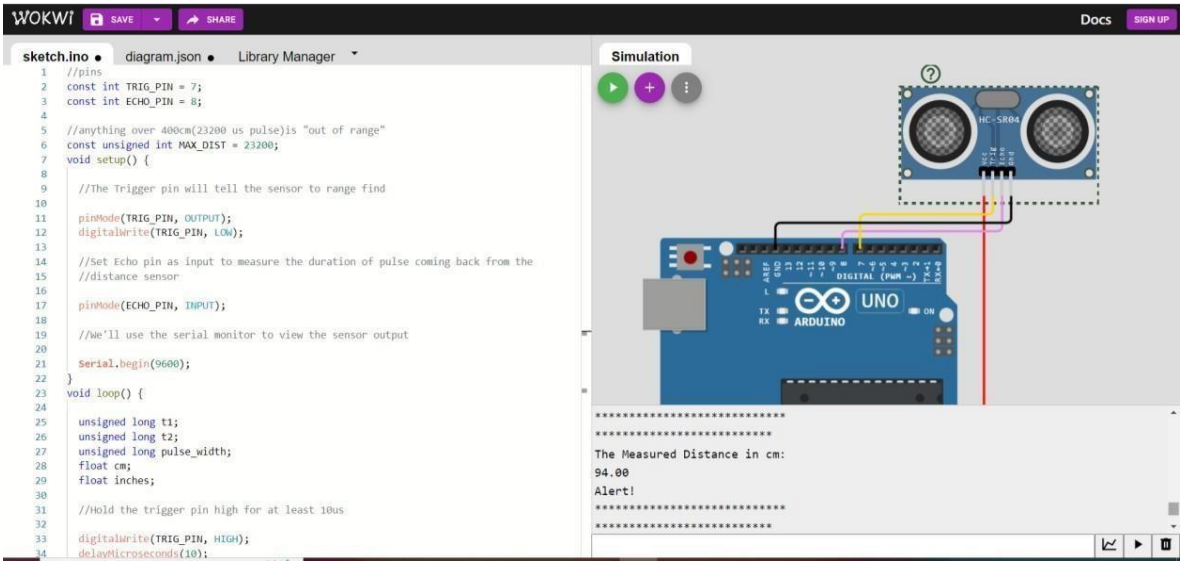
ASSIGNMENT-4

QUESTION:

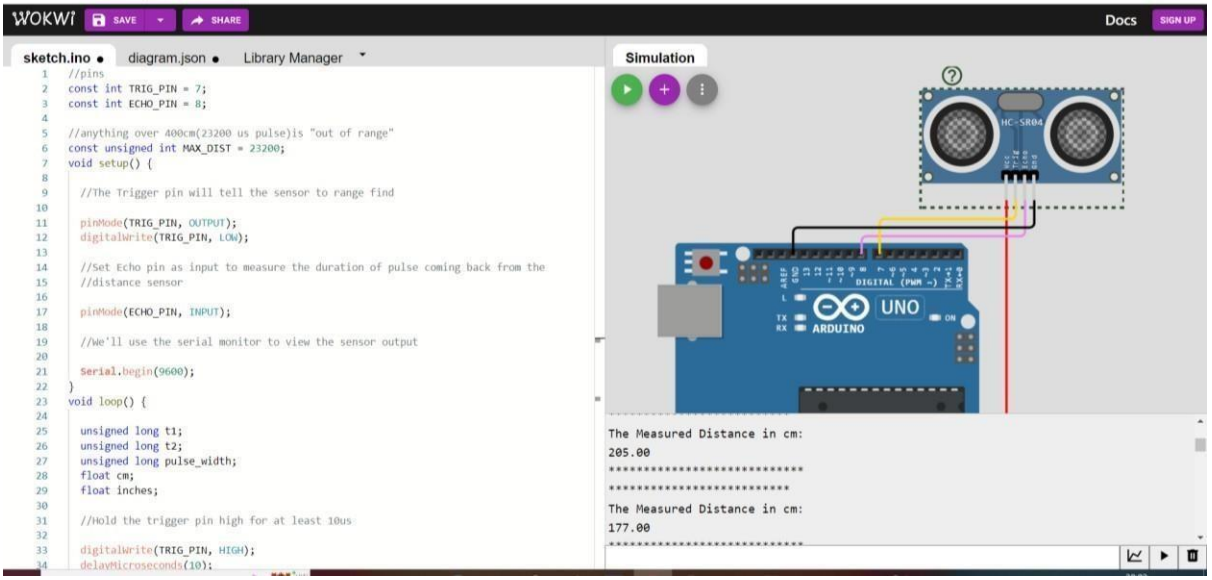
Write Code and connections in wokwi for ultrasonic sensor. whatever distance is less than 100 cm send “Alert” to IBM cloud and display in device recent events.

CASE 1: Distance less than 100cm ➔ It Alerts

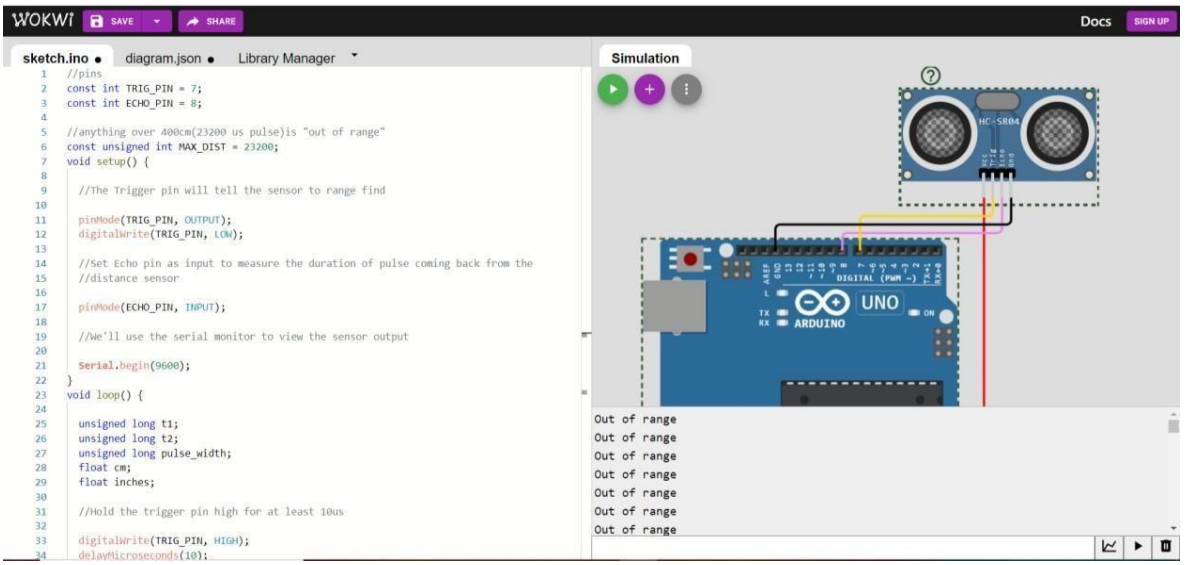



```
//pins
const int TRIG_PIN = 7;
const int ECHO_PIN = 8;

//anything over 400cm(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 pulse 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 10us

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

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



CASE 3: Beyond limits ➔ Out of Range



CODING:

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

```
//anything over 400cm(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 pulse 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 10us

  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 -70min
  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);
}
```

CIRCUIT: