Lab 3: Connect to Networks

Objectives:

1. Program ESP32-S3 as a Wi-Fi station and connect to the provided access point (AP).
2. Program ESP32-S3 as a client and connect to the provided web server to update the information.
3. Program the ESP32-S3 as a web server and controller of the sensors. Receive instructions from HTTP client.

Materials:

1. ESP32-S3 devkit board.
2. Breadboard and Dupont wires.
3. A USB 2.0 cable (Standard-A to Micro-B).
4. DHT22 temperature and humidity sensor.
5. Computer

Lab activities:

Task 1. Program your ESP32-S3 as a Wi-Fi station

Program the provided ESP32-S3 as a Wi-Fi station and connect it to Wi-Fi network from the AP1 with credentials list below. Identify the IP address allocated to your ESP32-S3. Include your code with comments in lab report.

SSID: ESP32Server **Password**: 12345678

Task 2. Program ESP32-S3 as a HTTP client and access the web server

a. Program your ESP32-S3 as a HTTP client to access the URL below.
   URL 192.168.4.1
b. Parse the respond and follow the instructions to get the string. Record the string you get.
c. Include your code with documentation, your matric number and the string you got in lab report.

Task 3. Program ESP32-S3 as a webserver and controller for sensors

a. Connect the temperature and humidity sensor to your ESP32-S3.

b. Program your ESP32-S3 as a webserver and controller for DHT22 and onboard LED. Display reading for the temperature and humidity, and controls to turn on/off the onboard LED when a browser accesses your webserver. (The browser can be any browser from your computer browser or from your smart phone.) Your web server should response correctly to the instruction (to turn on/off the onboard LED) post from the browser.

c. Show your result to the instructor when your finish this task.

d. Include your code with comments in your lab report.

Assessment: Show your results to the instructor by 11am and submit your lab report by 23:59 midnight today to Canvas submission folder. Lab test starts at 11am and include your code with comments in your lab report.