Practical 5

Q5. To write a program to connect with the available Wi-Fi using Arduino.

In Proteus, ESP32 support for Wi-Fi functionality is limited because Proteus doesn't natively support the ESP32 microcontroller. However, I can still provide a sample program for connecting to Wi-Fi using an ESP32, which you can upload and test on a physical ESP32 device instead of in Proteus. Below is a code sample that will connect the ESP32 to a specified Wi-Fi network, display the connection status in the Serial Monitor, and print the IP address assigned by the router once it connects.

Code for Connecting ESP32 to Wi-Fi

This program will attempt to connect your ESP32 to a Wi-Fi network using credentials you provide.

```
#include <WiFi.h>


// Replace with your Wi-Fi credentials
const char* ssid = "YOUR_SSID";       // Your Wi-Fi network name
const char* password = "YOUR_PASSWORD"; // Your Wi-Fi network password


void setup() {
  // Start the Serial Monitor
  Serial.begin(115200);
```

```
  // Begin Wi-Fi connection
  Serial.print("Connecting to Wi-Fi network: ");
  Serial.println(ssid);

  WiFi.begin(ssid, password);

  // Wait for connection
  while (WiFi.status() != WL_CONNECTED) {
    delay(500);
    Serial.print(".");
  }

  // When connected, print the IP address
  Serial.println();
  Serial.println("Wi-Fi connected.");
  Serial.print("IP address: ");
  Serial.println(WiFi.localIP());
}

void loop() {
  // The loop can be used to maintain a connection or perform tasks
```

```
  delay(1000);  // Optional: Keep-alive delay or task frequency
}
```

Steps to Test This Program on a Physical ESP32

1. Install ESP32 Board in Arduino IDE:

- In the Arduino IDE, go to File > Preferences.
- Add the following URL to Additional Boards Manager URLs:

  https://dl.espressif.com/dl/package_esp32_index.json

- Then go to Tools > Board > Boards Manager, search for ESP32 and install it.

2. Connect ESP32 to Computer:

- Connect the ESP32 to your computer via USB.

3. Select the ESP32 Board and Port:

- In Arduino IDE, go to Tools > Board and select ESP32 Dev Module.
- Go to Tools > Port and select the COM port associated with your ESP32.

4. Upload the Code:

- Replace `"YOUR_SSID"` and `"YOUR_PASSWORD"` with your Wi-Fi network details.
- Upload the code to the ESP32.

- Open the Serial Monitor (set the baud rate to 115200) to view connection status messages.

5. View Output:

- The Serial Monitor will display connection progress and, once connected, will show the IP address assigned by your router.

Notes:

- Proteus Limitation: Since Proteus doesn’t support ESP32’s Wi-Fi functionality, it cannot simulate Wi-Fi behavior. Testing this code requires a physical ESP32 device.

- ESP32 Modules: The ESP32 library (WiFi.h) handles Wi-Fi connections, IP assignment, and communication protocols, making it straightforward to implement.