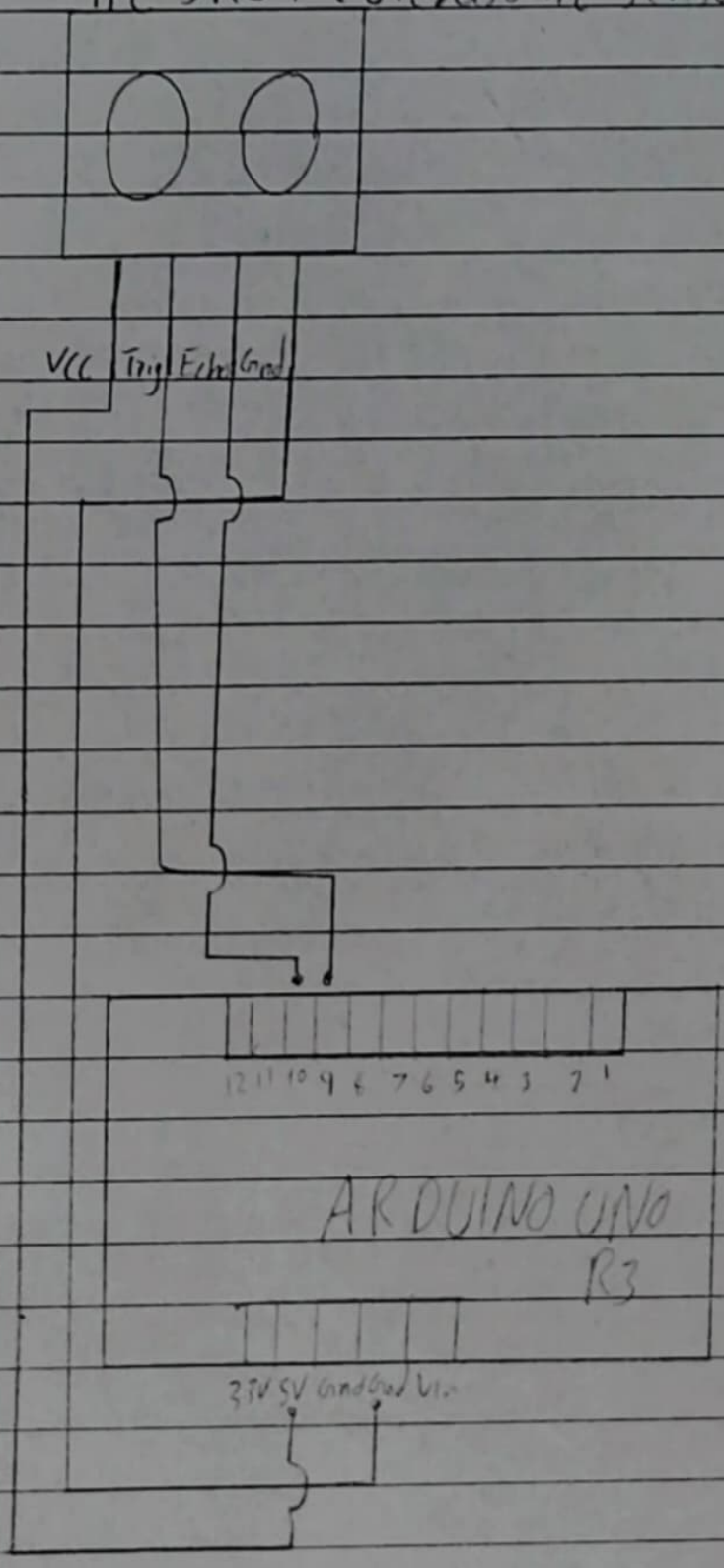
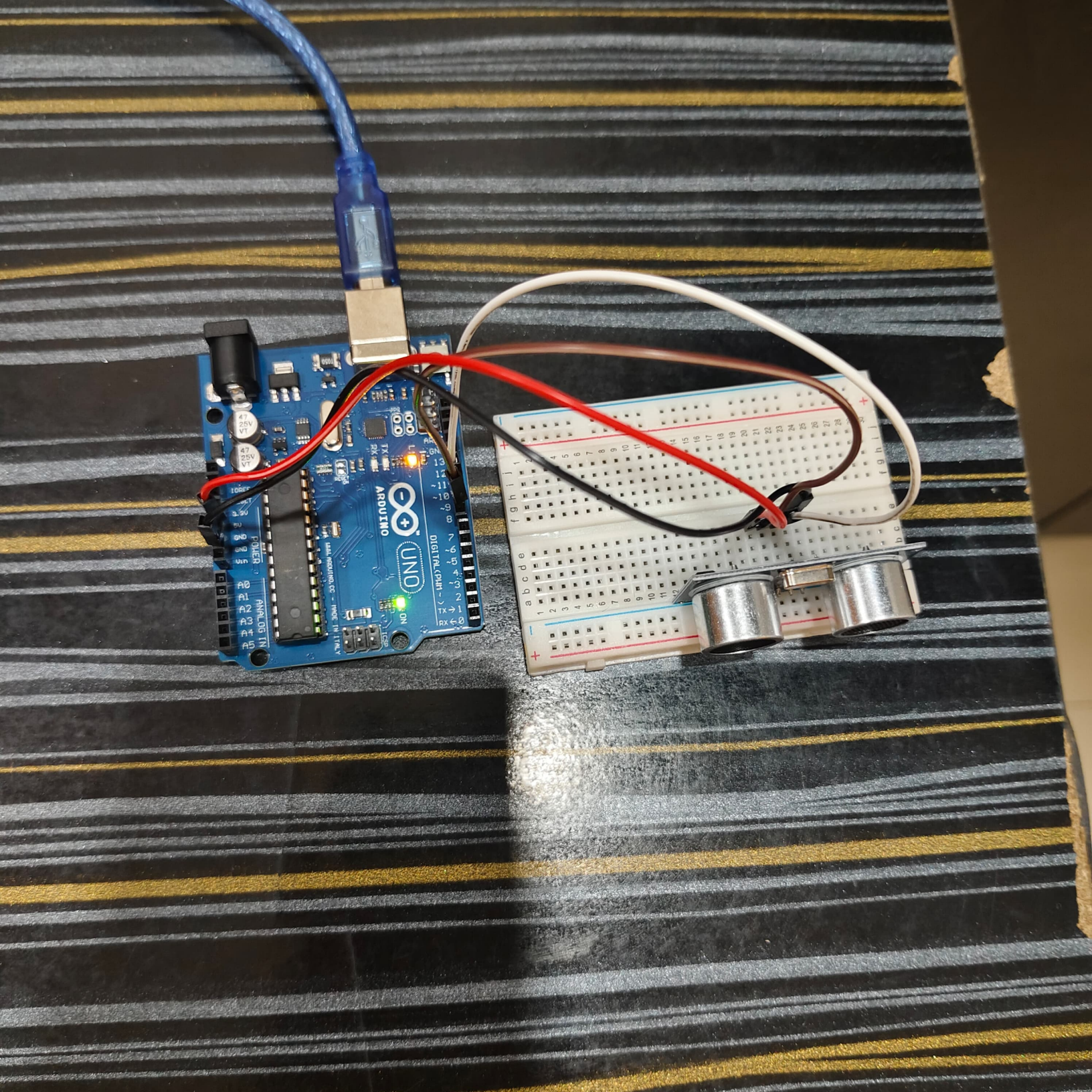
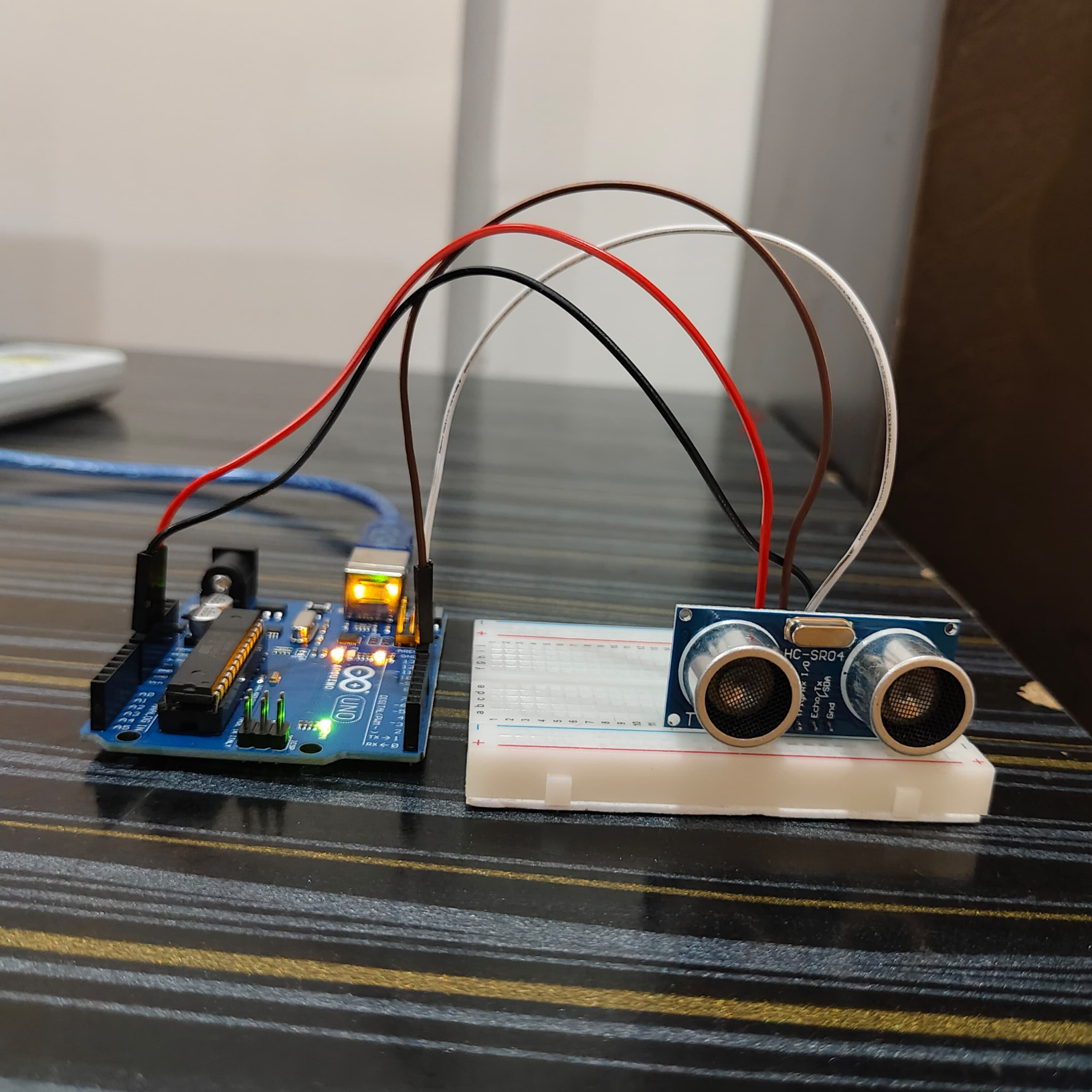
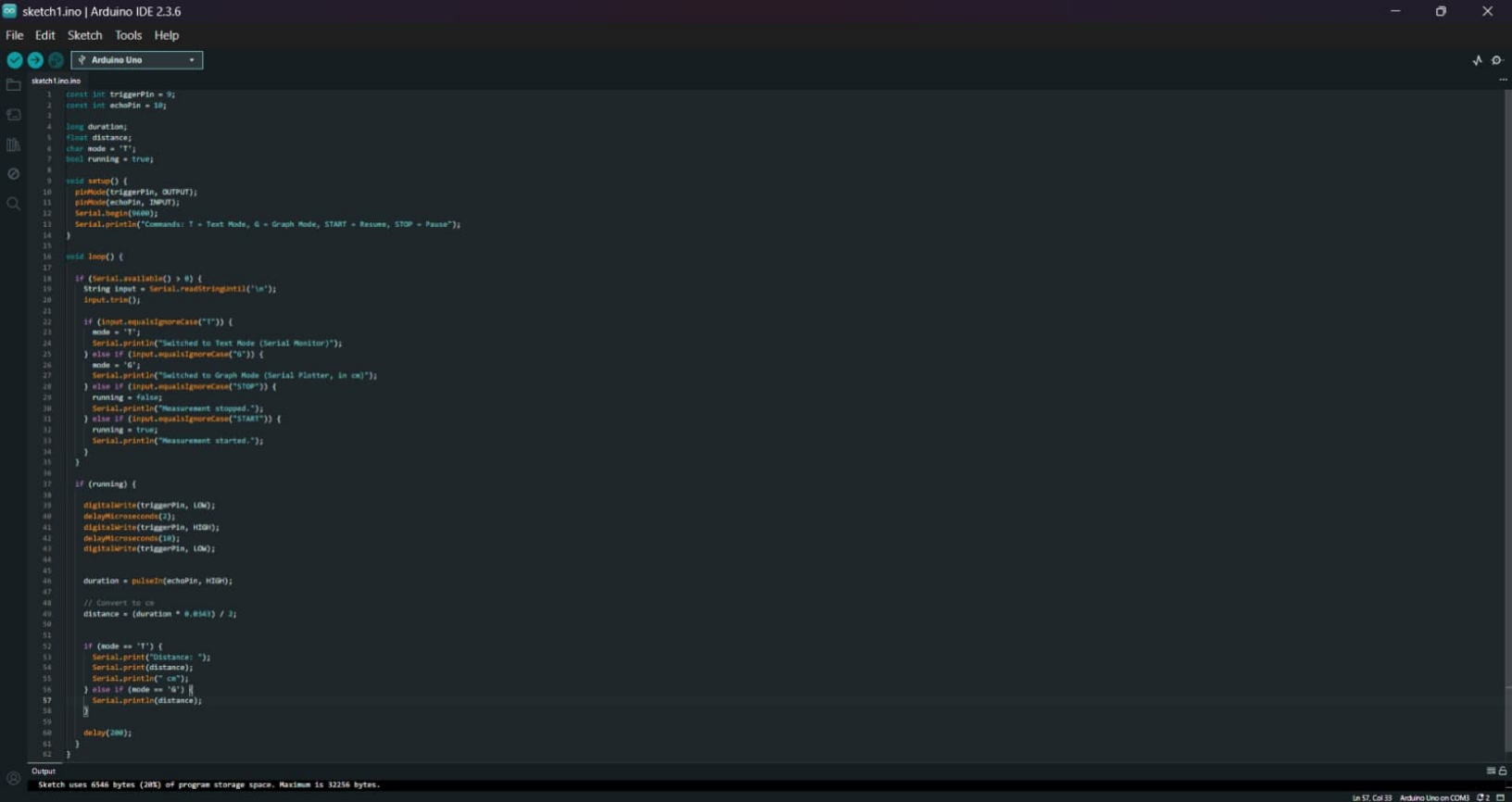
PAGE NO.:

HC-SR04 (Ultrasonic sensor)




ARDUINO
UNO
POWER
ANALOG IN
DIGITAL (PWM~)
ON


HC-SR04
Vcc
Trig
Echo
Gnd
UNO


sketch1.ino | Arduino IDE 2.3.6
File Edit Sketch Tools Help
Arduino Uno
sketch1.ino.ino
const int triggerPin = 9;
const int echoPin = 10;
long duration;
float distance;
char mode = 'T';
bool running = true;
void setup() {
pinMode(triggerPin, OUTPUT);
pinMode(echoPin, INPUT);
Serial.begin(9600);
Serial.println("Commands: T = Text Mode, G = Graph Mode, START = Resume, STOP = Pause");
}
void loop() {
if (Serial.available() > 0) {
String input = Serial.readStringUntil('\n');
input.trim();
if (input.equalsIgnoreCase("T")) {
mode = 'T';
Serial.println("Switched to Text Mode (Serial Monitor)");
} else if (input.equalsIgnoreCase("G")) {
mode = 'G';
Serial.println("Switched to Graph Mode (Serial Plotter, in cm)");
} else if (input.equalsIgnoreCase("STOP")) {
running = false;
Serial.println("Measurement stopped.");
} else if (input.equalsIgnoreCase("START")) {
running = true;
Serial.println("Measurement started.");
}
}
if (running) {
digitalWrite(triggerPin, LOW);
delayMicroseconds(2);
digitalWrite(triggerPin, HIGH);
delayMicroseconds(10);
digitalWrite(triggerPin, LOW);
duration = pulseIn(echoPin, HIGH);
// Convert to cm
distance = (duration * 0.0343) / 2;
if (mode == 'T') {
Serial.print("Distance: ");
Serial.print(distance);
Serial.println(" cm");
} else if (mode == 'G') {
Serial.println(distance);
}
delay(200);
}
}
Output
Sketch uses 6546 bytes (20%) of program storage space. Maximum is 32256 bytes.
Ln 57, Col 33 Arduino Uno on COM3

sketch1.ino | Arduino IDE 2.3.6

File Edit Sketch Tools Help

Arduino Uno

sketch1.ino.ino

```
1  const int triggerPin = 9;
2  const int echoPin = 10;
3
4  long duration;
5  float distance;
```

Output Serial Monitor

Message (Enter to send message to 'Arduino Uno' on 'COM3')

New Line 9600 baud

```
D22.18 cm
Distance: 322.09 cm
Commands: T = Text Mode, G = Graph Mode, START = Resume, STOP = Pause
Distance: 0.00 cm
Distance: 320.40 cm
Distance: 1198.08 cm
Distance: 320.46 cm
Distance: 321.75 cm
Distance: 321.17 cm
Distance: 321.73 cm
Distance: 321.61 cm
Distance: 321.29 cm
Distance: 1197.91 cm
Distance: 321.31 cm
Distance: 320.81 cm
Distance: 320.48 cm
Distance: 322.52 cm
Distance: 321.77 cm
Distance: 1197.91 cm
Distance: 320.46 cm
Distance: 321.63 cm
Distance: 1198.13 cm
Distance: 1197.96 cm
Distance: 1197.91 cm
Distance: 1198.00 cm
Distance: 1197.91 cm
Distance: 320.83 cm
Distance: 1198.10 cm
Distance: 1197.98 cm
Distance: 1197.96 cm
Distance: 321.29 cm
Distance: 321.73 cm
Distance: 320.89 cm
Distance: 320.96 cm
Distance: 320.41 cm
```

Ln 57, Col 33 Arduino Uno on COM3 2

sketch1.ino | Arduino IDE 2.3.6

File Edit Sketch Tools Help

Arduino Uno

sketch1.ino.ino

```
1  const int triggerPin = 9;
2  const int echoPin = 10;
3
4  long duration;
5  float distance;
```

Output Serial Monitor

Message (Enter to send message to 'Arduino Uno' on 'COM3')

New Line 9600 baud

```
Distance: 1198.05 cm
Distance: 1198.03 cm
Distance: 1198.13 cm
Distance: 1198.08 cm
Distance: 320.67 cm
Distance: 320.77 cm
Distance: 321.65 cm
Distance: 322.04 cm
Distance: 320.81 cm
Distance: 320.67 cm
Distance: 1198.06 cm
Distance: 1198.06 cm
Switched to Graph Mode (Serial Plotter, in cm)
1192.08
1198.00
321.63
1198.05
1198.12
1198.03
1198.12
1198.06
321.10
1198.22
1197.98
321.65
1198.05
1198.13
322.40
1198.27
321.56
321.67
321.22
322.45
1198.06
1198.03
1197.96
```

Ln 57, Col 33 Arduino Uno on COM3

COM3
value 1
Interpolate
STOP
1,400
1,200
1,000
800
600
400
200
0
6
13
20
27
Type Message
SEND
New Line
9600 baud

sketch1.ino | Arduino IDE 2.3.6

File Edit Sketch Tools Help

Arduino Uno

sketch1.ino.ino

```
1  const int triggerPin = 9;
2  const int echoPin = 10;
3
4  long duration;
5  float distance;
```

Output Serial Monitor

STOP

New Line 9600 baud

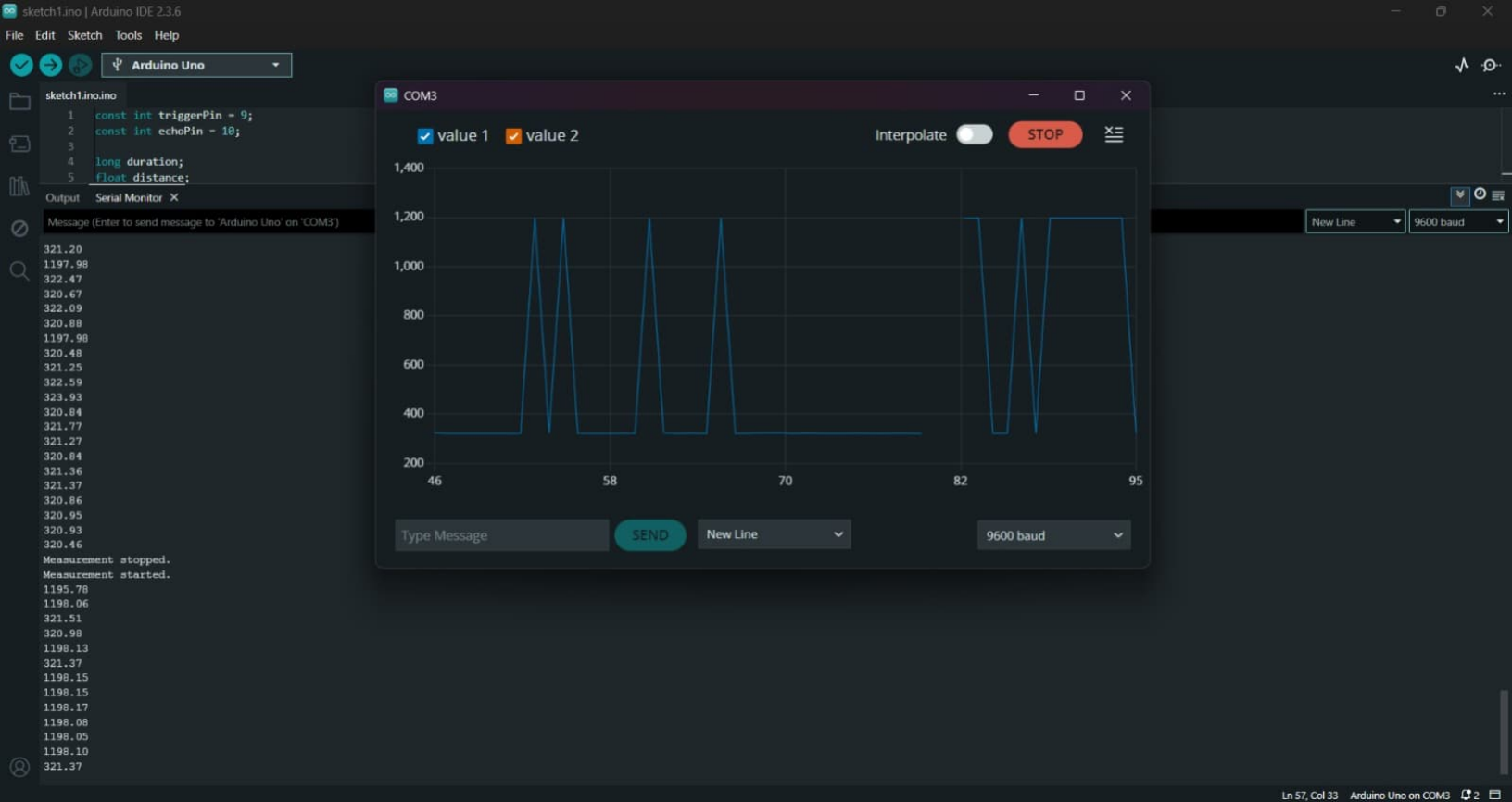
```
322.56
320.74
320.83
320.84
320.74
320.76
321.29
1197.93
321.67
1198.00
321.27
320.79
320.69
321.68
321.20
1197.98
322.47
320.67
322.09
320.88
1197.98
320.48
321.25
322.59
323.93
320.84
321.77
321.27
320.84
321.36
321.37
320.86
320.95
320.93
320.46
Measurement stopped.
```

COM3

value 1 value 2 Interpolate STOP

Type Message SEND New Line 9600 baud

Ln 57, Col 33 Arduino Uno on COM3


sketch1.ino | Arduino IDE 2.3.6
File Edit Sketch Tools Help
Arduino Uno
sketch1.ino.ino
1 const int triggerPin = 9;
2 const int echoPin = 10;
3
4 long duration;
5 float distance;
Output Serial Monitor
Message (Enter to send message to 'Arduino Uno' on 'COM3')
New Line
9600 baud
321.20
1197.98
322.47
320.67
322.09
320.88
1197.90
320.48
321.25
322.59
323.93
320.84
321.77
321.27
320.84
321.36
321.37
320.86
320.95
320.93
320.46
Measurement stopped.
Measurement started.
1195.78
1198.06
321.51
320.98
1198.13
321.37
1198.15
1198.15
1198.17
1198.08
1198.05
1198.10
321.37
COM3
value 1
value 2
Interpolate
STOP
1,400
1,200
1,000
800
600
400
200
46
58
70
82
95
Type Message
SEND
New Line
9600 baud
Ln 57, Col 33
Arduino Uno on COM3