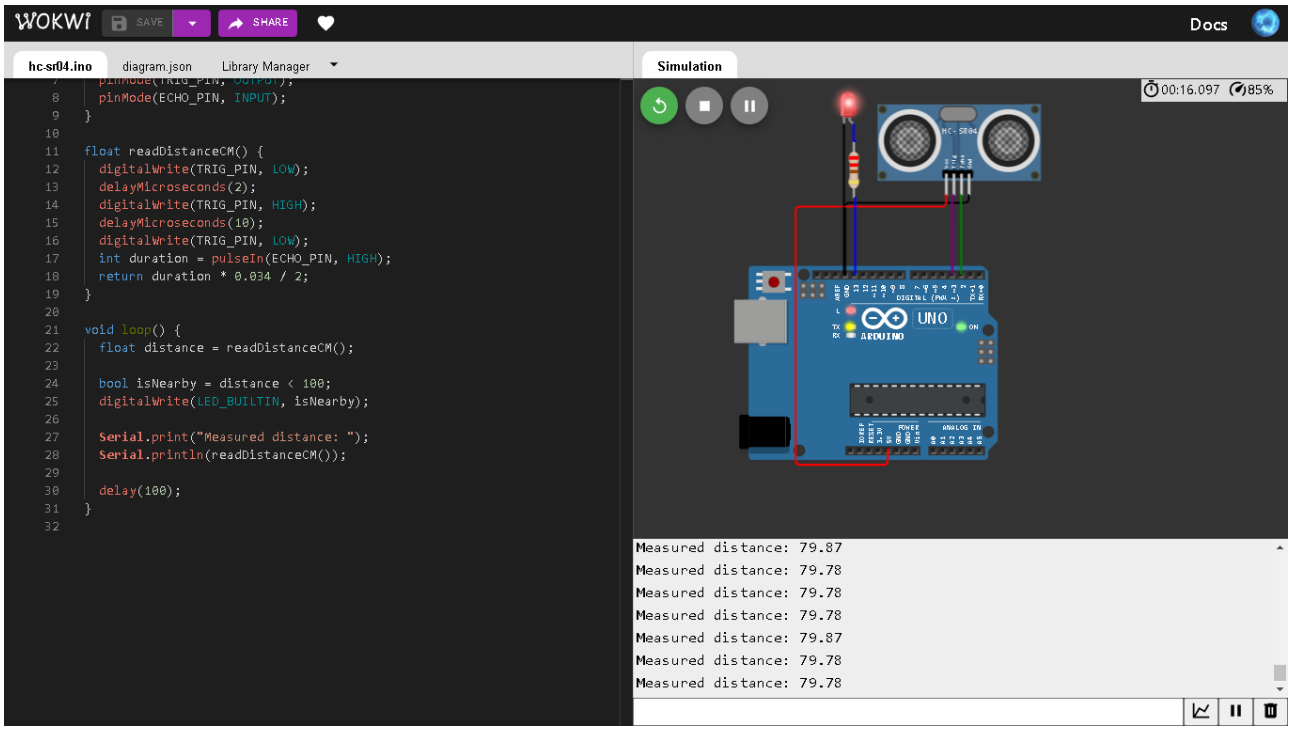
ASSIGNMENT-4

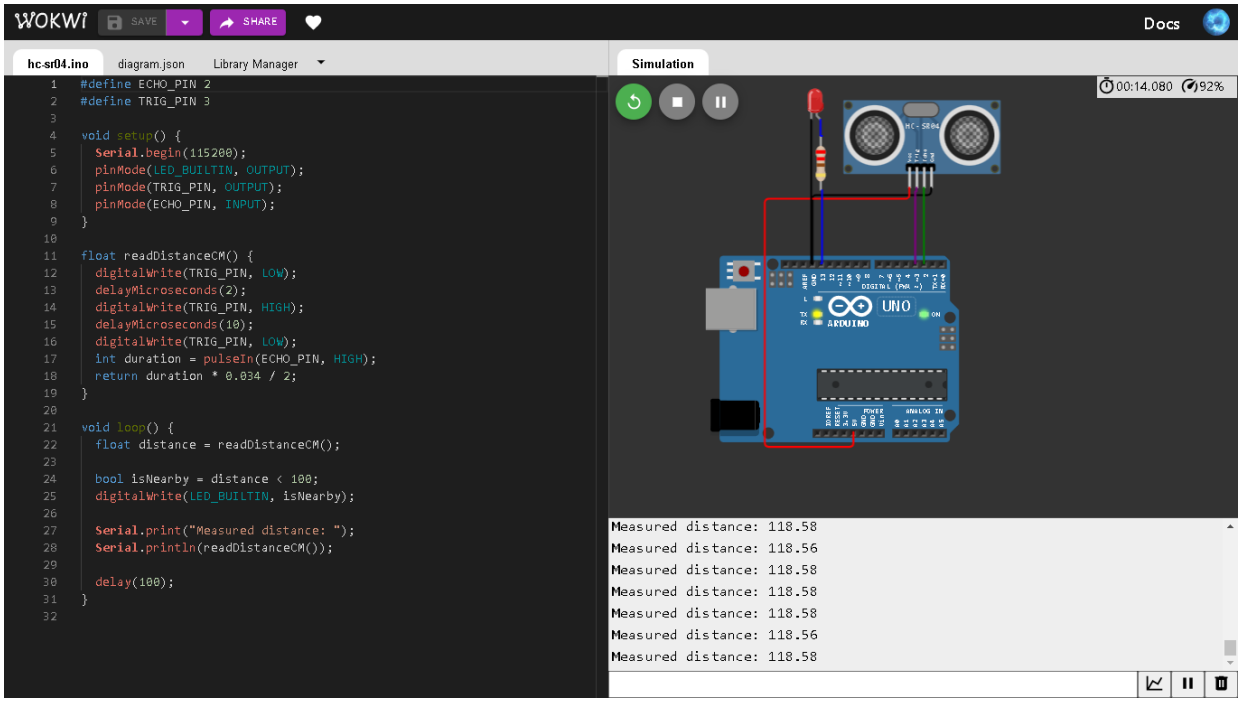
QUESTION:

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.

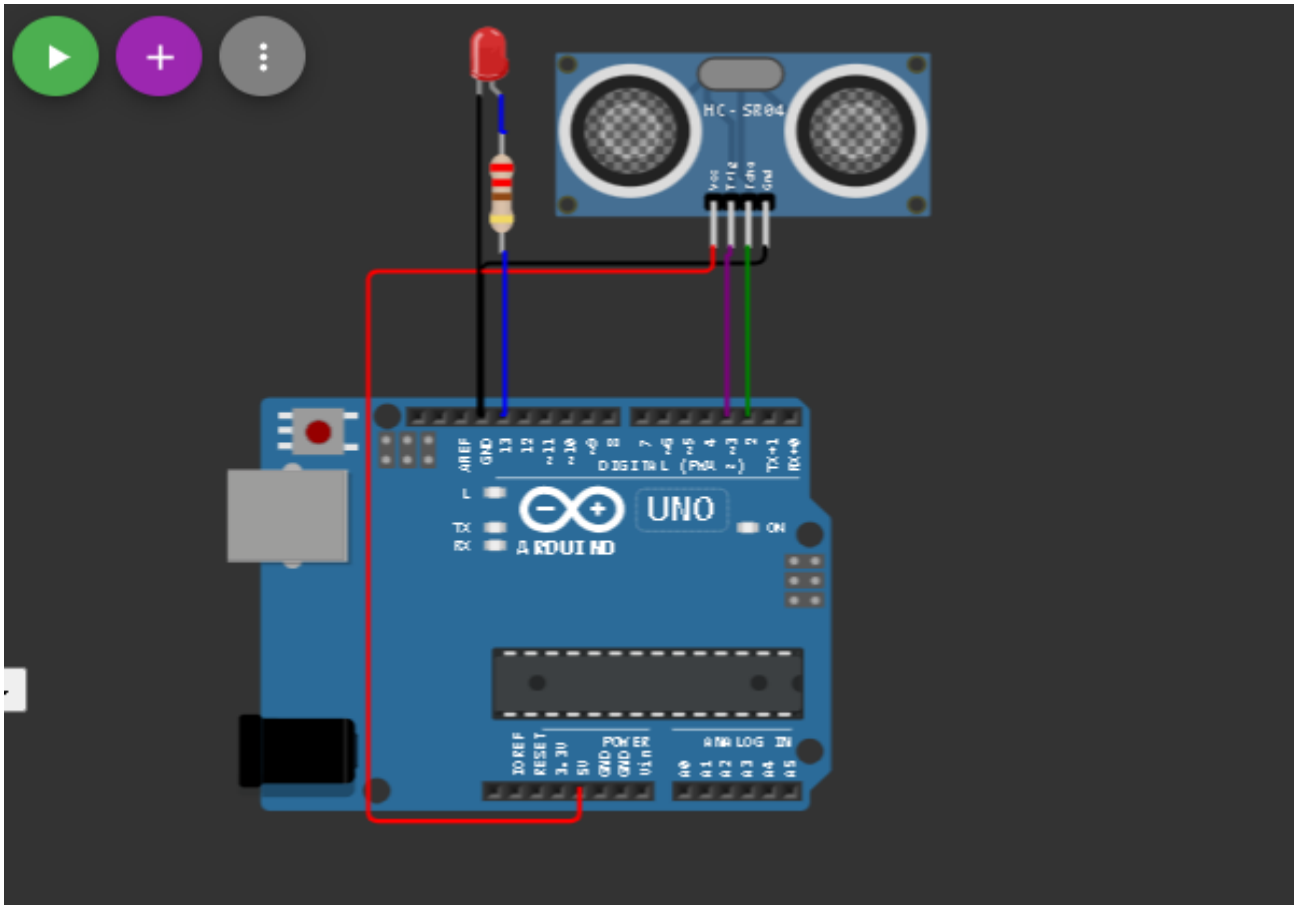
CASE 1: Distance less than 100cm ➔ It Alerts



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



Circuit Design:



CODING:

```
#define ECHO_PIN 2
#define TRIG_PIN 3

void setup() {
  Serial.begin(115200);
  pinMode(LED_BUILTIN, OUTPUT);
  pinMode(TRIG_PIN, OUTPUT);
  pinMode(ECHO_PIN, INPUT);
}

float readDistanceCM() {
  digitalWrite(TRIG_PIN, LOW);
  delayMicroseconds(2);
  digitalWrite(TRIG_PIN, HIGH);
  delayMicroseconds(10);
  digitalWrite(TRIG_PIN, LOW);
  int duration = pulseIn(ECHO_PIN, HIGH);
  return duration * 0.034 / 2;
}

void loop() {
  float distance = readDistanceCM();

  bool isNearby = distance < 100;
  digitalWrite(LED_BUILTIN, isNearby);

  Serial.print("Measured distance: ");
  Serial.println(readDistanceCM());

  delay(100);
}
```

```
  t1 = micros();
  while (digitalRead(ECHO_PIN) == 1);
  t2 = micros();
  pulse_width = t2 - t1;

  //calculate distance in centimeters and inches. The constantsare 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. 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);
}
```

WOKWI LINK:

https://wokwi.com/projects/346596108174628