SMARTBRIDGE EXTERNSHIP

Internet Of Things

Date: 20th May 2023

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Assignment 1 : *In Wowki, if the distance is less than 100cms for an ultrasonic sensor, glow a LED*

Code:

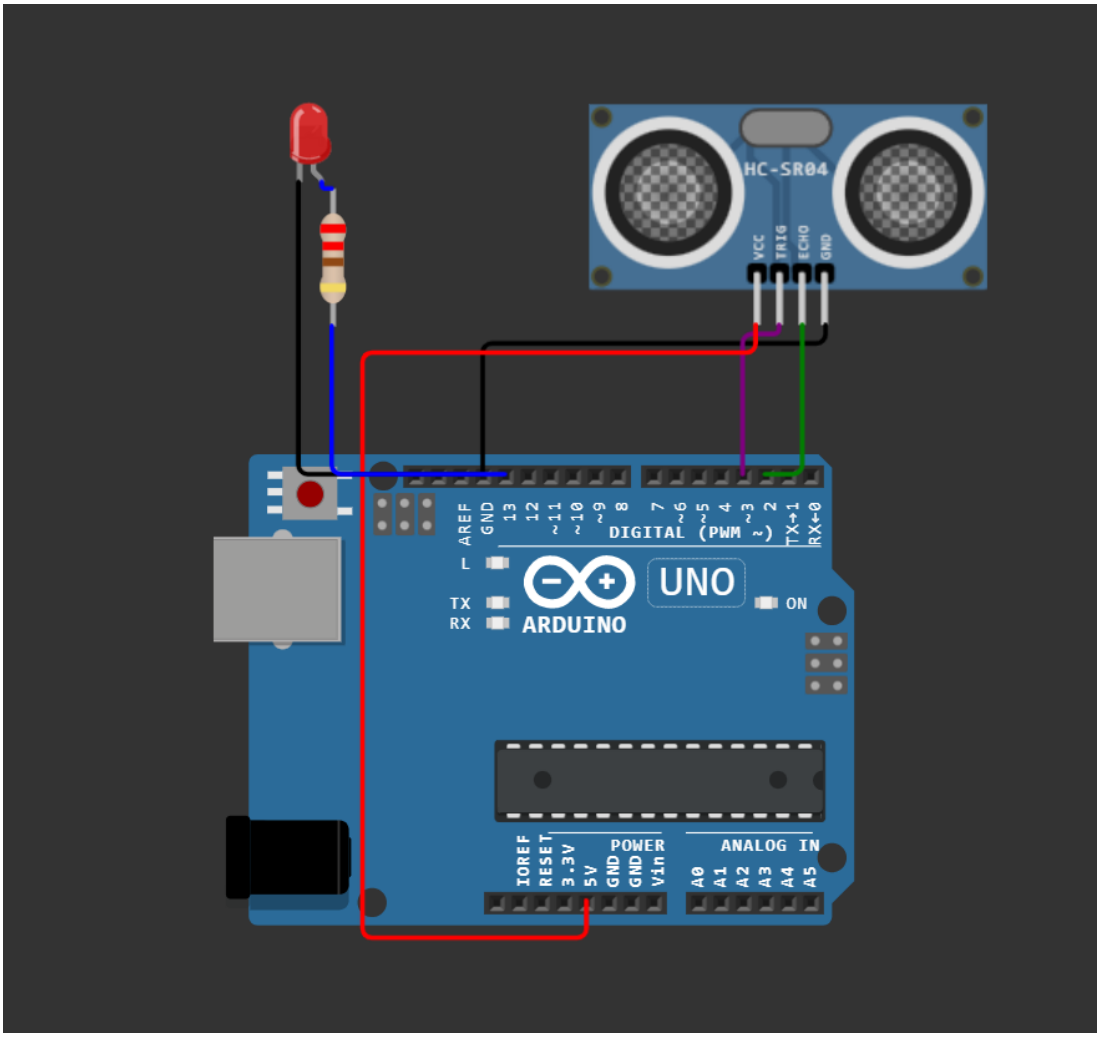
sketch.ino

```
#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": "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:


HC-SR04
VCC
TRIG
ECHO
GND
AREF
GND
13
12
~11
~10
~9
8
7
~6
~5
4
~3
2
TX→1
RX←0
DIGITAL (PWM ~)
L
TX
RX
ARDUINO
UNO
ON
IOREF
RESET
3.3V
5V
GND
GND
Vin
POWER
A0
A1
A2
A3
A4
A5
ANALOG IN

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);
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  digitalWrite(TRIG_PIN, LOW);
  int duration = pulseIn(ECHO_PIN, HIGH);
  return duration * 0.034 / 2;
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void loop() {
  float distance = readDistanceCM();

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

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

  delay(100);
}


```

Diagram.json

sketch.ino | **diagram.json** | Library Manager

```
{
  "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" }
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    [ "uno:2", "ultrasonic:ECHO", "green", [] ],
    [ "uno:3", "ultrasonic:TRIG", "purple", [ "*", "v4" ] ],
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    [ "uno:GND.1", "led:C", "black", [] ],
    [ "r1:1", "led:A", "blue", [] ],
    [ "uno:13", "r1:2", "blue", [] ]
  ],
  "dependencies": {}
}
```
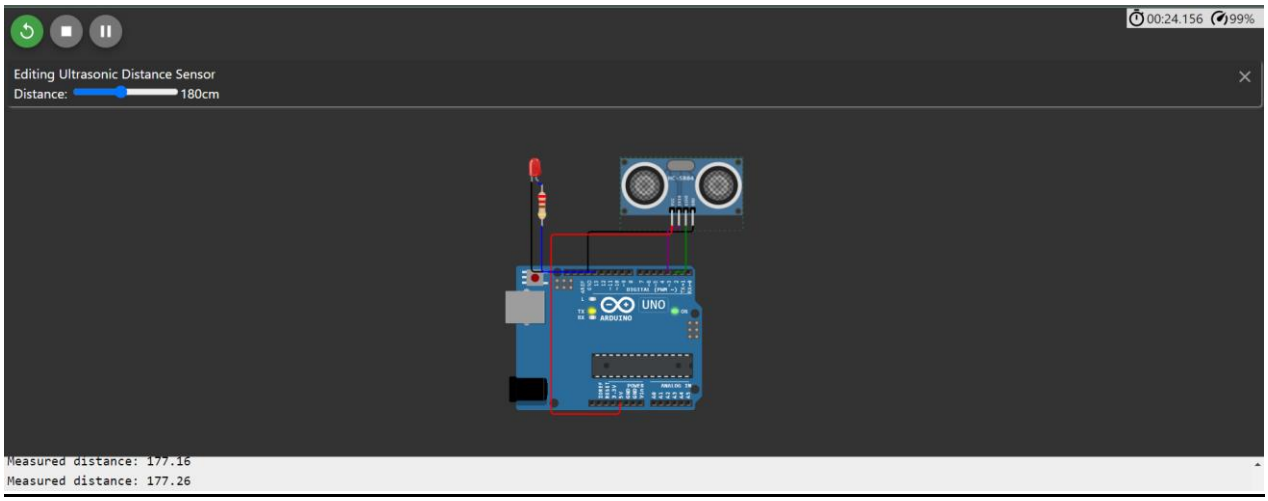

Output:

i) Distance more than 100cm



ii) Distance less than 100cm