

ASSIGNMENT 4

ULTRASONIC SENSOR SIMULATION IN WOKWI

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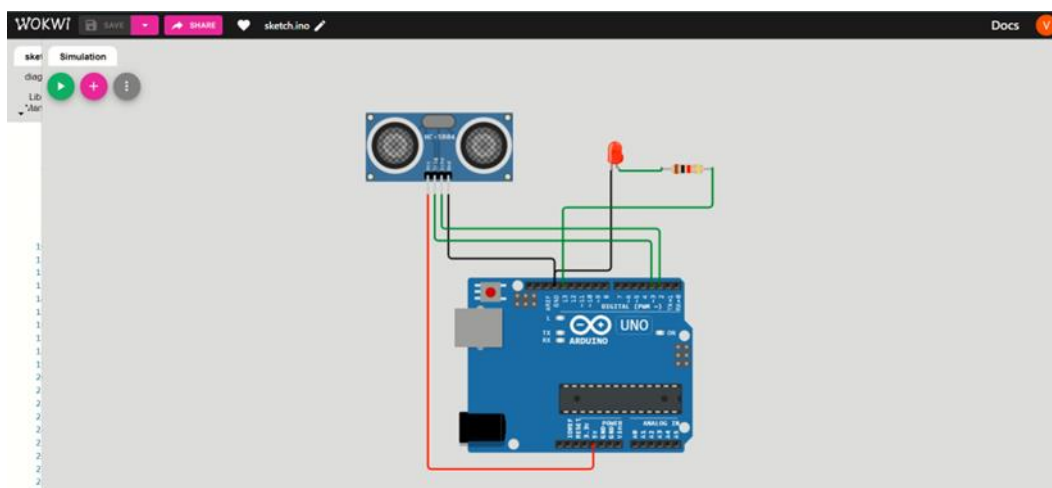
QUESTION:

Write a code and connections in wokwi for the ultrasonic sensor. Whenever the distance is less than 100cms send an “Alert” to IBM cloud and display in the device recent events.

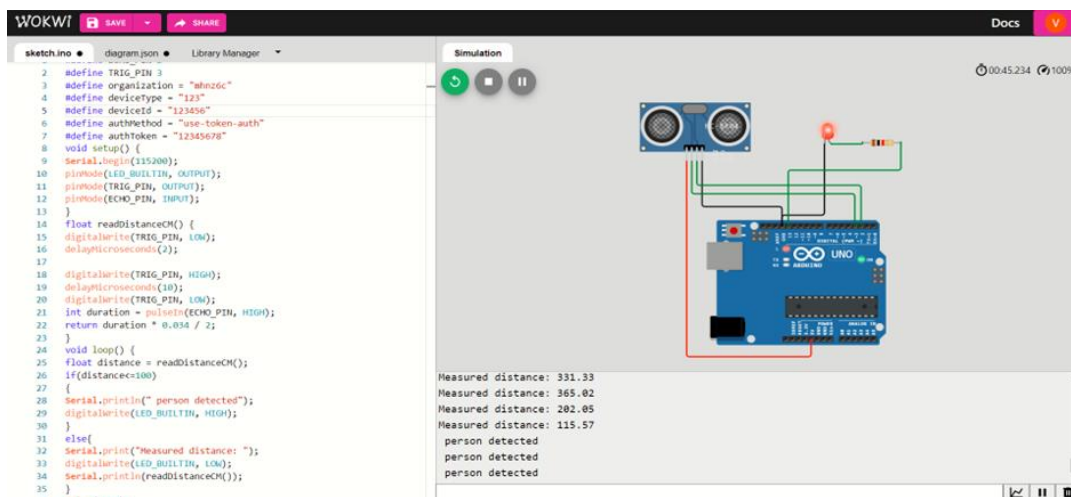
WOKWI SIMULATION LINK:

<https://wokwi.com/projects/348372451544007250>

CIRCUIT DIAGRAM:



OUTPUT SCREENSHOT:



CODE:

```
#define ECHO_PIN 2
#define TRIG_PIN 3
#define organization = "mhnz6c"
#define deviceType = "123"
#define deviceId = "123456"
#define authMethod = "use-token-auth"
#define authToken = "12345678"
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();
  if(distance<=100)
  {
    Serial.println(" person detected");
    digitalWrite(LED_BUILTIN, HIGH);
  }
  else{
    Serial.print("Measured distance: ");
    digitalWrite(LED_BUILTIN, LOW);
    Serial.println(readDistanceCM());
  }
  delay(1000);
}
```

IBM CLOUD:

The screenshot displays the IBM Watson IoT Platform interface. The top navigation bar includes 'Browse', 'Action', 'Device Types', and 'Interfaces'. A sidebar on the left contains various icons for navigation. The main content area shows details for a specific device, identified by ID '123456' and status 'Disconnected'. The 'Recent Events' tab is active, displaying a table of events. The table has four columns: 'Event', 'Value', 'Format', and 'Last Received'. It lists five events, all with the format 'json' and received 'a few seconds ago'. The events are labeled 'event_1' and their values are JSON strings representing distance measurements. At the bottom, there is a pagination control showing 'Items per page: 50' and '1-1 of 1 item', along with a status indicator '1 Simulation running'.

Event	Value	Format	Last Received
event_1	("distance":92)	json	a few seconds ago
event_1	("distance":63)	json	a few seconds ago
event_1	("distance":380)	json	a few seconds ago
event_1	("distance":25)	json	a few seconds ago
event_1	("distance":406)	json	a few seconds ago

Items per page: 50 | 1-1 of 1 item

1 Simulation running