NAME: SHUBHANKAR GADAD **REG NO: 20BCE7592** **COLLEGE: VIT-AP**

SMARTBRIDGE EXTERNSHIP

Internet Of Things

ASSIGNMENT 1

Question: *In Wokwi, if the distance is less than 100cms for an ultrasonic sensor, glowa LED*

Code:

sketch.ino

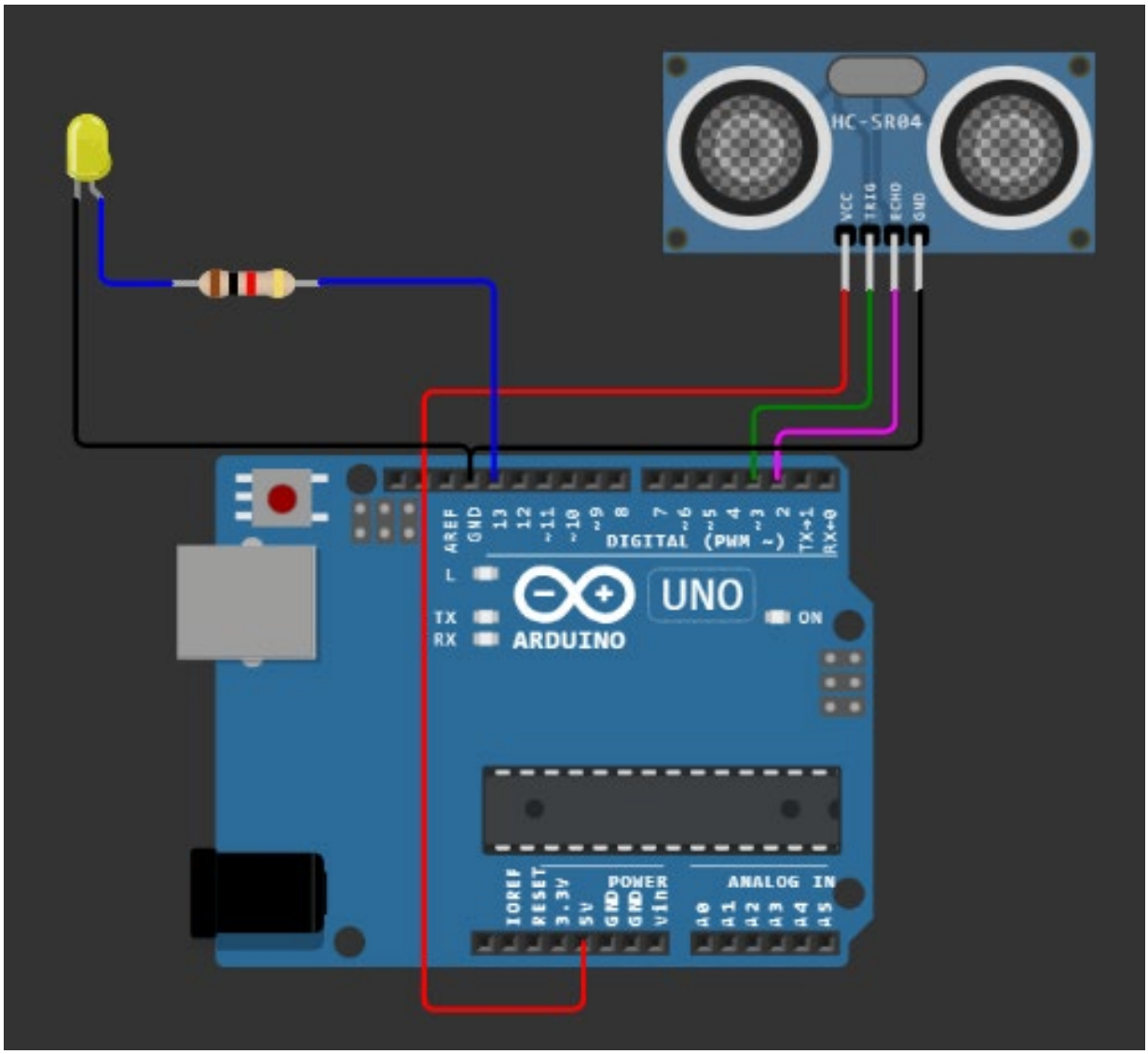
NAME: SHUBHANKAR GADAD **REG NO: 20BCE7592** **COLLEGE: VIT-AP**

```
#define ECHO_PIN 2
#define TRIG_PIN 3

void setup() {
  Serial.begin(9600);
  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);
}
```

diagram.json

```
{
  "version": 1,
  "author": "JYOTI PRAKASH BEHURA 20BCE7355",
  "editor": "wokwi",
  "parts": [
    { "type": "wokwi-arduino-uno", "id": "uno", "top": 299.62, "left": 89.42,
"attrs": {} },
    {
      "type": "wokwi-resistor",
      "id": "r1",
      "top": 210.34,
      "left": 110.84,
      "rotate": 90,
      "attrs": { "value": "220" }
    },
    {
      "type": "wokwi-led",
      "id": "led",
      "top": 141.49,
      "left": 110.91,
      "attrs": { "color": "red", "flip": "" }
    },
    {
      "type": "wokwi-hc-sr04",
      "id": "ultrasonic",
      "top": 150.12,
      "left": 250.7,
      "attrs": { "distance": "180" }
    }
  ],
  "connections": [
    [ "uno:GND.1", "ultrasonic:GND", "black", [ "v-8", "*", "v8" ] ],
    [ "uno:2", "ultrasonic:ECHO", "green", [] ],
    [ "uno:3", "ultrasonic:TRIG", "purple", [ "*", "v4" ] ],
    [ "uno:5V", "ultrasonic:VCC", "red", [ "v16", "h-96", "*", "v12" ] ],
    [ "uno:GND.1", "led:C", "black", [] ],
    [ "r1:1", "led:A", "blue", [] ],
    [ "uno:13", "r1:2", "blue", [] ]
  ],
  "dependencies": {}
}
```

Diagram:



Project Link: ***https://wokwi.com/projects/365964169115280385***

Outputs:

sketch.ino

sketch.ino | diagram.json | Library Manager

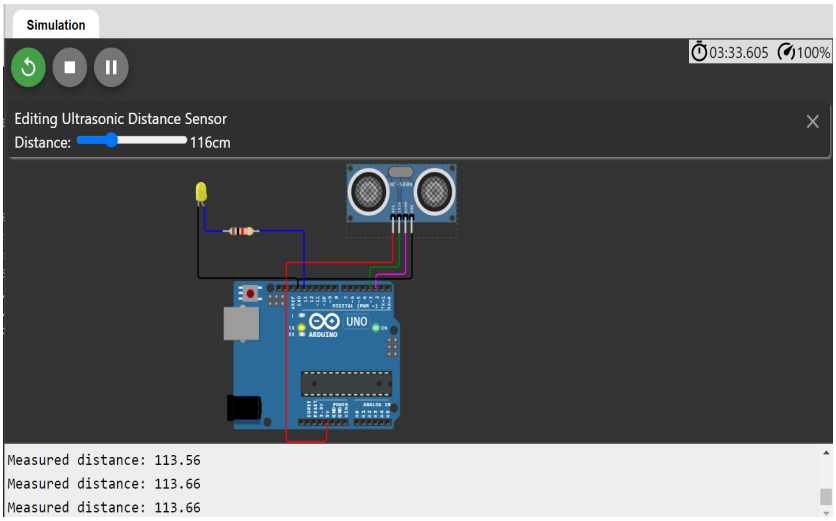
```
#define ECHO_PIN 2
#define TRIG_PIN 3

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);
}


```

Diagram.json:

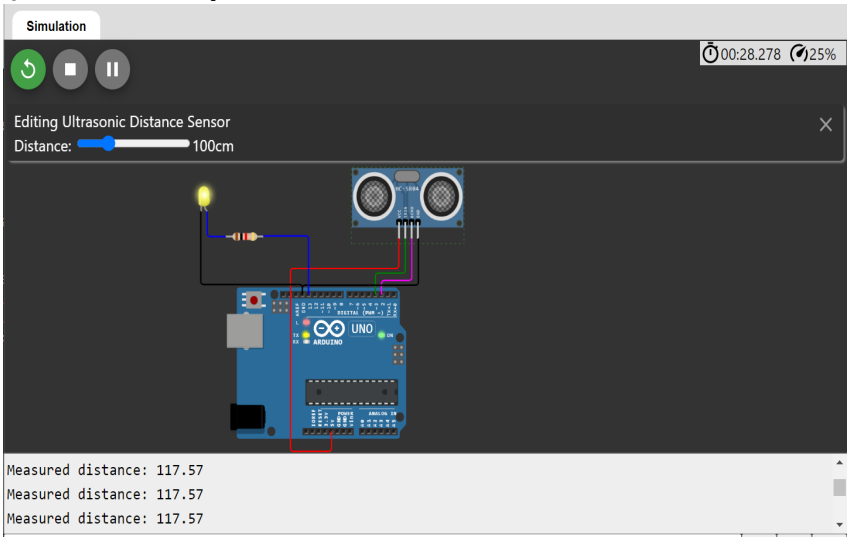
```
{
  "version": 1,
  "author": "Shubhankar",
  "editor": "wokwi",
  "parts": [
    { "type": "wokwi-arduino-uno", "id": "uno", "top": 56.73, "left": 31.18, "attrs": {} },
    {
      "type": "wokwi-led",
      "id": "led1",
      "top": -85.87,
      "left": -23.44,
      "attrs": { "color": "yellow" }
    },
    {
      "type": "wokwi-resistor",
      "id": "r1",
      "top": -16.64,
      "left": 29.12,
      "attrs": { "value": "1000" }
    },
    { "type": "wokwi-hc-sr04", "id": "ultrasonic1", "top": -102.33, "left": 222.59, "attrs": {} }
  ],
  "connections": [
    [ "ultrasonic1:VCC", "uno:5V", "red", [ "v39.32", "h-165.29", "v243.06", "h61.65" ] ],
    [ "ultrasonic1:TRIG", "uno:3", "green", [ "v45.48", "h-44.07" ] ],
    [ "ultrasonic1:ECHO", "uno:2", "magenta", [ "v55.17", "h-47.9" ] ],
    [ "ultrasonic1:GND", "uno:GND.1", "black", [ "v61.44", "h-177.18" ] ],
    [ "led1:A", "r1:1", "blue", [ "v0" ] ],
    [ "r1:2", "uno:13", "blue", [ "v-0.84", "h64.7" ] ],
    [ "led1:C", "uno:GND.1", "black", [ "v96.69", "h148.53" ] ]
  ],
  "dependencies": {}
}
```

Output:

i) Distance more than 100cm



ii) Distance equal to 100cm



iii) Distance less than 100cm