

Lab -2

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Subject - IOT

***Experiment:***

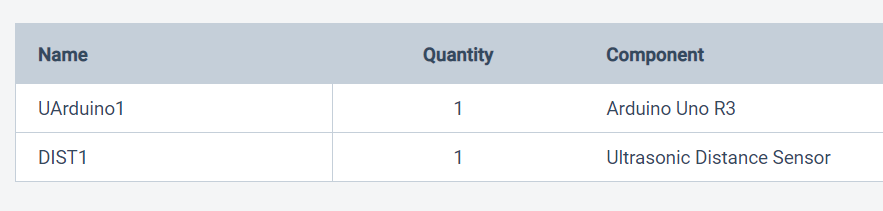
Design a circuit for interfacing the Ultrasonic sensor in Tinkercad framework and plot the capture data using Processing tool.

Solution -:

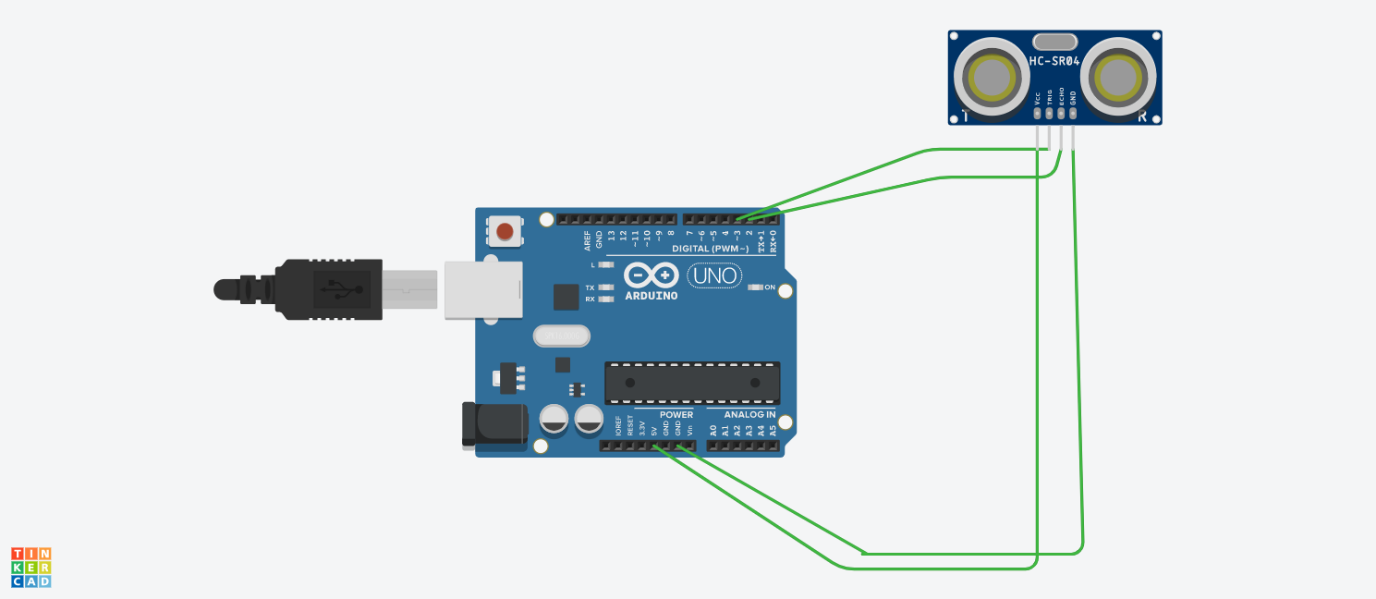
We are going to design a circuit to interface Ultrasonic sensor with Arduino an check the distance depicted by it.

***Software Name*** -: Tinkercad

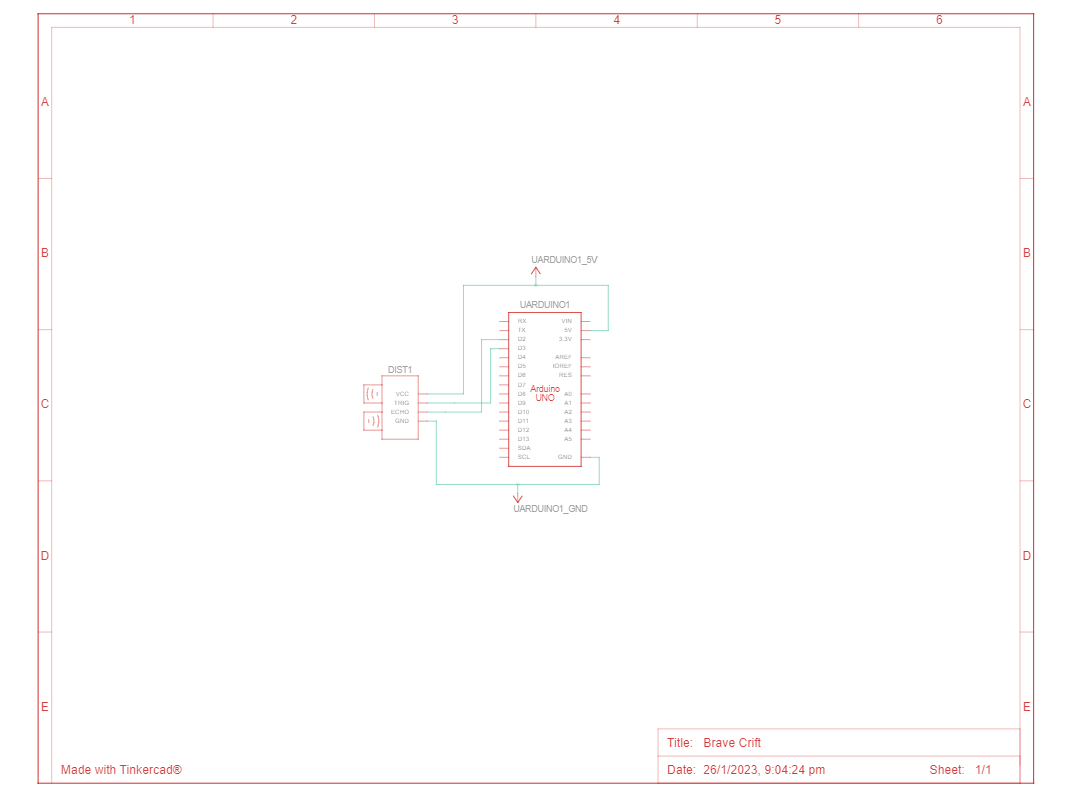
***Components Required***



***Circuit Diagram***



***Schematic View***



***Code for getting distance based on locus***

#define echo\_pin 2

#define trig\_pin 3

long duration\_0;

int distance\_0;

void setup(){

  pinMode(trig\_pin, OUTPUT);

  pinMode(echo\_pin,INPUT);

  Serial.begin(9600);

  Serial.println("Working....");

}

void loop(){

  digitalWrite(trig\_pin,LOW);

  delayMicroseconds(2);

  digitalWrite(trig\_pin, LOW);

  duration\_0=pulseIn(echo\_pin,HIGH);

  distance\_0=duration\_0 \* 0.034/2;

  Serial.print("Distance : ");

  Serial.print(distance\_0);

  Serial.println(" cm");

}

Maximum Distance Measured: 35.3 cm

Minimum distance measured: 15.2 cm

**How it is calculating the distance?**

Measures time delay, T, between transmitted signal and signal returned from target at distance d. If velocity of ultrasonic signal given by v (approx. 344 m/sec), distance d = v \* T /2 where factor of 2 is to account for round trip distance travelled by signal.

***Difficulty issues***

* Understanding the coding and functions used.

**Knowledge Gain**

* Learned to interface Arduino with sensor.
* Learned C++ function to achieve this.