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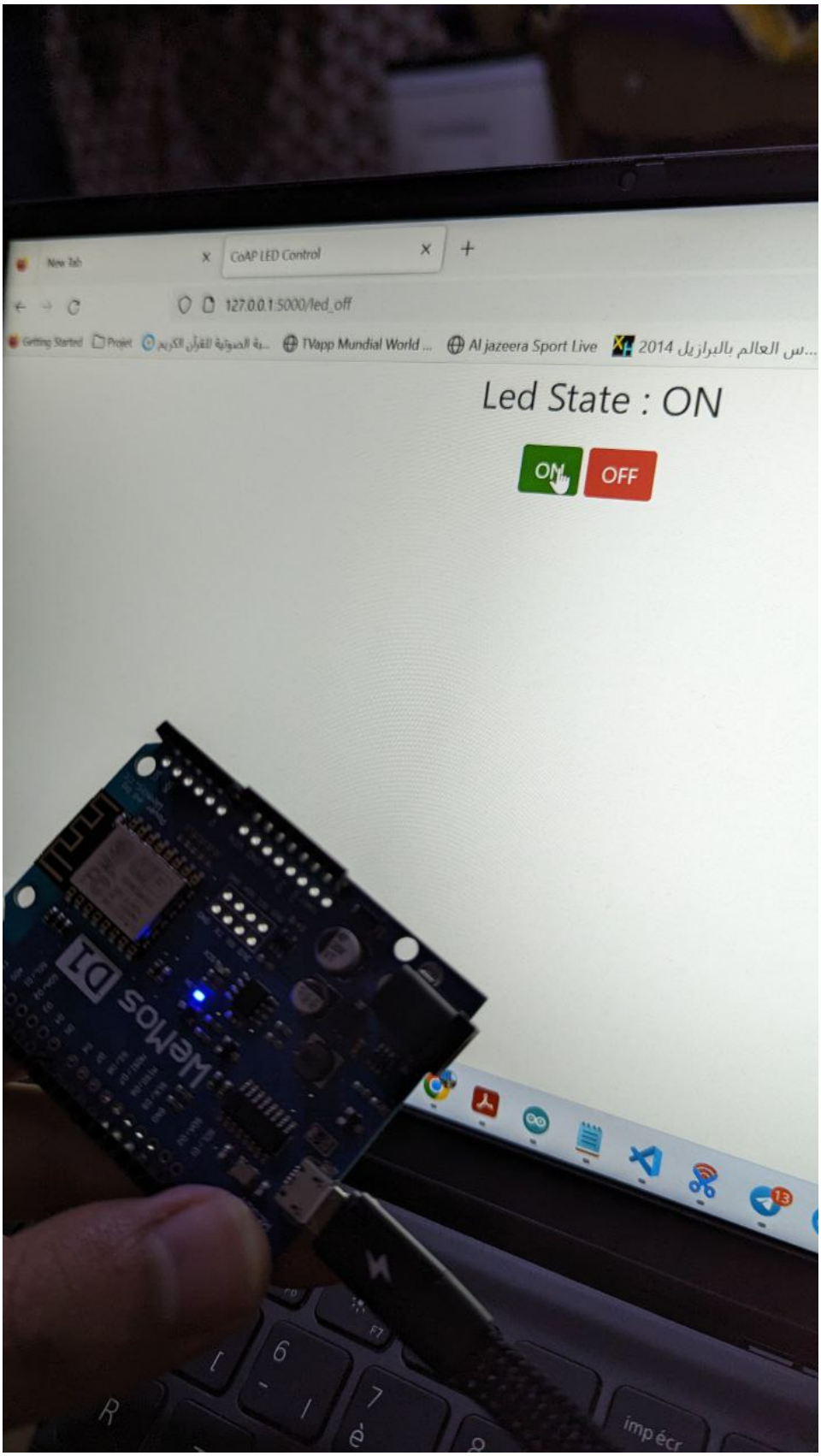
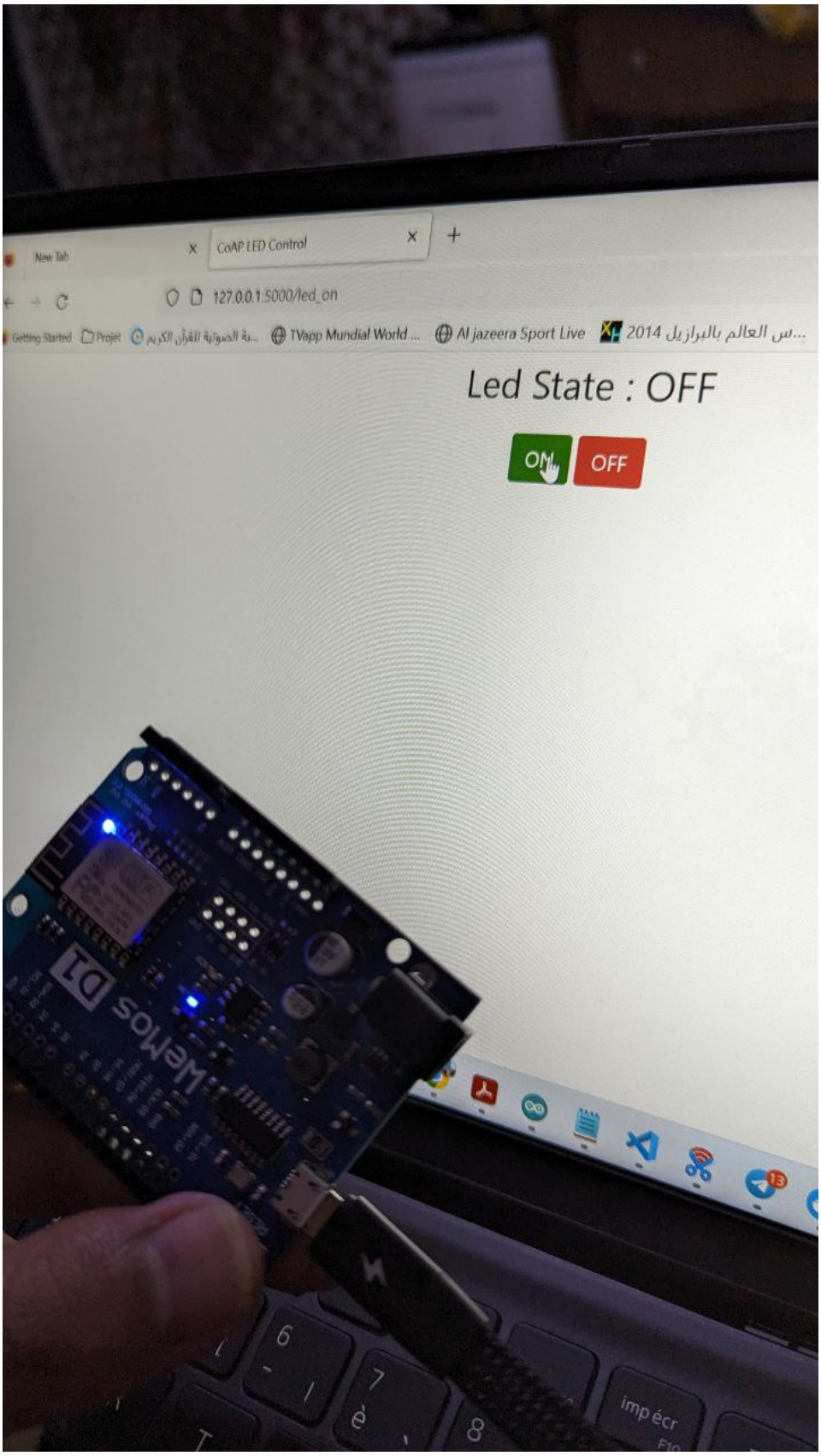
Rapport Tp2 IOT

Final Result


CoAP LED Control
127.0.0.1:5000/led_off
Led State : ON
ON
OFF



Python Code

```
from flask import Flask, render_template, request
from coapthon.client.helperclient import HelperClient
```

```
app = Flask(__name__)


COAP_SERVER_IP = '192.168.43.96'
# COAP_SERVER_PORT = 5683
# COAP_LED_ENDPOINT = '/LED'


# def send_coap_request(data):
#     try:
#         client = HelperClient(server=(COAP_SERVER_IP, COAP_SERVER_PORT))
#         response = client.post(COAP_LED_ENDPOINT, data)
#         return response
#     except Exception as e:
#         return f"Error: {e}"
#     finally:
#         client.stop()

@app.route('/')
def index():

    return render_template('index.html', state='OFF')

@app.route('/led_off', methods=['POST'])
def led_on():
    client = HelperClient(server=(COAP_SERVER_IP, 5683))
    response = client.post('/LED', 'On')
    #response = send_coap_request('On')
    client.stop()
    return render_template('index.html', state='ON')

@app.route('/led_on', methods=['POST'])
def led_off():
    client = HelperClient(server=(COAP_SERVER_IP, 5683))
    response = client.post('/LED', 'Off')
    return render_template('index.html', state='OFF')

if __name__ == '__main__':
    app.run(debug=True)
```

Arduino Code

```
#include <ESP8266WiFi.h>
#include "Thing.CoAP.h"
#include "Thing.CoAP/Server.h"
#include "Thing.CoAP/ESP/UDPPacketProvider.h"

Thing::CoAP::Server server;
Thing::CoAP::ESP::UDPPacketProvider udpProvider;
```

```
char* ssid = "Aa1";
char* password = "Haithem2023";
#define LED 2
#define BUTTON 0
float temp = 0.0;

void setup() {
  Serial.begin(115200);
  Serial.println("Initializing");

  pinMode(LED, OUTPUT);
  pinMode(BUTTON, INPUT_PULLUP);

  WiFi.begin(ssid, password);

  while (WiFi.status() != WL_CONNECTED) {
    delay(1000);
    Serial.println("Connecting to WiFi..");
  }

  Serial.println("Connected to the WiFi network");
  Serial.println("My IP: ");
  Serial.println(WiFi.localIP());

  server.SetPacketProvider(udpProvider);

  server.CreateResource("LED", Thing::CoAP::ContentFormat::TextPlain, true)
    .OnGet([](Thing::CoAP::Request & request) {
      Serial.println("GET Request received for endpoint 'LED'");
      Serial.println(LED);

      std::string result;
      if (digitalRead(LED) == HIGH)
        result = "On";
      else
        result = "Off";

      return Thing::CoAP::Status::Content(result);
    })
    .OnPost([](Thing::CoAP::Request& request) {
      Serial.println("POST Request received for endpoint 'LED'");
      auto payload = request.GetPayload();
      std::string message(payload.begin(), payload.end());
      Serial.print("The client sent the message: ");
      Serial.println(message.c_str());
      if (message == "On") {
        digitalWrite(LED, HIGH);
      } else if (message == "Off") {
        digitalWrite(LED, LOW);
      } else {
        return Thing::CoAP::Status::BadRequest();
      }
      return Thing::CoAP::Status::Created("ok merci");
```

```
    });

  server.CreateResource("temp", Thing::CoAP::ContentFormat::TextPlain, false)
    .OnGet([](Thing::CoAP::Request & request) {
      Serial.println("GET Request received for endpoint 'temp'");
      std::string result;
      result = String(temp).c_str();
      return Thing::CoAP::Status::Content(result);
    });

  server.Start();
}

void loop() {
  temp += 1;
  Serial.println(temp);
  server.Process();
  delay(1000);
}
```

Html code

```
<!DOCTYPE html>
<html>

<head>
  <title>CoAP LED Control</title>
  <link
href="https://stackpath.bootstrapcdn.com/bootstrap/4.3.1/css/bootstrap.min.css"
rel="stylesheet" type="text/css">
  <style>
    .inline-form {
      display: inline-block;
    }
  </style>
</head>

<body>
  <div class="container" style="text-align:center;">

    <p style='font-size:30px;'>
      Led State :
      <span id='state'>{{ state }}</span>
    </p>

    <form class="inline-form" action="/led_on" method="post">
      <button class="btn btn-success" type="submit">ON</button>
    </form>
```

```
    <form class="inline-form" action="/led_off" method="post">
      <button class="btn btn-danger" type="submit">OFF</button>
    </form>

  </div>
</body>

</html>
```