LED CONTROL USING WIFI STA MODE

- **Problem Statement**
  Use Http Protocol through intermediate Router to control Switch ON/OFF connected to NodeMCU.

- **Arrange circuit components**

  1. Requirements -
  NodeMCU(ESP8266 board), BreadBoard, LED, resistor, jumping wire(2-3), USB Cord, Laptop

  2. Procedure -
  2.1 Connect ‘-ve’ leg(small leg) to GND.
  2.2 Connect ‘+ve’ leg(long leg) to D1(GPIO 5) via resistor.
  2.3 Connect NodeMCU to Laptop. Open Arduino Studio. Go to Tools->Board and Select NodeMCU1.0.

- **Write HTML Code**
  As we are writing this code for Led Switch ON/OFF we need 2 HTML Codes.

  1. Switch ON
  2. Switch OFF

  This is provided by Arduino code itself.

- **Write NodeMCU Code**
  // NodeMCU Code to Control Led Switching

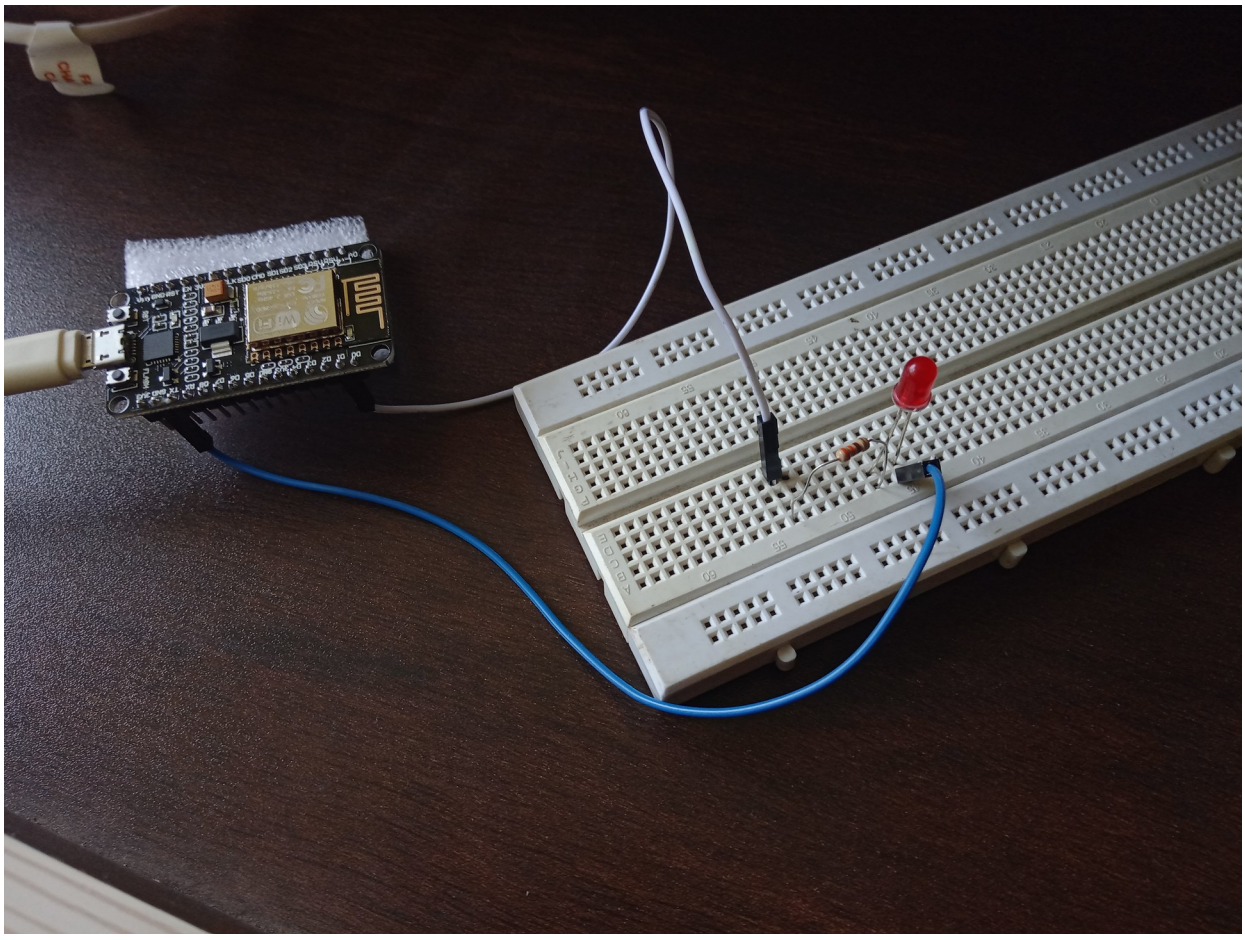
```
#include <ESP8266WiFi.h>
#include <ESP8266WebServer.h>

/*Put your SSID & Password*/
const char* ssid = "Harry";  // Enter SSID here
const char* password = "1234567Q";  //Enter Password here

ESP8266WebServer server(80);

uint8_t LEDpin = D1; // OR int LEDpin = 5
bool LEDstatus = LOW;

void setup() {
  Serial.begin(9600);
  delay(100);
  pinMode(LEDpin, OUTPUT);

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

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

  //check wi-fi is connected to wi-fi network
  while (WiFi.status() != WL_CONNECTED) {
  delay(1000);
  Serial.print(".");
```

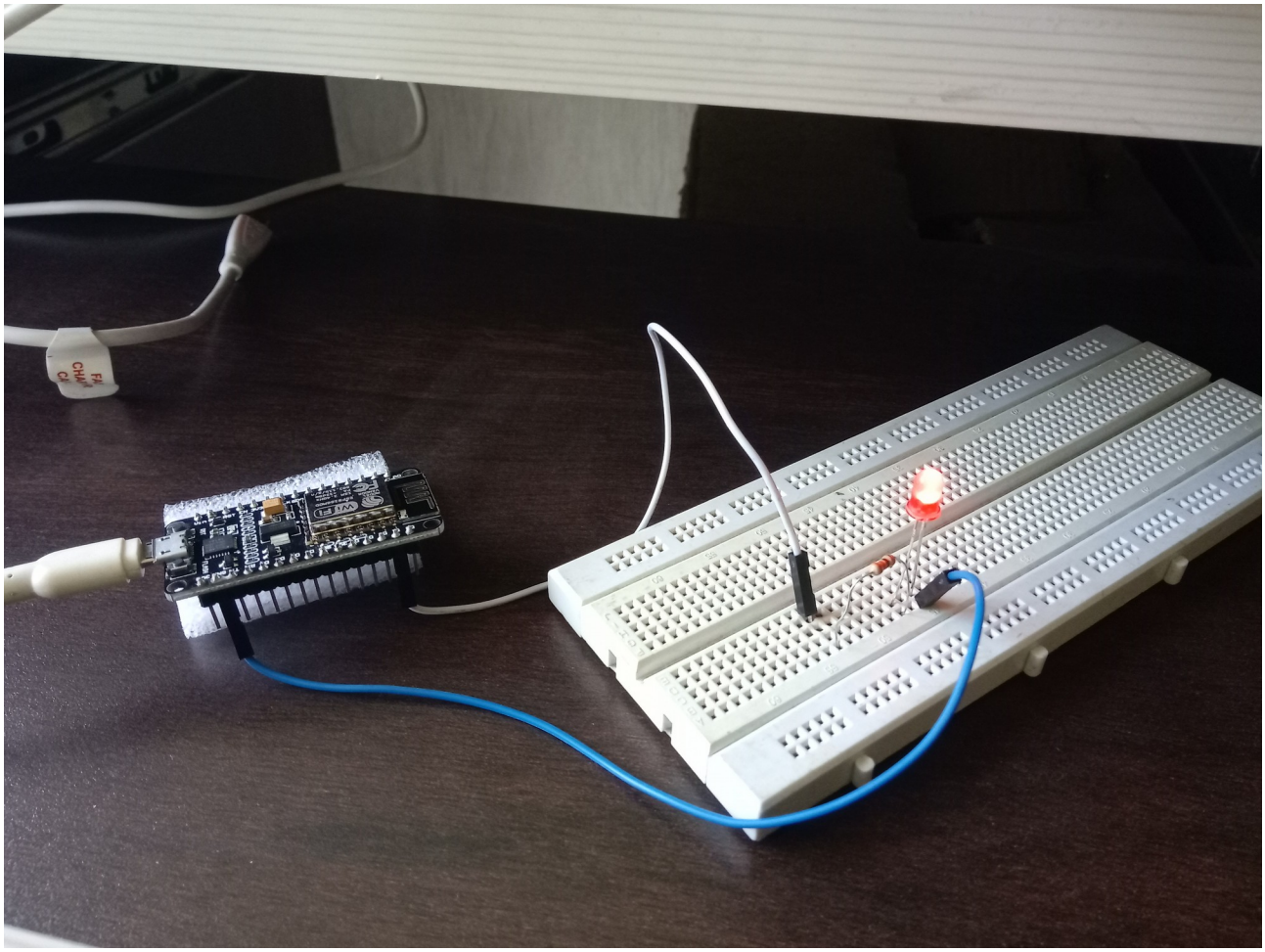
```
  }
  Serial.println("");
  Serial.println("WiFi connected..!");
  Serial.print("Got IP: ");
Serial.println(WiFi.localIP()); // IP assign by router

  server.on("/", handle_OnConnect);// Initial Html Window
  server.on("/ledon", handle_ledon);// When click Led ON
  server.on("/ledoff", handle_ledoff);// When click Led OFF
  server.onNotFound(handle_NotFound);

  server.begin();
  Serial.println("HTTP server started");
}
void loop() {
  server.handleClient(); // Listen Client
  if(LEDstatus)
  digitalWrite(LEDpin, HIGH);
  else
  digitalWrite(LEDpin, LOW);
}

void handle_OnConnect() {
  LEDstatus = LOW;
  server.send(200, "text/html", SendHTML(false));
}

void handle_ledon() {
  LEDstatus = HIGH;
  server.send(200, "text/html", SendHTML(true));
}
```

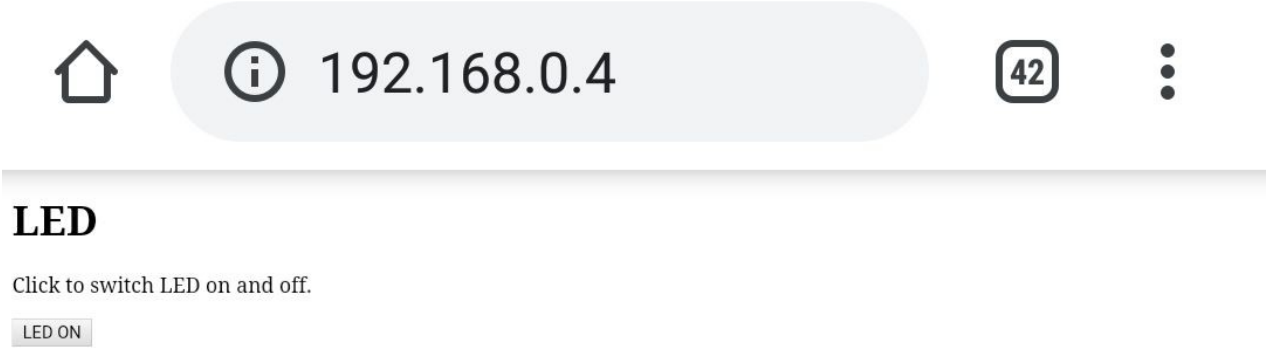
```
void handle_ledoff() {
  LEDstatus = LOW;
  server.send(200, "text/html", SendHTML(false));
}

void handle_NotFound(){
  server.send(404, "text/plain", "Not found");
}
// Switch HTML Pages
String SendHTML(uint8_t led){
  String ptr = "<!DOCTYPE html>\n";
  ptr +="<html>\n";
  ptr +="<head>\n";
  ptr +="<title>LED Control</title>\n";
  ptr +="</head>\n";
  ptr +="<body>\n";
  ptr +="<h1>LED</h1>\n";
  ptr +="<p>Click to switch LED on and off.</p>\n";
  ptr +="<form method=\"get\">\n";
  if(led)
  ptr +="<input type=\"button\" value=\"LED OFF\"
onclick=\"window.location.href='/ledoff'\">\n";
  else
  ptr +="<input type=\"button\" value=\"LED ON\"
onclick=\"window.location.href='/ledon'\">\n";
  ptr +="</form>\n";
  ptr +="</body>\n";
  ptr +="</html>\n";
  return ptr;
}
```

- **Compile and Run**
  1. Compile project
  2. Run on terminal ‘sudo chmod -R 777 */dev/ttyUSB0’*
  3. Now Upload Code to Board.

- **Output**



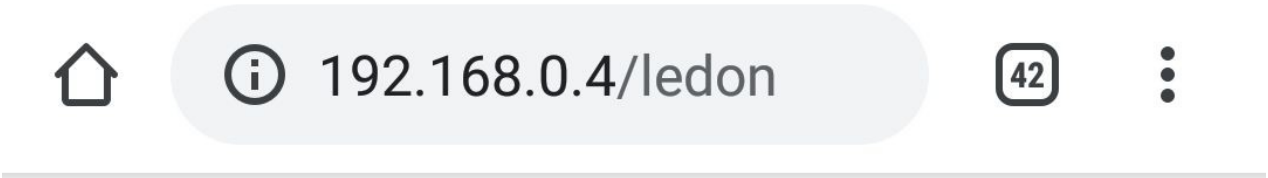




LED

Click to switch LED on and off.

LED ON



LED

Click to switch LED on and off.

LED OFF