

# YESHWANTRAO CHAVAN COLLEGE OF ENGINEERING

## IOT 2404: Internet of Things Application Lab LAB-08

OBJECTIVE/ AIM	IoT-Based Rain Alert System with Real-Time Weather Monitoring
SOFTWARE REQUIRED	Arduino IDE
CODE	<pre>// Blynk Credentials #define BLYNK_TEMPLATE_ID "--" #define BLYNK_TEMPLATE_NAME "WEEK 08" #define BLYNK_AUTH_TOKEN "-----"  #include &lt;WiFi.h&gt; #include &lt;BlynkSimpleEsp32.h&gt; #include &lt;Adafruit_SSD1306.h&gt; #include &lt;DHT.h&gt;  // WiFi credentials char ssid[] = "S23"; char pass[] = "aman09877";  // Pin definitions #define RAIN_SENSOR_ANALOG_PIN 34 // Analog rain sensor #define RAIN_SENSOR_DIGITAL_PIN 32 // Digital rain sensor #define BUZZER_PIN 26 // Buzzer #define LED_PIN 25 // LED for rain indication #define DHT_PIN 4 // DHT22 data pin  // OLED setup #define SCREEN_WIDTH 128 #define SCREEN_HEIGHT 64 Adafruit_SSD1306 display(SCREEN_WIDTH, SCREEN_HEIGHT, &amp;Wire, -1);  // DHT setup #define DHTTYPE DHT22 DHT dht(DHT_PIN, DHTTYPE);</pre>

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```
// Blynk virtual pins
#define TEMP_VPIN V1
#define HUMIDITY_VPIN V2
#define RAIN_STATUS_VPIN V3

// Rain threshold
#define RAIN_SENSOR_THRESHOLD 500 // Analog threshold for
rain

void setup() {
  Serial.begin(115200);
  Blynk.begin(BLYNK_AUTH_TOKEN, ssid, pass);

  // Pin modes
  pinMode(RAIN_SENSOR_DIGITAL_PIN, INPUT);
  pinMode(BUZZER_PIN, OUTPUT);
  pinMode(LED_PIN, OUTPUT);

  dht.begin();

  // OLED initialization
  if(!display.begin(SSD1306_SWITCHCAPVCC, 0x3C)) {
    Serial.println(F("OLED allocation failed"));
    for(;;);
  }
  display.clearDisplay();
  display.display();
}

void loop() {
  Blynk.run();

  // Read rain sensor data
  int rainAnalogValue =
analogRead(RAIN_SENSOR_ANALOG_PIN);
  int rainDigitalValue =
digitalRead(RAIN_SENSOR_DIGITAL_PIN);

  // Temperature and humidity readings
  float temperature = dht.readTemperature();
```

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```
float humidity = dht.readHumidity();

// Display data on OLED
display.clearDisplay();
display.setTextSize(1);
display.setTextColor(SSD1306_WHITE);

// Show temperature
display.setCursor(0, 0);
display.print("Temp: ");
display.print(temperature);
display.print(" C");

// Show humidity
display.setCursor(0, 10);
display.print("Humidity: ");
display.print(humidity);
display.print(" %");

// Rain detection logic
display.setCursor(0, 20);
if (rainDigitalValue == LOW || rainAnalogValue <
RAIN_SENSOR_THRESHOLD) {
    display.print("Rain: Detected");
    digitalWrite(LED_PIN, HIGH);    // LED on
    digitalWrite(BUZZER_PIN, HIGH); // Buzzer on
    Blynk.virtualWrite(RAIN_STATUS_VPIN, 1); // Blynk
update
    Blynk.logEvent("RAIN_DETECTED", "Rain has been
detected!");
} else {
    display.print("Rain: None");
    digitalWrite(LED_PIN, LOW);    // LED off
    digitalWrite(BUZZER_PIN, LOW); // Buzzer off
    Blynk.virtualWrite(RAIN_STATUS_VPIN, 0); // Blynk
update
}

display.display();

// Update Blynk for temperature and humidity
```

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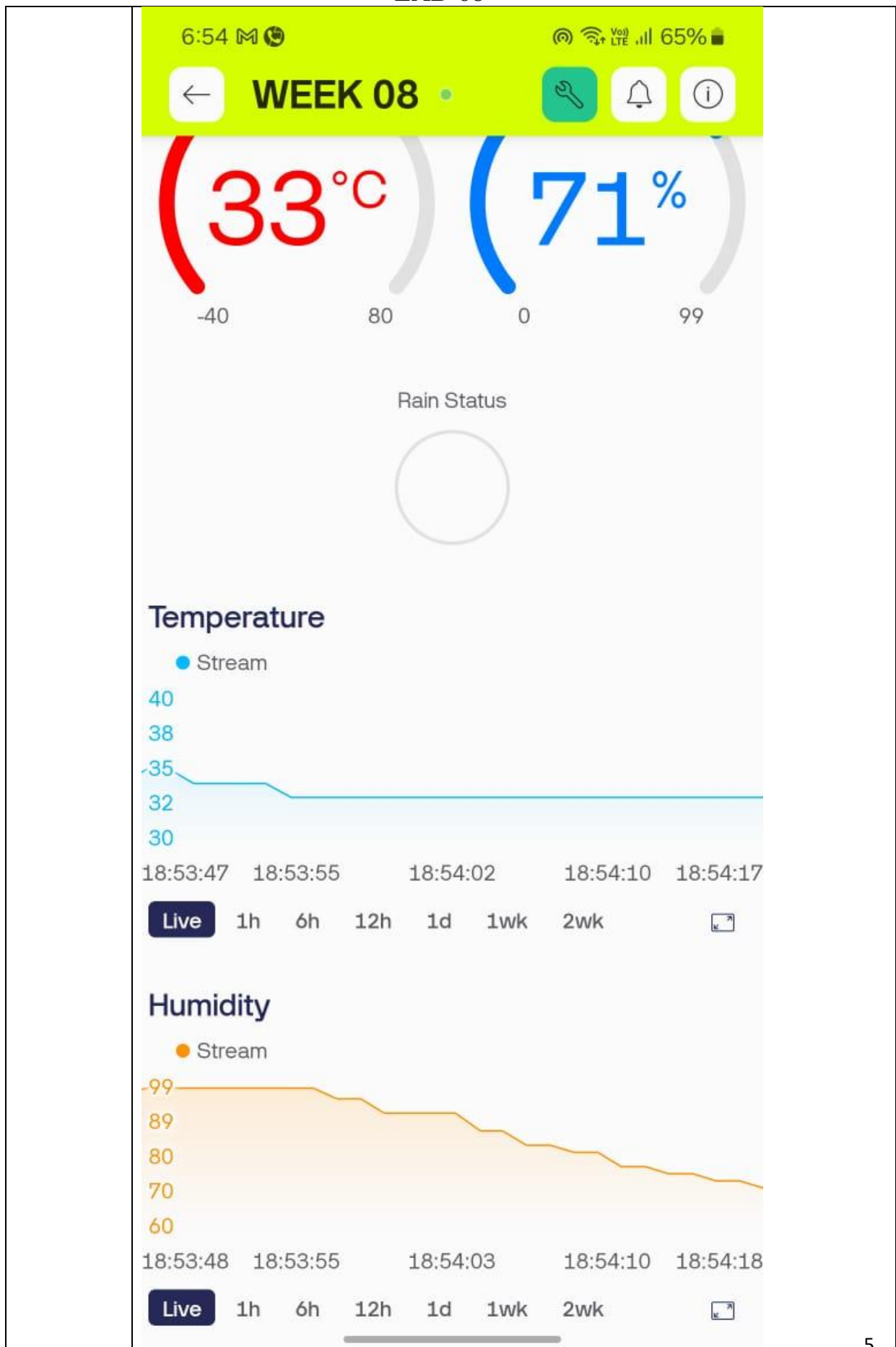
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	<pre>Blynk.virtualWrite(TEMP_VPIN, temperature); Blynk.virtualWrite(HUMIDITY_VPIN, humidity);  delay(1000); // Update interval }</pre>
OUTPUT/ PHOTO	

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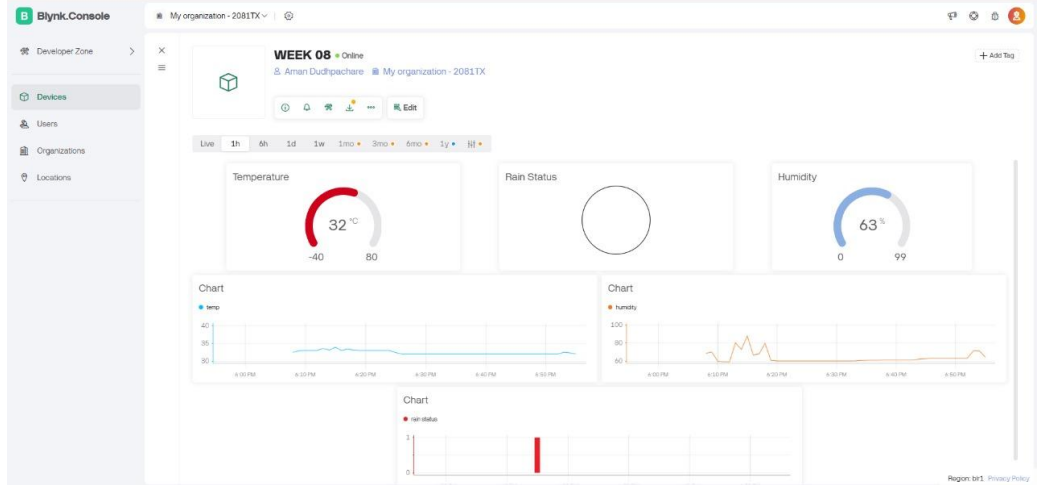
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## LAB-08

	 <p>The screenshot displays the Blynk Console interface for a project named 'WEEK 08'. The dashboard includes a left sidebar with navigation options: Developer Zone, Devices, Users, Organizations, and Locations. The main area shows a live data feed for 'WEEK 08' with a status of 'Online'. It features three primary widgets: a Temperature gauge showing 32°C, a Rain Status indicator (a circle), and a Humidity gauge showing 63%. Below these are three line charts: 'temp' (temperature) showing a fluctuating line, 'humidity' showing a line with peaks, and 'rain status' showing a single red bar indicating a rain event. The interface also includes a top navigation bar with 'My organization - 2081TX' and a bottom status bar indicating 'Region: br1' and 'Privacy Policy'.</p>
RESULT	THE PROGRAM HAS BEEN WRITTEN AND EXECUTED SUCCESSFULLY