

## ASSIGNMENT NO. 1

**Aim:** Design and implement IoT system using Arduino Uno/ Raspberry Pi using 'Ultrasonic sensor and Servo motor' such as 'Door opener in home automation'.

**Code:**

```
#include <Servo.h>

Servo doorServo;

const int trigPin = 9; const
int echoPin = 10; const int
servoPin = 6;

long duration; int
distance;

void setup() { doorServo.attach(servoPin);
pinMode(trigPin, OUTPUT);
pinMode(echoPin, INPUT);
Serial.begin(9600); doorServo.write(0); //
Door initially closed
}

void loop() {
// Send ultrasonic pulse
digitalWrite(trigPin, LOW);
delayMicroseconds(2);
digitalWrite(trigPin, HIGH);
```

```
delayMicroseconds(10);

digitalWrite(trigPin, LOW);

// Read echo  duration = pulseIn(echoPin,
HIGH);  distance = duration * 0.034 / 2; //

Convert to cm

Serial.print("Distance: ");
Serial.println(distance);

// If object is within 20 cm, open the door  if
(distance < 20 && distance > 0) {
doorServo.write(90); // Door opens
delay(2000);      // Keep open for 2 seconds
} else {   doorServo.write(0); //
Door closes
}

delay(500);
}
```

### **Output:**

Serial Monitor

```
distance: 57
Distance: 57
Distance: 57
Distance: 57
Distance: 56
Distance: 57
Distance: 57
Distance: 57
```

Ultrasonic Distance Sensor... ?

Name 1

The diagram illustrates the hardware setup for an ultrasonic distance measurement. An Arduino Uno is connected to an HC-SR04 ultrasonic distance sensor. The sensor is mounted on a breadboard. A green box highlights the connection between the Arduino pins and the sensor. A red box highlights the power connection from the Arduino 5V pin to the breadboard power rail.