**Slip 13:Write a program to measure the distance using ultrasonic sensor and**

**make LED blink using Arduino**.

Example of an Arduino program that measures distance using an ultrasonic sensor

(HC-SR04) and makes an LED blink based on the measured distance.

Components Needed:

Arduino board (e.g., Arduino Uno)

HC-SR04 ultrasonic sensor

LED

Wiring:

1) Place the HC-SR04:

VCC to 5V on Arduino

GND to GND on Arduino

Trig to digital pin 9

Echo to digital pin 10

2) Connect the LED:

One end to the default terminal and double click on it and select IO13

The other end of the resistor to GND.

Arduino Code:

const int trigPin = 9;

const int echoPin = 10;

const int ledPin = 13;

void setup() {

// Start the serial communication

Serial.begin(9600);

// Set pin modes

pinMode(trigPin, OUTPUT);

pinMode(echoPin, INPUT);

pinMode(ledPin, OUTPUT);

}

void loop() {

// Clear the trigPin

digitalWrite(trigPin, LOW);

delayMicroseconds(2);

// Set the trigPin high for 10 microseconds

digitalWrite(trigPin, HIGH);

delayMicroseconds(10);

digitalWrite(trigPin, LOW);

// Read the echoPin

long duration = pulseIn(echoPin, HIGH);

// Calculate the distance in cm

float distance = duration \* 0.034 / 2;

// Print distance to Serial Monitor

Serial.print("Distance: ");

Serial.print(distance);

Serial.println(" cm");

// Blink the LED based on distance

if (distance > 10) { // If distance is more than 40 cm

digitalWrite(ledPin, HIGH); // Turn LED on

} else {

digitalWrite(ledPin, LOW); // Turn LED off

}

// Wait before next measurement

delay(500);

}

Explanation:

1) Setup: The pins are initialized, and serial communication is started for

debugging.

2) Loop:

The ultrasonic sensor sends a pulse and measures the time taken for the

echo to return.

The distance is calculated based on the duration of the pulse.

If the distance is more than 10 cm, the LED will blink on; otherwise, it

will be off.

3) Delay: The loop pauses for half a second before taking the next