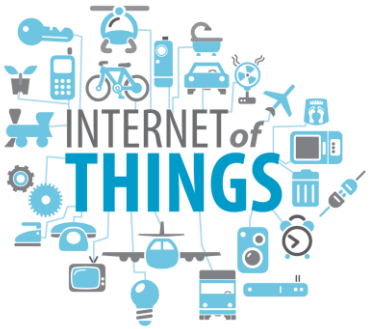
UNIVERSITY OF SCIENCE - VNUHCM
Faculty of Information Technology

INTERNET OF THINGS

3.2

ESP8266 IS A WEB SERVER



The Basic Web Server

PLAIN TEXT

```
#include <ESP8266WebServer.h>

// Create new web server
ESP8266WebServer server(80);

void setup() {
  Serial.begin(115200);

  //Connect to Wifi network. DIY - Do It Yourself

  // Start the web server
  server.on("/",handleRoot);
  server.begin();
  Serial.println("Web server started");
}

void loop() {
  server.handleClient();    //Handle Client requests
}

void handleRoot() {
  server.send(200, "text/plain", "Hello World"); //Send web page
}
```

The Basic Web Server

HTML CODE

```
void handleRoot() {
   String s = "<head>";
   s += "</head>";

   s += "<body>";
   s += "<h1>Hello World</h1>";
   s += "</body>";
   server.send(200, "text/html", s);
}
```

The Basic Web Server

LOAD HTML CODE IN HEADER FILE

```
const char MAIN_page[] = R"=====(
<HTML>
        <HEAD>
                        <TITLE>My first web page</TITLE>
        </HEAD>
<BODY>
        <CENTER>
                        <B>Hello World.... </B>
        </CENTER>
</BODY>
</HTML>
)=====";
```

index.h

** Make sure this file must be with Arduino code file .ino*

```
#include <ESP8266WebServer.h>
#include "index.h"

// Create new web server
ESP8266WebServer server(80);

void setup() {
  Serial.begin(115200);

  //Connect to Wifi network. DIY - Do It Yourself

  // Start the web server
  server.on("/",handleRoot);
  server.begin();
  Serial.println("Web server started");
}

void loop() {
  server.handleClient();    //Handle Client requests
}

void handleRoot() {
  String s = MAIN_page;
  server.send(200, "text/html", s);
}
```

Display Temperature & Humidity on web browser

The Basic Web Server

TURN LED ON/OFF ON WEB BROWSER

```
server.on("/ledOn",handleOn);
server.on("/ledOff",handleOff);
```

Add 2 more listening events in setup() function

```
void handleRoot() {
  const char MAIN_page[] = R"=====(
  <!DOCTYPE html>
  <html>
    <body>
      <center>
        <h1>WiFi LED on off demo:</h1><br>
        Click to turn <a href="ledOn">LED ON</a><br>
        Click to turn <a href="ledOff">LED OFF</a><br>
        <hr>
      </center>
    </body>
  </html>
  )=====";
  server.send(200, "text/html", MAIN_page);
}
```

```
void handleOn() {
  Serial.println("On");
  server.send(200, "text/html", "LED is on");
}

void handleOff(){
  Serial.println("Off");
  server.send(200, "text/html", "LED is off");
}
```

The Basic Web Server

GETTING QUERY PARAMETERS

```
server.on("/led", handleLed);
```

Modify the listening events in setup() function

```
void handleRoot() {
  const char MAIN_page[] = R"=====(
  <!DOCTYPE html>
  <html>
    <body>
      <center>
        <h1>WiFi LED on off demo:</h1><br>
        Click to turn <a href="led?state=1">LED ON</a><br>
        Click to turn <a href="led?state=0">LED OFF</a><br>
        <hr>
      </center>
    </body>
  </html>
  )=====";
  server.send(200, "text/html", MAIN_page);
}

void handleLed() {
  String value = server.arg("state");
  Serial.println("LED state:"+value);
  if(value == "1"){
    server.send(200, "text/html", "LED is on");
  }
  else {
    server.send(200, "text/html", "LED is off");
  }
}
```

The Basic Web Server

SENDING DATA TO ESP8266 USING HTTP POST

```
server.on("/login",HTTP_POST,handleLogin);
```

Modify the listening events in setup() function

```
void handleRoot() {
  const char MAIN_page[] = R"=====(
  <!DOCTYPE html>
  <html>
    <body>
      <center>
        <form action="/login" method="POST">
          <input type="text" name="username" placeholder="username"></br>
          <input type="text" name="password" placeholder="password"></br>
          <input type="submit" value="Login"></br>
        </form>
      </center>
    </body>
  </html>
  )=====";
  server.send(200, "text/html", MAIN_page);
}
```

```
void handleLogin() {
  String username = server.arg("username");
  String password = server.arg("password");
  Serial.println(username + " " + password);
  server.send(200, "text/plain", "Server received:"+username);
}
```