

# YESHWANTRAO CHAVAN COLLEGE OF ENGINEERING

IIOT 2404: Internet of Things Application Lab

## LAB-03

OBJECTIVE/ AIM	Interface ESP32 with Ultrasonic Sensor and show output at 0.96' OLED Display and in BLYNK.
SOFTWARE REQUIRE D	Arduino IDE
CODE	<pre>#define BLYNK_TEMPLATE_ID "TMPL3rfdZNcy0" #define BLYNK_TEMPLATE_NAME "ULTRASONIC" #define BLYNK_AUTH_TOKEN "dBoRlw2lDdHl-HARKlFF1MAwdyiBWQwZ"  #include &lt;Wire.h&gt; #include &lt;Adafruit_GFX.h&gt; #include &lt;Adafruit_SSD1306.h&gt; #include &lt;WiFi.h&gt; #include &lt;BlynkSimpleEsp32.h&gt;  #define SCREEN_WIDTH 128 // OLED display width, in pixels #define SCREEN_HEIGHT 64 // OLED display height, in pixels  // Declaration for an SSD1306 display connected to I2C (SDA, // SCL pins) Adafruit_SSD1306 display(SCREEN_WIDTH, SCREEN_HEIGHT, &amp;Wire, -1);  const int trigPin = 5; const int echoPin = 18;  // Define sound speed in cm/uS #define SOUND_SPEED 0.034 #define CM_TO_INCH 0.393701  long duration; int distanceCm; float distanceInch; // Changed to float for precision  // Wi-Fi credentials char ssid[] = "S23"; // Your Wi-Fi SSID char pass[] = "aman09877"; // Your Wi-Fi password</pre>

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```
void setup() {
  Serial.begin(115200);
  pinMode(trigPin, OUTPUT); // Sets the trigPin as an Output
  pinMode(echoPin, INPUT);  // Sets the echoPin as an Input

  // Initialize display
  if (!display.begin(SSD1306_SWITCHCAPVCC, 0x3C)) {
    Serial.println(F("SSD1306 allocation failed"));
    for (;;);
  }
  delay(500);
  display.clearDisplay();
  display.setTextSize(1);
  display.setTextColor(WHITE);

  // Connect to Blynk
  Blynk.begin(BLYNK_AUTH_TOKEN, ssid, pass);
}

void loop() {
  // Blynk run
  Blynk.run();

  // Clears the trigPin
  digitalWrite(trigPin, LOW);
  delayMicroseconds(2);
  // Sets the trigPin on HIGH state for 10 microseconds
  digitalWrite(trigPin, HIGH);
  delayMicroseconds(10);
  digitalWrite(trigPin, LOW);

  // Reads the echoPin, returns the sound wave travel time
  // in microseconds
  duration = pulseIn(echoPin, HIGH);

  // Calculate the distance in cm
  distanceCm = duration * SOUND_SPEED / 2;

  // Convert to inches (using float)
  distanceInch = distanceCm * CM_TO_INCH;
```

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```
// Prints the distance in the Serial Monitor
Serial.print("Distance (cm): ");
Serial.println(distanceCm);
Serial.print("Distance (inch): ");
Serial.println(distanceInch);

// Display distance on OLED
display.clearDisplay();
display.setCursor(0, 10);
display.setTextSize(1);
display.print("DISTANCE");

display.setCursor(0, 25);
display.setTextSize(2);
display.print(distanceCm);
display.print(" cm");

display.setCursor(0, 50);
display.setTextSize(2);
display.print(distanceInch, 2); // Printing float value
with 2 decimal places
display.print(" in");

display.display();

// Send distance to Blynk (Virtual Pin V3 for cm and V4
for inch)
Blynk.virtualWrite(V3, distanceCm); // Sending integer
value for cm
Blynk.virtualWrite(V4, distanceInch); // Sending float
value for inches

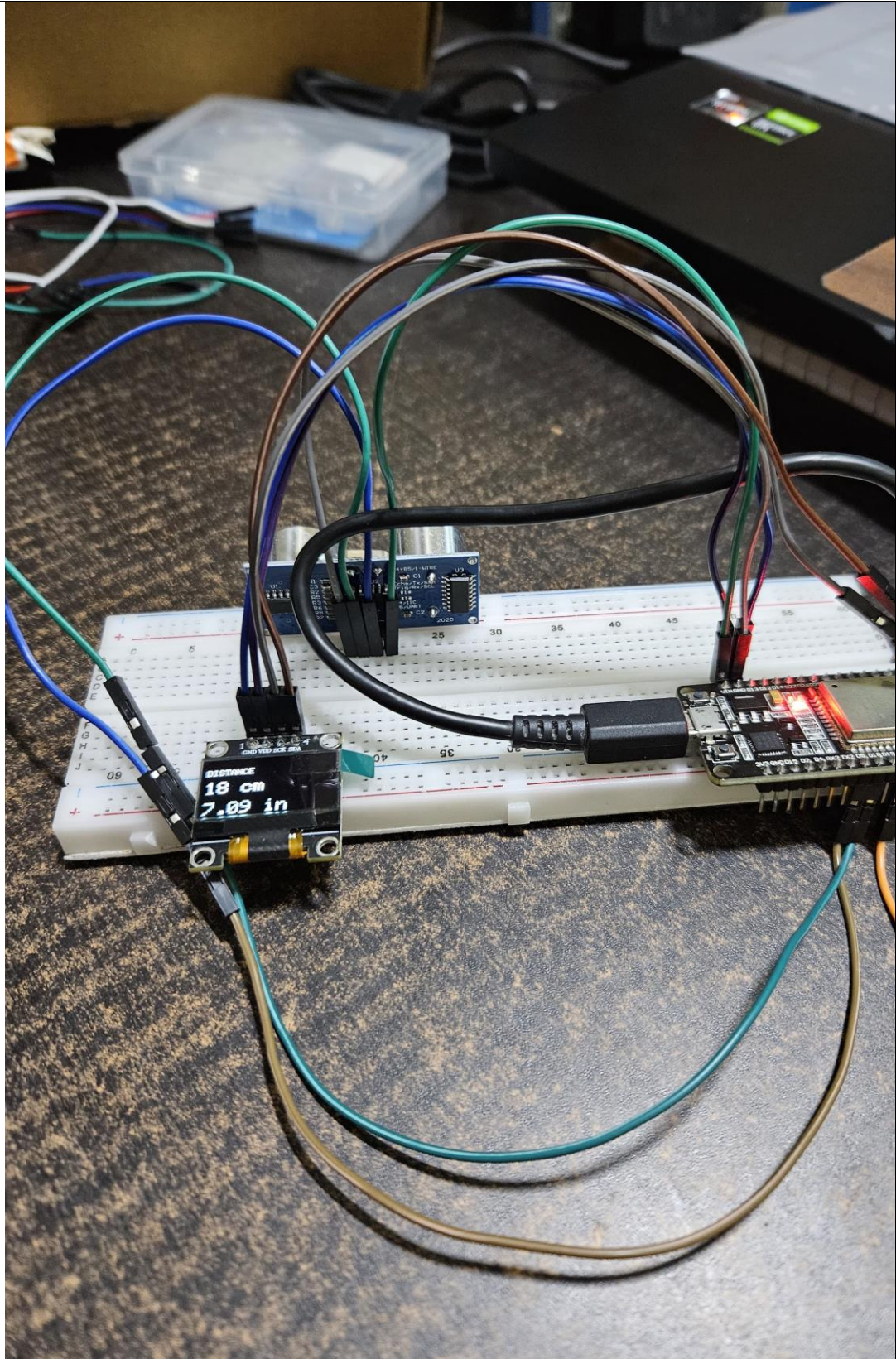
delay(500);
}
```

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OUTPUT/  
PHOTO


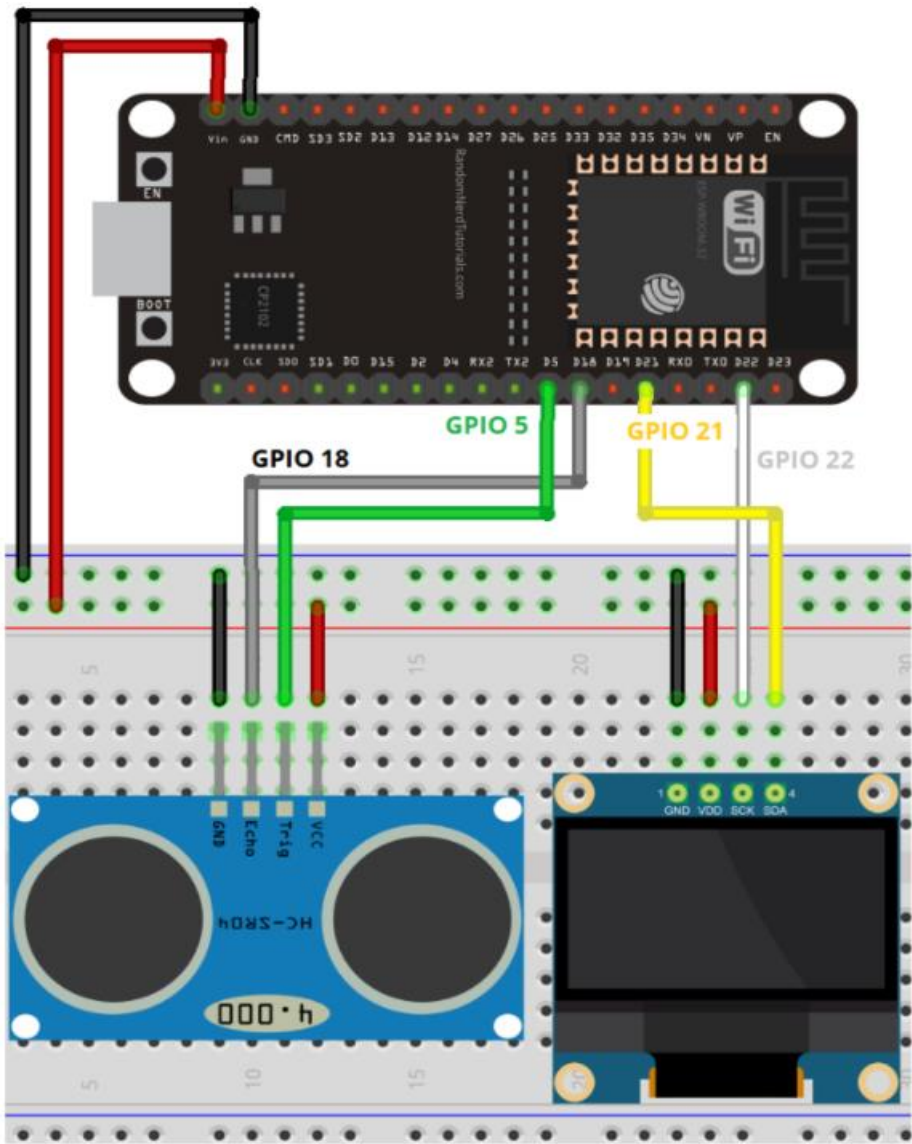




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	<div data-bbox="347 331 943 533"><div></div><div><b>ULTRASONIC</b> <span>Online</span></div><div><a href="#">Aman</a> <a href="#">My organization - 9396BJ</a></div><div><span>🔍</span> <span>🔔</span> <span>🔗</span> <span>📄</span> <span>⋮</span> <span>Edit</span></div><div><span>Live</span> <span>1h</span> <span>6h</span> <span>1d</span> <span>1w</span> <span>1mo</span> <span>3mo</span> <span>6mo</span> <span>1y</span> <span>📊</span></div></div> <div data-bbox="657 555 1219 654"><div>V3 cm18</div><div>V4 inch7</div></div> <div data-bbox="399 743 1315 1883"></div>
RESULT	THE PROGRAM HAS BEEN EXECUTED SUCCESSFULLY