

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:

