



CASE 3: Beyond limits ➔ Out of Range



CODING:

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

const unsigned int MAX_DIST = 23200;
void setup() {

  pinMode(TRIG_PIN, OUTPUT);
  digitalWrite(TRIG_PIN, LOW);

  pinMode(ECHO_PIN, INPUT);

  Serial.begin(9600);
}
void loop() {

  unsigned long t1;
  unsigned long t2;
  unsigned long pulse_width;
  float cm;
  float inches;
  digitalWrite(TRIG_PIN, HIGH);
  delayMicroseconds(10);
  digitalWrite(TRIG_PIN,  LOW);
  while (digitalRead(ECHO_PIN) == 0)
t1 = micros();
  while (digitalRead(ECHO_PIN) == 1);
  t2 = micros();
  pulse_width = t2 - t1;
  cm = pulse_width / 58;
  inches = pulse_width / 148.0;

  if (pulse_width > MAX_DIST) {

    Serial.println("Out of range");
  }
  else
  {
    Serial.println("**************************");
    Serial. println("The Measured Distance in cm:");
    Serial.println(cm);

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

```
    }
    Serial.println("***************************");
  }

  //wait at least 1000ms before next measurement

  delay(1000);
}
```

CIRCUIT: