Practical-13

Create local HTTP server on ESP8266 to blink LED using client browser.

Blink LED using client browser.

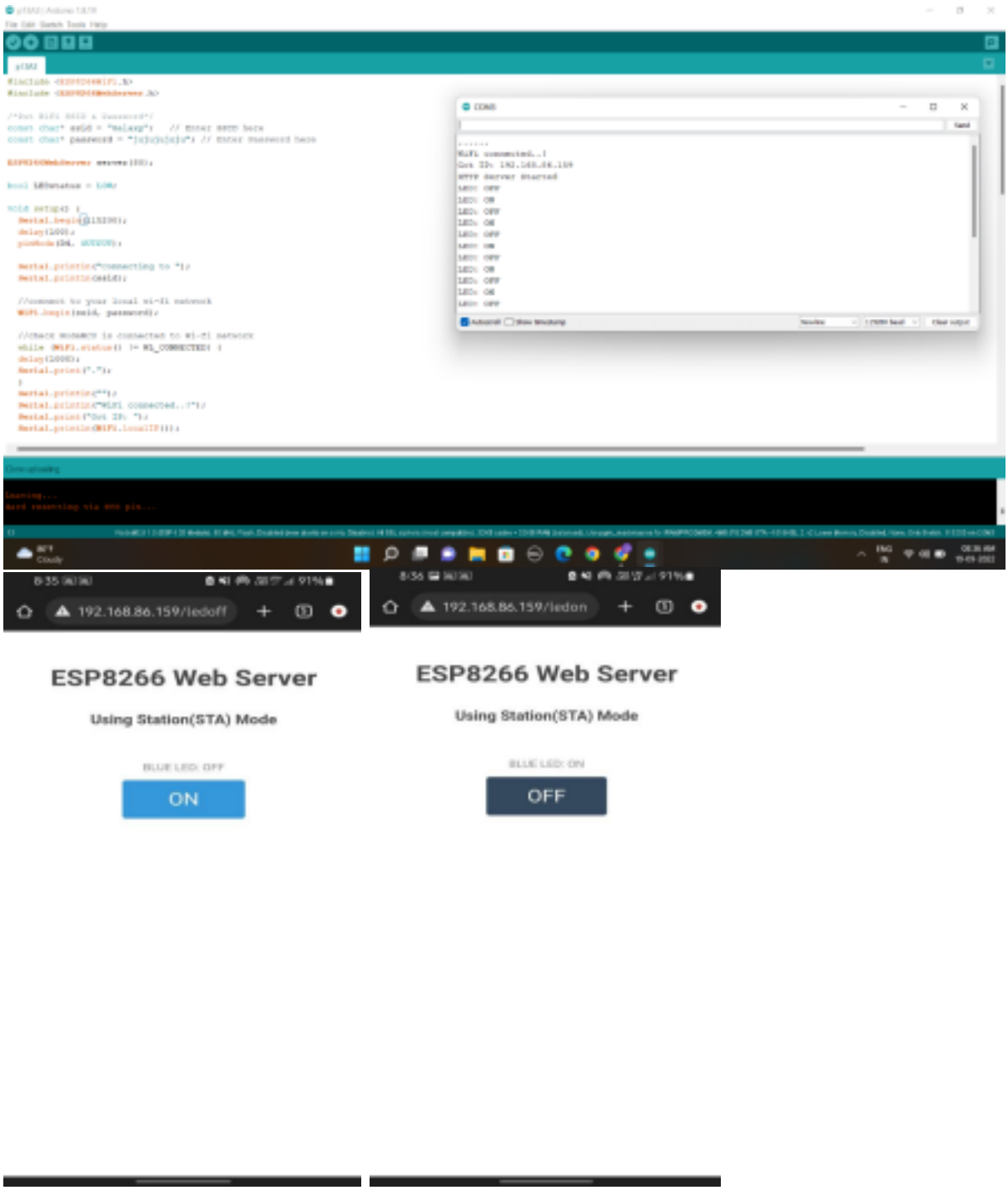
Code:-

```
#include <ESP8266WiFi.h>
#include <ESP8266WebServer.h>

/*Put WiFi SSID & Password*/
const char* ssid = "Oneplus"; // Enter SSID here
const char* password = "RENY1234"; // Enter Password here

ESP8266WebServer server(80);

bool LEDstatus = LOW;

void setup() {
 Serial.begin(115200);
 delay(100);
 pinMode(D4, OUTPUT);

 Serial.println("Connecting to ");
 Serial.println(ssid);

 //connect to your local wi-fi network
 WiFi.begin(ssid, password);

 //check NodeMCU is connected to Wi-fi network
 while (WiFi.status() != WL_CONNECTED) {
 delay(1000);
 Serial.print(".");
 }
 Serial.println("");
 Serial.println("WiFi connected..!");
 Serial.print("Got IP: ");
```

```
 Serial.println(WiFi.localIP());



server.on("/", handle_OnConnect);

 server.on("/ledon", handle_ledon);
 server.on("/ledoff", handle_ledoff);
 server.onNotFound(handle_NotFound);

 server.begin();
 Serial.println("HTTP Server Started");
}
void loop() {
 server.handleClient();

 if(LEDstatus)
 {
 digitalWrite(D4, HIGH);}
 else
 {
 digitalWrite(D4, LOW);}
}

void handle_OnConnect() {
 LEDstatus = LOW;
 Serial.println("LED: OFF");
 server.send(200, "text/html", updateWebpage(LEDstatus));
}

void handle_ledon() {
 LEDstatus = HIGH;
 Serial.println("LED: ON");
 server.send(200, "text/html", updateWebpage(LEDstatus));
}

void handle_ledoff() {
 LEDstatus = LOW;
 Serial.println("LED: OFF");
 server.send(200, "text/html", updateWebpage(LEDstatus));
}

void handle_NotFound(){
 server.send(404, "text/plain", "Not found");
```

```
}

String updateWebpage(uint8_t LEDstatus){
 String ptr = "<!DOCTYPE html> <html>\n";

ptr +="<head><meta name=\"viewport\" content=\"width=device-width,
initial-scale=1.0, user-scalable=no\">\n";
 ptr +="<title>LED Control</title>\n";


 ptr +="<style>html {font-family: Helvetica; display: inline-block; margin:  0px
auto; text-align: center;}\n";
 ptr +="body{margin-top: 50px;} h1 {color: #444444;margin: 50px auto
30px;} h3 {color: #444444;margin-bottom: 50px;}\n";
 ptr +=".button {display: block;width: 80px;background-color:  #1abc9c;border:
none;color: white;padding: 13px 30px;text-decoration:  none;font-size:
25px;margin: 0px auto 35px;cursor: pointer;border-radius:  4px;}\n";
 ptr +=".button-on {background-color: #3498db;}\n";
 ptr +=".button-on:active {background-color: #3498db;}\n";
 ptr +=".button-off {background-color: #34495e;}\n";
 ptr +=".button-off:active {background-color: #2c3e50;}\n";
 ptr +="p {font-size: 14px;color: #888;margin-bottom: 10px;}\n";  ptr
+="</style>\n";
 ptr +="</head>\n";
 ptr +="<body>\n";
 ptr +="<h1>ESP8266 Web Server</h1>\n";
 ptr +="<h3>Using Station(STA) Mode</h3>\n";

 if(LEDstatus){
 ptr +="<p>BLUE LED: ON</p><a class=\"button button-off\"
href=\"/ledoff\">OFF</a>\n";
 }else{
 ptr +="<p>BLUE LED: OFF</p><a class=\"button button-on\"
href=\"/ledon\">ON</a>\n";
 }

 ptr +="</body>\n";
 ptr +="</html>\n";
 return ptr;
}
```

Output:-


192.168.86.159/ledoff
ESP8266 Web Server
Using Station(STA) Mode
BLUE LED: OFF
ON
192.168.86.159/ledon
ESP8266 Web Server
Using Station(STA) Mode
BLUE LED: ON
OFF

Blink 4 LED using client browser.

Code:-

```
#include <ESP8266WiFi.h>


const char* ssid = "Galaxy";

const char* password = "jujujujuju";


int ledPin = 13; // GPIO13---D7 of NodeMCU

int LED_2 = 12; //D6

int LED_3 = 15; // D8

int LED_4 = 14; // D5


WiFiServer server(80);


void setup() {

 Serial.begin(115200);

 delay(10);


 pinMode(ledPin, OUTPUT);

 digitalWrite(ledPin, LOW);


 pinMode(LED_2, OUTPUT);

 digitalWrite(ledPin, LOW);
```

```
pinMode(LED_3, OUTPUT);
digitalWrite(ledPin, LOW);

pinMode(LED_4, OUTPUT);
digitalWrite(ledPin, LOW);

// Connect to WiFi network
Serial.println();
Serial.println();
Serial.print("Connecting to ");
Serial.println(ssid);


while (WiFi.status() != WL_CONNECTED) {
delay(500);
Serial.print(".");
}
Serial.println("");
Serial.println("WiFi connected");

// Start the server
server.begin();
Serial.println("Server started");
```

```
// Print the IP address
Serial.print("Use this URL to connect: ");
Serial.print("http://");
Serial.print(WiFi.localIP());
Serial.println("/");

}

void loop() {
// Check if a client has connected
//server.begin(); // change
WiFiClient client = server.available();

if (!client) {
return;
}

// Wait until the client sends some data
Serial.println("new client");
while(!client.available()){
delay(1);
}

// Read the first line of the request
```

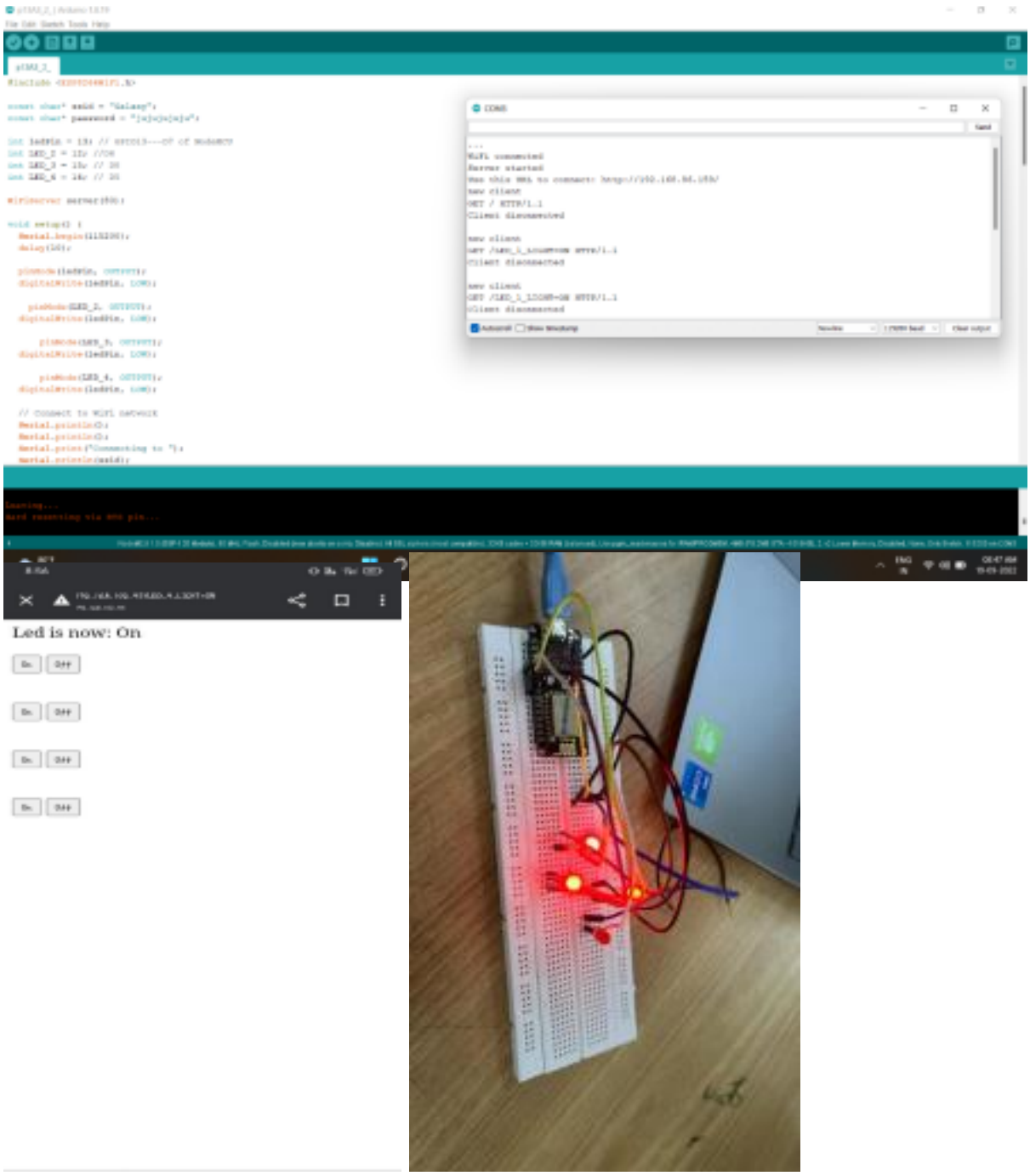
```
String request = client.readStringUntil('\r');
Serial.println(request);
client.flush();

// Match the request

int value = LOW;
if (request.indexOf("/LED_1_LIGHT=ON") != -1) {
digitalWrite(ledPin, HIGH);
value = HIGH;
}
if (request.indexOf("/LED_1_LIGHT=OFF") != -1) {
digitalWrite(ledPin, LOW);
value = LOW;
}

if (request.indexOf("/LED_2_LIGHT=ON") != -1) {
digitalWrite(LED_2, HIGH);
value = HIGH;
}
if (request.indexOf("/LED_2_LIGHT=OFF") != -1) {
digitalWrite(LED_2, LOW);
value = LOW;
```

```
}

if (request.indexOf("/LED_3_LIGHT=ON") != -1) {
digitalWrite(LED_3, HIGH);
value = HIGH;
}
if (request.indexOf("/LED_3_LIGHT=OFF") != -1) {
digitalWrite(LED_3, LOW);
value = LOW;
}

if (request.indexOf("/LED_4_LIGHT=ON") != -1) {
digitalWrite(LED_4, HIGH);
value = HIGH;
}
if (request.indexOf("/LED_4_LIGHT=OFF") != -1) {
digitalWrite(LED_4, LOW);
value = LOW;
}

// Set ledPin according to the request
//digitalWrite(ledPin, value);
```

```
// Return the response

client.println("HTTP/1.1 200 OK");

client.println("Content-Type: text/html");

client.println(""); // do not forget this one

client.println("<!DOCTYPE HTML>");

client.println("<html>");


client.print("Led is now: ");


if(value == HIGH) {

client.print("On");

} else {

client.print("Off");

}

client.println("<br><br>");

client.println("<a href=\"/LED_1_LIGHT=ON\"\"><button>On
</button></a>");

client.println("<a href=\"/LED_1_LIGHT=OFF\"\"><button>Off
</button></a><br />");


client.println("<br><br>");

client.println("<a href=\"/LED_2_LIGHT=ON\"\"><button>On
</button></a>");

client.println("<a href=\"/LED_2_LIGHT=OFF\"\"><button>Off
</button></a><br />");
```

```
client.println("<br><br>");

client.println("<a href=\"/LED_3_LIGHT=ON\"\"><button>On
</button></a>");

client.println("<a href=\"/LED_3_LIGHT=OFF\"\"><button>Off
</button></a><br />");



client.println("<br><br>");

client.println("<a href=\"/LED_4_LIGHT=ON\"\"><button>On
</button></a>");

client.println("<a href=\"/LED_4_LIGHT=OFF\"\"><button>Off
</button></a><br />");

client.println("</html>");

delay(1);

Serial.println("Client disonnected");

Serial.println("");



}
```

Output:-


Led is now: On