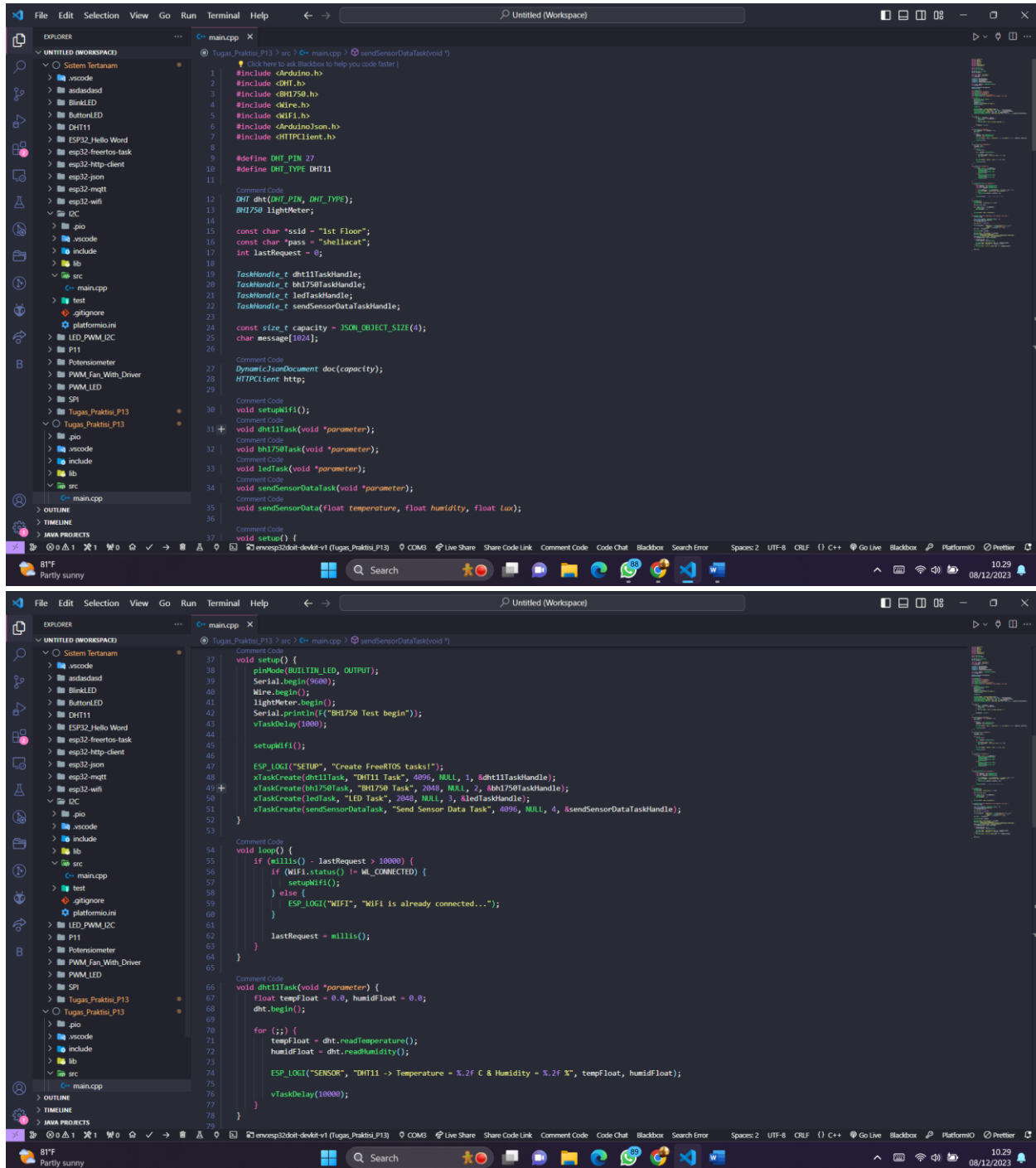


Abdi Surya Perdana

Nim 2004426

Tugas Praktisi Send Message data Sensor DHT11 dan BH1750 ke Telegram

Code Program



```
1 #include <Arduino.h>
2 #include <DHT.h>
3 #include <BH1750.h>
4 #include <Wire.h>
5 #include <DHT11.h>
6 #include <ArduinoJson.h>
7 #include <HTTPClient.h>
8
9 #define DHT_PIN 27
10 #define DHT_TYPE DHT11
11
12 // Comment Code
13 DHT dht(DHT_PIN, DHT_TYPE);
14 BH1750 lightMeter;
15
16 const char *ssid = "ist Floor";
17 const char *pass = "shellacat";
18 int lastRequest = 0;
19
20 TaskHandle_t dht11TaskHandle;
21 TaskHandle_t bh1750TaskHandle;
22 TaskHandle_t ledTaskHandle;
23 TaskHandle_t sendSensorDataTaskHandle;
24
25 const size_t capacity = JSON_OBJECT_SIZE(4);
26 char message[1024];
27
28 // Comment Code
29 DynamicJsonDocument doc(capacity);
30 HTTPClient http;
31
32 // Comment Code
33 void setupWifi();
34
35 // Comment Code
36 void dht11Task(void *parameter);
37
38 // Comment Code
39 void bh1750Task(void *parameter);
40
41 // Comment Code
42 void ledTask(void *parameter);
43
44 // Comment Code
45 void sendSensorDataTask(void *parameter);
46
47 // Comment Code
48 void sendSensorData(float temperature, float humidity, float lux);
49
50 // Comment Code
51 void setup() {
52
53     // Comment Code
54     void setup() {
55         pinMode(BUILTIN_LED, OUTPUT);
56         Serial.begin(9600);
57         Wire.begin();
58         lightMeter.begin();
59         Serial.println("BH1750 Test begin");
60         vTaskDelay(1000);
61         setupWifi();
62
63         ESP_LOGI("SETUP", "Create FreeRTOS tasks!");
64         xTaskCreate(dht11Task, "DHT11 Task", 4096, NULL, 1, &dht11TaskHandle);
65         xTaskCreate(bh1750Task, "BH1750 Task", 2048, NULL, 2, &bh1750TaskHandle);
66         xTaskCreate(ledTask, "LED Task", 2048, NULL, 3, &ledTaskHandle);
67         xTaskCreate(sendSensorDataTask, "Send Sensor Data Task", 4096, NULL, 4, &sendSensorDataTaskHandle);
68     }
69
70     // Comment Code
71     void loop() {
72         if (millis() - lastRequest > 10000) {
73             if (WiFi.status() != WL_CONNECTED) {
74                 setupWifi();
75             } else {
76                 ESP_LOGI("WIFI", "WiFi is already connected...");
77             }
78             lastRequest = millis();
79         }
80     }
81
82     // Comment Code
83     void dht11Task(void *parameter) {
84         float tempFloat = 0.0, humidFloat = 0.0;
85         dht.begin();
86
87         for (;;) {
88             tempFloat = dht.readTemperature();
89             humidFloat = dht.readHumidity();
90
91             ESP_LOGI("SENSOR", "DHT11 -> Temperature = %.2f C & Humidity = %.2f %", tempFloat, humidFloat);
92             vTaskDelay(10000);
93         }
94     }
95 }
```

```
66 void dht11Task(void *parameter) {
67     float tempFloat = 0.0, humidFloat = 0.0;
68     dht.begin();
69
70     for (;;) {
71         tempFloat = dht.readTemperature();
72         humidFloat = dht.readHumidity();
73
74         ESP_LOGI("SENSOR", "DHT11 -> Temperature = %.2f C & Humidity = %.2f %", tempFloat, humidFloat);
75
76         vTaskDelay(10000);
77     }
78 }
79
80
81 void bh1750Task(void *parameter) {
82     float lux = 0.0;
83     lightMeter.begin();
84
85     for (;;) {
86         vTaskDelay(100);
87
88         lux = lightMeter.readLightLevel();
89
90         if (isnan(lux) || lux < 0.0) {
91             ESP_LOGW("SENSOR", "Invalid lux value: %.2f", lux);
92             lux = 0.0;
93         }
94
95         ESP_LOGI("SENSOR", "BH1750 -> Light = %.2f lux", lux);
96
97         vTaskDelay(10000);
98     }
99 }
```

```
100 void ledTask(void *parameter) {
101     for (;;) {
102         if (WiFi.status() == WL_CONNECTED) {
103             digitalWrite(BUILTIN_LED, HIGH);
104             vTaskDelay(1000);
105             digitalWrite(BUILTIN_LED, LOW);
106             vTaskDelay(1000);
107         } else {
108             digitalWrite(BUILTIN_LED, HIGH);
109             vTaskDelay(200);
110             digitalWrite(BUILTIN_LED, LOW);
111             vTaskDelay(200);
112         }
113     }
114 }
115
116
117 void sendSensorDataTask(void *parameter) {
118     for (;;) {
119         float tempFloat = dht.readTemperature();
120         float humidFloat = dht.readHumidity();
121         float lux = lightMeter.readLightLevel();
122
123         if (isnan(tempFloat) || isnan(humidFloat) || isnan(lux) || lux < 0.0) {
124             ESP_LOGW("SENSOR", "Invalid sensor data. Skipping...");
125         } else {
126             sendSensorData(tempFloat, humidFloat, lux);
127         }
128
129         vTaskDelay(60000); // Mengirim data setiap 1 menit
130     }
131 }
132
133 void setupWifi() {
134     vTaskDelay(10);
135     ESP_LOGI("WIFI", "Connecting to %s", ssid);
136
137     WiFi.begin(ssid, pass);
138
139     while (WiFi.status() != WL_CONNECTED) {
140         vTaskDelay(500);
141         ESP_LOGI("WIFI", ".");
142     }
```

```
137 while (WiFi.status() != WL_CONNECTED) {
138     vTaskDelay(500);
139     ESP_LOGI("WiFi", ".");
140 }
141 ESP_LOGI("WiFi", "WiFi is connected!");
142 }
143
144 // Comment Code
145 void sendSensorData(float temperature, float humidity, float lux) {
146     HTTPClient http;
147
148     const size_t capacity = JSON_OBJECT_SIZE(4) + 60;
149     DynamicJsonDocument doc(capacity);
150     char message[capacity];
151
152     doc["chat_id"] = 1228390909;
153
154     String messageText = "Temperature: " + String(temperature, 2) + " C\n"
155         + "Humidity: " + String(humidity, 2) + " %\n"
156         + "Light: " + String(lux, 2) + " lux";
157
158     doc["text"] = messageText;
159
160     serializeJson(doc, message);
161
162     ESP_LOGI("TELE", "HTTP Payload: %s", message);
163     http.begin("https://api.telegram.org/"
164         + "bot6529117442:AAG19JHd1M-H3FMphroL8LMjWkyKvm/sendMessage");
165     http.addHeader("Content-Type", "application/json");
166     int httpResponseCode = http.POST(message);
167
168     if (httpResponseCode > 0) {
169         String response = http.getString();
170
171         ESP_LOGI("TELE", "HTTP Response code: %d", httpResponseCode);
172         ESP_LOGI("TELE", "Response: %s", response.c_str());
173     } else {
174         ESP_LOGI("TELE", "Error on sending POST: %d", httpResponseCode);
175     }
176
177     http.end();
178 }
179 }
```

Hasil Output Terminal

```
20802[1][main.cpp:59] loop(): [WiFi] WiFi is already connected...
21172[1][main.cpp:74] dht11Task(): [SENSOR] DHT11 -> Temperature - 29.90 C & Humidity - 70.00
21316[1][main.cpp:94] bh1750Task(): [SENSOR] BH1750 -> Light - 36.67 lux
30803[1][main.cpp:59] loop(): [WiFi] WiFi is already connected...
31202[1][main.cpp:74] dht11Task(): [SENSOR] DHT11 -> Temperature - 29.90 C & Humidity - 70.00
31417[1][main.cpp:94] bh1750Task(): [SENSOR] BH1750 -> Light - 36.67 lux
40804[1][main.cpp:59] loop(): [WiFi] WiFi is already connected...
41222[1][main.cpp:74] dht11Task(): [SENSOR] DHT11 -> Temperature - 29.90 C & Humidity - 70.00
41518[1][main.cpp:94] bh1750Task(): [SENSOR] BH1750 -> Light - 36.67 lux
58085[1][main.cpp:59] loop(): [WiFi] WiFi is already connected...
51262[1][main.cpp:74] dht11Task(): [SENSOR] DHT11 -> Temperature - 29.90 C & Humidity - 70.00
53619[1][main.cpp:94] bh1750Task(): [SENSOR] BH1750 -> Light - 35.83 lux
60806[1][main.cpp:59] loop(): [WiFi] WiFi is already connected...
62939[1][main.cpp:162] sendSensorData(): [TELE] HTTP Payload: {"chat_id":1228390909,"text":"Temperature: 29.90 C\\nHumidity: 70.00 %\\nLight: 35.83 lux"}
63265[1][main.cpp:74] dht11Task(): [SENSOR] DHT11 -> Temperature - 29.90 C & Humidity - 70.00
63720[1][main.cpp:94] bh1750Task(): [SENSOR] BH1750 -> Light - 35.83 lux
65105[1][main.cpp:171] sendSensorData(): [TELE] HTTP Response code: 200
65106[1][main.cpp:172] sendSensorData(): [TELE] Response: {"ok":true,"result":{"message_id":355,"from":{"id":6529117442,"is_bot":true,"first_name":"Prabot","username":"Ksnfmxzbrjdbot","chat":{"id":1228390909,"first_name":"Abdi","last_name":"Surya","username":"Abdisurya","type":"private"},"date":1702005900,"text":"Temperature: 29.90 C\\nHumidity: 70.00 %\\nLight: 35.83 lux"}}}
70807[1][main.cpp:59] loop(): [WiFi] WiFi is already connected...
71297[1][main.cpp:74] dht11Task(): [SENSOR] DHT11 -> Temperature - 29.90 C & Humidity - 70.00
71821[1][main.cpp:94] bh1750Task(): [SENSOR] BH1750 -> Light - 36.67 lux
80808[1][main.cpp:59] loop(): [WiFi] WiFi is already connected...
81326[1][main.cpp:74] dht11Task(): [SENSOR] DHT11 -> Temperature - 29.90 C & Humidity - 70.00
81922[1][main.cpp:94] bh1750Task(): [SENSOR] BH1750 -> Light - 35.83 lux
90809[1][main.cpp:59] loop(): [WiFi] WiFi is already connected...
91355[1][main.cpp:74] dht11Task(): [SENSOR] DHT11 -> Temperature - 29.90 C & Humidity - 70.00
91823[1][main.cpp:94] bh1750Task(): [SENSOR] BH1750 -> Light - 35.00 lux
100810[1][main.cpp:59] loop(): [WiFi] WiFi is already connected...
101360[1][main.cpp:74] dht11Task(): [SENSOR] DHT11 -> Temperature - 29.90 C & Humidity - 70.00
104124[1][main.cpp:94] bh1750Task(): [SENSOR] BH1750 -> Light - 36.67 lux
110011[1][main.cpp:59] loop(): [WiFi] WiFi is already connected...
111414[1][main.cpp:74] dht11Task(): [SENSOR] DHT11 -> Temperature - 29.90 C & Humidity - 70.00
114225[1][main.cpp:94] bh1750Task(): [SENSOR] BH1750 -> Light - 36.67 lux
120812[1][main.cpp:59] loop(): [WiFi] WiFi is already connected...
121444[1][main.cpp:74] dht11Task(): [SENSOR] DHT11 -> Temperature - 29.90 C & Humidity - 70.00
124326[1][main.cpp:94] bh1750Task(): [SENSOR] BH1750 -> Light - 35.00 lux
125507[1][main.cpp:162] sendSensorData(): [TELE] HTTP Payload: {"chat_id":1228390909,"text":"Temperature: 29.90 C\\nHumidity: 70.00 %\\nLight: 35.83 lux"}
127877[1][main.cpp:171] sendSensorData(): [TELE] HTTP Response code: 200
127878[1][main.cpp:172] sendSensorData(): [TELE] Response: {"ok":true,"result":{"message_id":357,"from":{"id":6529117442,"is_bot":true,"first_name":"Prabot","username":"Ksnfmxzbrjdbot","chat":{"id":1228390909,"first_name":"Abdi","last_name":"Surya","username":"Abdisurya","type":"private"},"date":1702005900,"text":"Temperature: 29.90 C\\nHumidity: 70.00 %\\nLight: 35.83 lux"}}}
130813[1][main.cpp:59] loop(): [WiFi] WiFi is already connected...
131474[1][main.cpp:74] dht11Task(): [SENSOR] DHT11 -> Temperature - 29.90 C & Humidity - 70.00
134427[1][main.cpp:94] bh1750Task(): [SENSOR] BH1750 -> Light - 35.83 lux
140014[1][main.cpp:59] loop(): [WiFi] WiFi is already connected...
141503[1][main.cpp:74] dht11Task(): [SENSOR] DHT11 -> Temperature - 29.90 C & Humidity - 70.00
144528[1][main.cpp:94] bh1750Task(): [SENSOR] BH1750 -> Light - 35.83 lux
150015[1][main.cpp:59] loop(): [WiFi] WiFi is already connected...
151532[1][main.cpp:74] dht11Task(): [SENSOR] DHT11 -> Temperature - 29.90 C & Humidity - 70.00
154629[1][main.cpp:94] bh1750Task(): [SENSOR] BH1750 -> Light - 750.00 lux
160016[1][main.cpp:59] loop(): [WiFi] WiFi is already connected...
```


Hasil Pengiriman Data Telegram

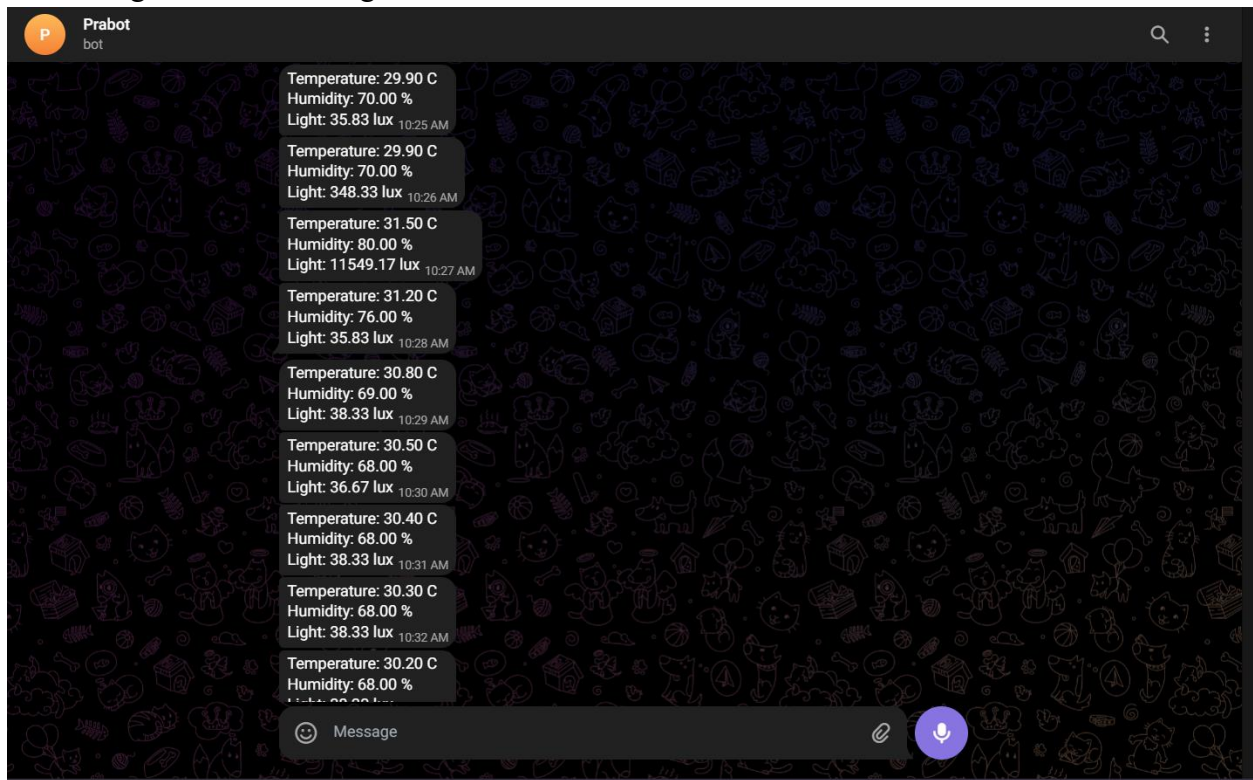


Foto Rangkaian Alat

