

Name – Parag Gattani

Program No. – 07

Program Title – Distance Measurement using ultrasonic sensor

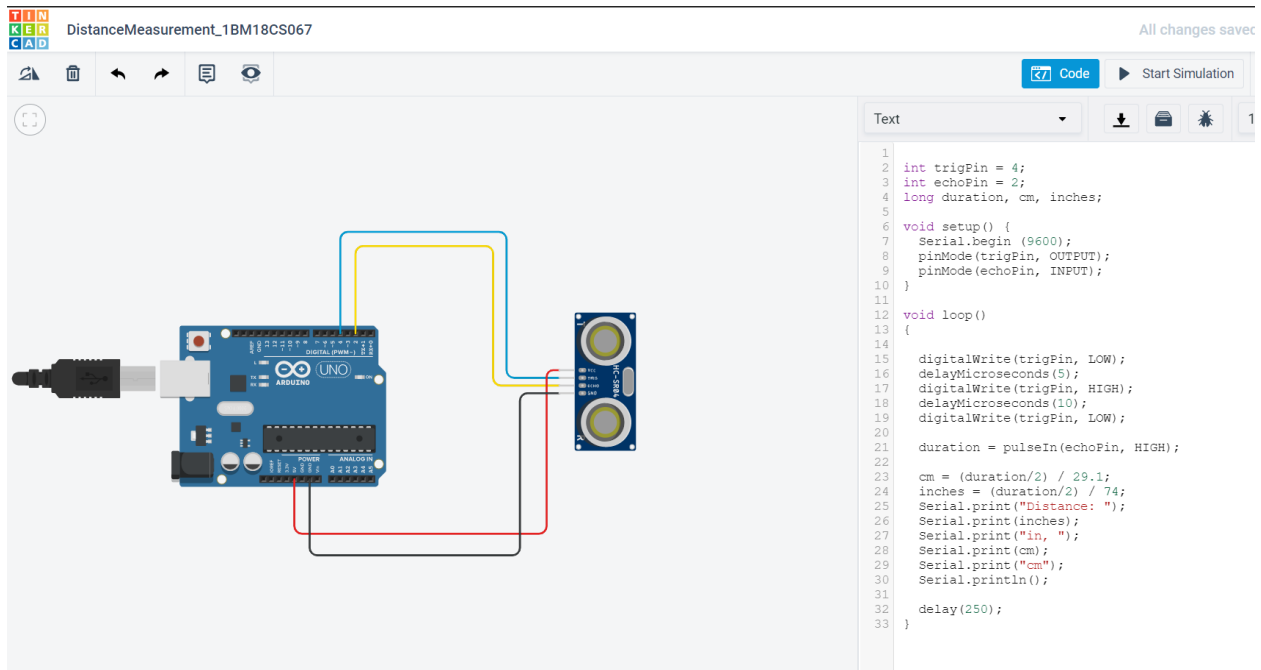
AIM

Design a system to measure the distance between objects.

HARDWARES REQUIRED

- Arduino Board
- Ultrasonic sensor HC-SR04

CIRCUIT DIAGRAM



The screenshot displays the TINKER CAD environment. On the left, a circuit diagram shows an Arduino Uno board connected to an HC-SR04 ultrasonic sensor. The sensor's VCC pin is connected to the 5V pin on the Arduino, and its GND pin is connected to a GND pin. The TRIG pin is connected to digital pin 4, and the ECHO pin is connected to digital pin 2. On the right, the code editor shows the following code:

```
1
2 int trigPin = 4;
3 int echoPin = 2;
4 long duration, cm, inches;
5
6 void setup() {
7   Serial.begin(9600);
8   pinMode(trigPin, OUTPUT);
9   pinMode(echoPin, INPUT);
10 }
11
12 void loop()
13 {
14
15   digitalWrite(trigPin, LOW);
16   delayMicroseconds(5);
17   digitalWrite(trigPin, HIGH);
18   delayMicroseconds(10);
19   digitalWrite(trigPin, LOW);
20
21   duration = pulseIn(echoPin, HIGH);
22
23   cm = (duration/2) / 29.1;
24   inches = (duration/2) / 74;
25   Serial.print("Distance: ");
26   Serial.print(inches);
27   Serial.print("in, ");
28   Serial.print(cm);
29   Serial.print("cm");
30   Serial.println();
31
32   delay(250);
33 }
```

WRITE-UP

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DISTANCE MEASUREMENT

Aim

Design a system to measure the distance between objects.

Hardware Required

Arduino Board

Ultrasonic distance measure. HC-SR04

Code:

```
int trigPin = 4;  
int echoPin = 2;  
long duration, cm, inches;
```

```
void setup() {
```

```
    Serial.begin(9600);  
    pinMode(trigPin, OUTPUT);  
    pinMode(echoPin, INPUT);
```

```
}
```

```
void loop() {
```

```
{
```

```
    digitalWrite(trigPin, LOW);  
    delayMicroseconds(5);  
    digitalWrite(trigPin, HIGH);  
    delayMicroseconds(10);  
    digitalWrite(trigPin, LOW);
```

```
    duration = pulseIn(echoPin, HIGH);
```

```
    cm = (duration/2) / 29.1;
```

```
    inches = (duration/2) / 74;
```

```
Serial.print("Distance: ");  
Serial.print(inches);  
Serial.print(" in, ");  
Serial.print(cm);  
Serial.print(" cm");  
Serial.println();
```

```
delay(200);
```

```
}
```

CODE

```
int trigPin = 4;  
  
int echoPin = 2;  
  
long duration, cm, inches;  
  
void setup() {  
  Serial.begin(9600);  
  pinMode(trigPin, OUTPUT);  
  pinMode(echoPin, INPUT);  
}
```

```
void loop()
{

    digitalWrite(trigPin, LOW);
    delayMicroseconds(5);
    digitalWrite(trigPin, HIGH);
    delayMicroseconds(10);
    digitalWrite(trigPin, LOW);

    duration = pulseIn(echoPin, HIGH);

    cm = (duration/2) / 29.1;
    inches = (duration/2) / 74;
    Serial.print("Distance: ");
    Serial.print(inches);
    Serial.print("inch, ");
    Serial.print(cm);
    Serial.print("cm");
    Serial.println();

    delay(250);
```

}

OUTPUT

Design a system to measure the distance between objects using ultrasonic device.