Ex.No.2   <u>**Measuring Distance of the given Object**</u>

Aim:

Measure the distance of a given object using ultrasonic sensor and Arduino UNO

Components Required:

1. Arduino UNO R3 - 1
2. Ultrasonic Distance Sensor (4 pins) - 1

Procedure:

1. Connect the components on the breadboard according to the circuit connections mentioned.
2. Connect the Arduino to your computer using a USB cable.
3. Open the Arduino IDE on the computer.
4. Copy and paste the provided Arduino code into the IDE.
5. Select the correct board and port from the Tools menu in the Arduino IDE.
6. Click the "Upload" button to upload the code to the Arduino.
7. Once the upload is complete, press the button on the breadboard and observe the distance displayed in response.

Circuit Connections:

Connect the pin1 (Vcc) of ultrasonic sensor to 5v power pin in Arduino UNO.
Connect the pin2 (trig) of ultrasonic sensor to Digital I/O pin 10 in Arduino UNO
Connect the pin3 (echo) of ultrasonic sensor to Digital I/O pin 9 in Arduino UNO
Connect the pin4 (gnd) of the ultrasonic sensor to ground pin in Arduino UNO

Circuit Diagram:

<div align="center">

Ultrasonic Sensor

</div>

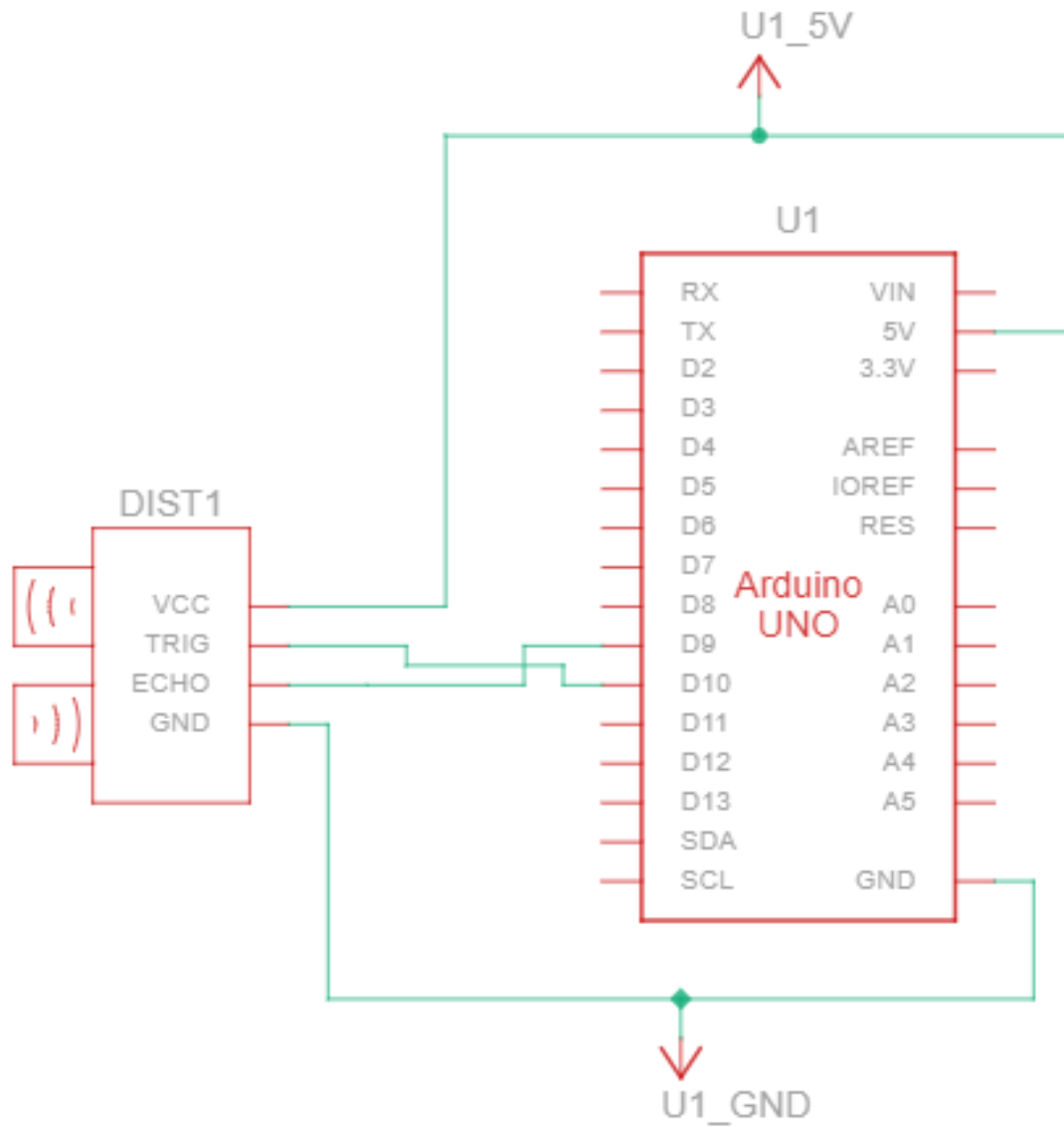# Arduino UNO with Ultrasonic Sensor
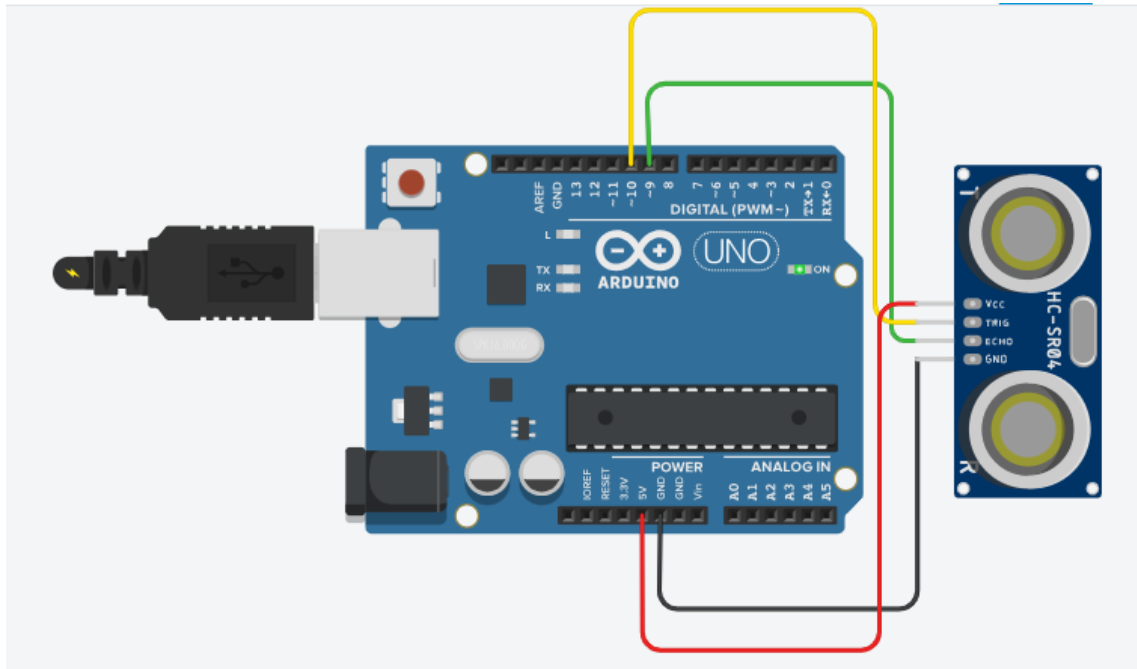
Arduino Code:

```cpp
// C++ code
int trigPin = 10;
int echoPin = 9;
long time;
float distance;
void setup()
{
  pinMode(trigPin, OUTPUT); // SETTING OUTPUT PIN
  pinMode(echoPin, INPUT); // SETTING INPUT PIN
  Serial.begin(9600); // INITIALISING THE COMMUNICATION
}
void loop()
{
  digitalWrite(trigPin,LOW);
  delayMicroseconds(2);
  // transmitting sound for 10 microseconds
  digitalWrite(trigPin, HIGH);
  delayMicroseconds(10);
  digitalWrite(10, LOW);
  // calculating distance
  time=pulseIn(echoPin , HIGH);
  Serial.print("time: ");
```
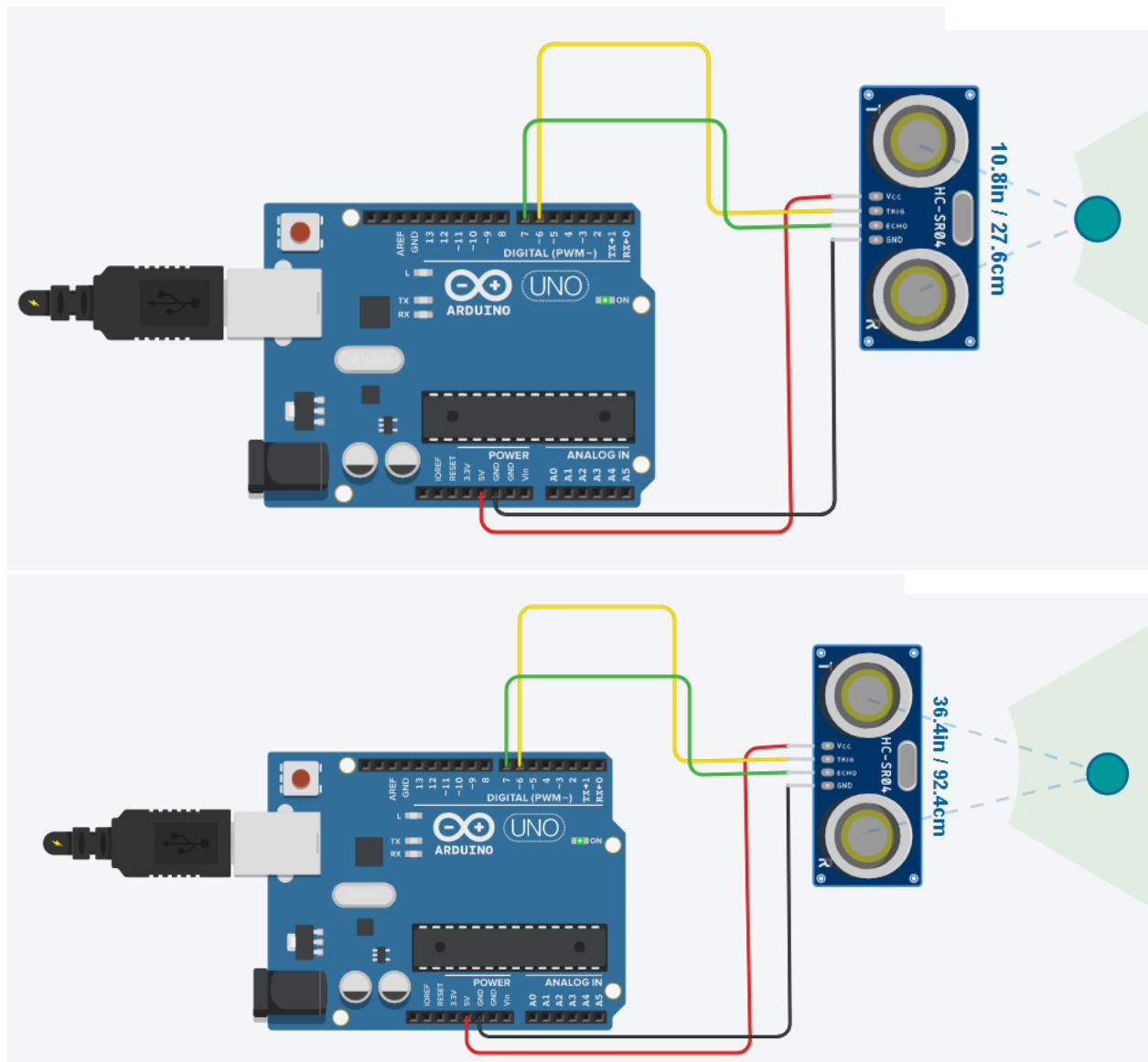
```
Serial.println(time);
distance = time * 0.0343/2;
// Printing out the final output => distance
Serial.print("Distance:");
Serial.println(distance);
}
```

Schematic Pin Diagram:

Sample Output Screenshot:

Result:

      Thus the given object distance is measured using Ultrasonic sensor and Arduino UNO.