ESP8266 Wi-Fi Modes

The ESP8266 Wi-Fi module can operate in two primary modes (with a third hybrid option):

1. Station Mode (STA):

- In this mode, the ESP8266 connects to an existing Wi-Fi network (like a client device such as a smartphone or laptop).

- It is typically used to connect the ESP8266 to a router or hotspot to access the internet or communicate with other devices on the network.

- To activate station mode in code: WiFi.mode(WIFI_STA);

2. Access Point Mode (AP):

- In this mode, the ESP8266 creates its own Wi-Fi network, allowing other devices to connect to it directly.

- This is useful when you want to create a standalone network without needing an external router.

- To activate access point mode in code: WiFi.mode(WIFI_AP);

3. Station + Access Point Mode (AP_STA):

- This hybrid mode allows the ESP8266 to connect to an existing Wi-Fi network (as a client) while simultaneously creating its own Wi-Fi network.

- This mode is useful for scenarios where you want the ESP8266 to be part of an existing network but also allow direct connections from other devices.

- To activate this combined mode in code: WiFi.mode(WIFI_AP_STA);

Example Code to Set Modes:

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

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

  // Uncomment one of the following lines to set the desired mode
  WiFi.mode(WIFI_STA);      // Station mode
  // WiFi.mode(WIFI_AP);       // Access Point mode
  // WiFi.mode(WIFI_AP_STA);   // Station + Access Point mode

  // Additional setup code here
}

void loop() {
  // Your main code here
}
```

Each mode has its own use cases, so you can choose based on your project's needs.