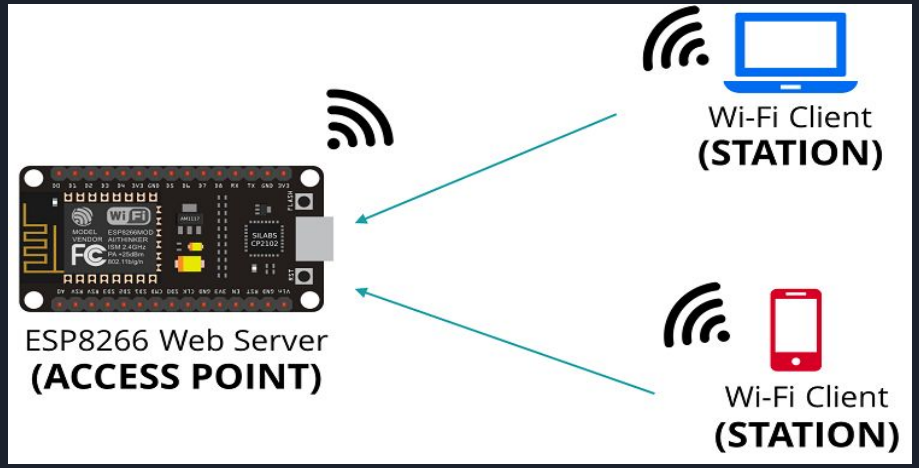
Session: 3

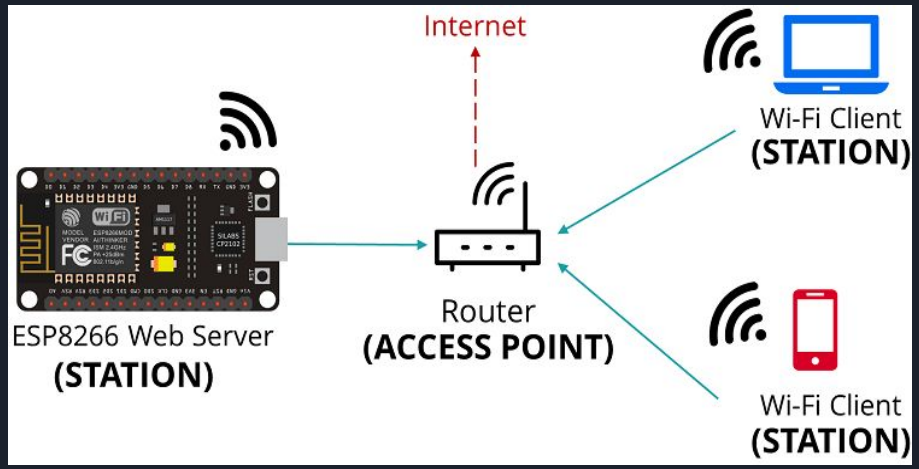
Access Point and Station

What is an Access Point and Station ?

When you set the ESP8266 as an access point you create its own Wi-Fi network and nearby Wi-Fi devices (stations) can connect to it (like your smartphone or your computer).

When the NodeMCU is in Station mode, it can connect itself to any Hotspot or Wi-Fi network router.


Wi-Fi Client
(STATION)
ESP8266 Web Server
(ACCESS POINT)
Wi-Fi Client
(STATION)


Internet
Wi-Fi Client
(STATION)
ESP8266 Web Server
(STATION)
Router
(ACCESS POINT)
Wi-Fi Client
(STATION)

Some Important Commands:

Library: A library is a reusable chunk of code that you may want to include in your programs. These may include message templates, pre-written code and subroutines, values or type specifications.

1. #include <ESP8266WiFi.h>
   No wifi related commands will work without this library.

2. WiFi.begin("WiFiName", "WiFiPassword"); //Command to connect to a WiFi Network

3. WiFi.status(); //To check if it is connected to a Network or not.
   WiFi.status() values can be:
   WL_CONNECTED - connected
   WL_IDLE_STATUS - trying to connect
   WL_CONNECT_FAILED - connection failed

4. WiFi.localIP: returns the IP address of the connected network.

5. WiFi.scanNetworks(): Scans for available WiFi networks and returns the discovered number.

6. WiFi.softAP(“network name”, “network password”): Creates its own network and generates its own IP Address.

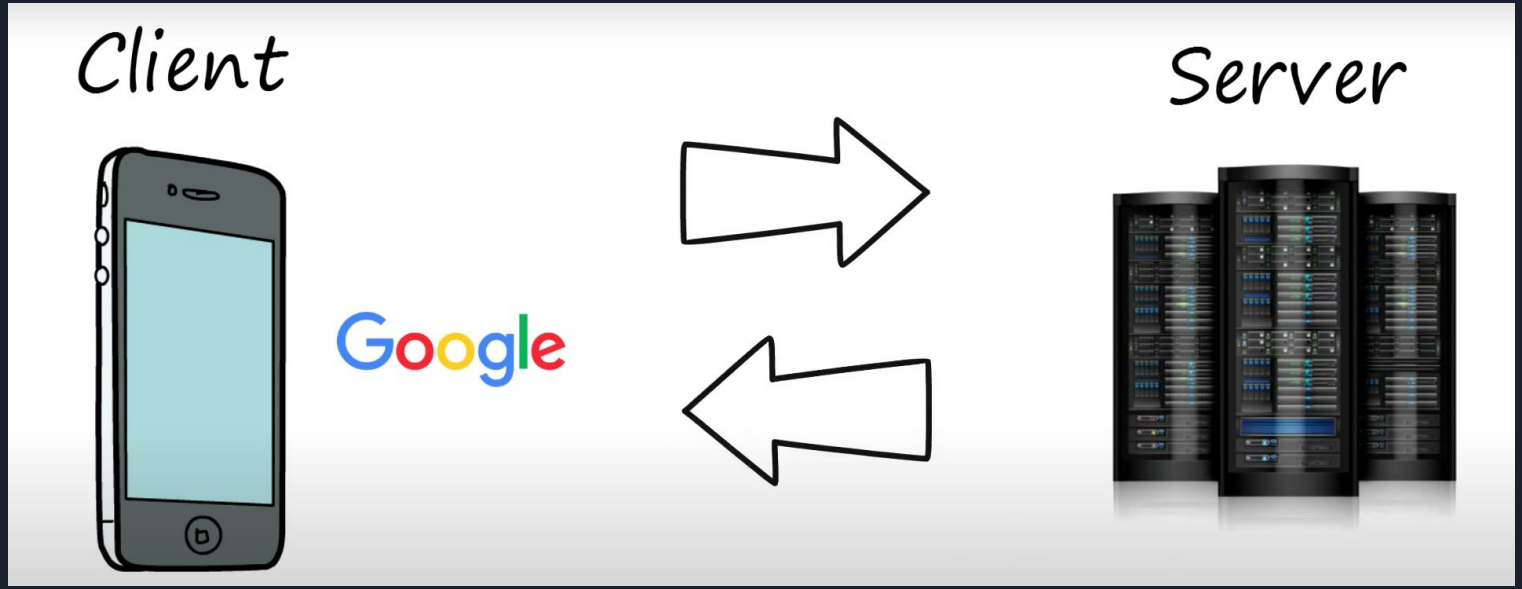
7. WiFi.softAPIP(): Returns the IP address generated by the nodeMCU behaving as an access point.

8. WiFiClient: Creates a client that can connect to to a specified internet IP address.

9. server.available(): Gets a client that is connected to the server and has data available for reading.

Client and Server:

Example:



NodeMCU as Station Code:

```
#include <ESP8266WiFi.h>

void setup() {
  // put your setup code here, to run once:
  Serial.begin(9600);
  WiFi.begin("iot", "project1234");
  while(WiFi.status() != WL_CONNECTED)
  {
    Serial.print("..");
    delay(200);
  }
  Serial.println();
  Serial.println("NodeMCU is Connected!");
  Serial.println(WiFi.localIP());

}

void loop() {
  // put your main code here, to run repeatedly:

}
```

NodeMCU as Access Point Code:

```
#include <ESP8266WiFi.h>
WiFiServer server(80);
void setup()
{
 WiFi.mode(WIFI_AP);
 WiFi.softAP("Akshet's NodeMCU","123456789");
 server.begin();
 Serial.begin(9600);
 IPAddress HTTP_ServerIP = WiFi.softAPIP();
 Serial.println("Server Ip is: " );
 Serial.println(HTTP_ServerIP);
}
void loop()
{
 WiFiClient client = server.available();
 if(!client)
 {
  return;
 }
 Serial.println("Client has connected");
 }
```

NodeMCU as Server:
Coming up in the next session! HTML?