Transfer Wi-Fi credentials over BLE and connect to Wi-Fi using ESP32 Devkit V1

By Nirvan Tamhane

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Task Details

Transfer Wi-Fi credentials over Bluetooth and connect to Wi-Fi using a smartphone to send the credentials.

Hardware Components Used

1. Espressif System's ESP32 Devkit V1 Development Board
2. USB to MicroUSB Cable
3. Breadboard

Tools Used

Arduino IDE

Arduino Integrated Development Environment or Arduino Software (IDE) contains a text editor for writing code, a message area, a text console, a toolbar with buttons for common functions,

and a series of menus. It connects to the Arduino hardware to upload programs and communicate with them.

- For more details, refer to: Arduino IDE

Microcontroller Interfacing

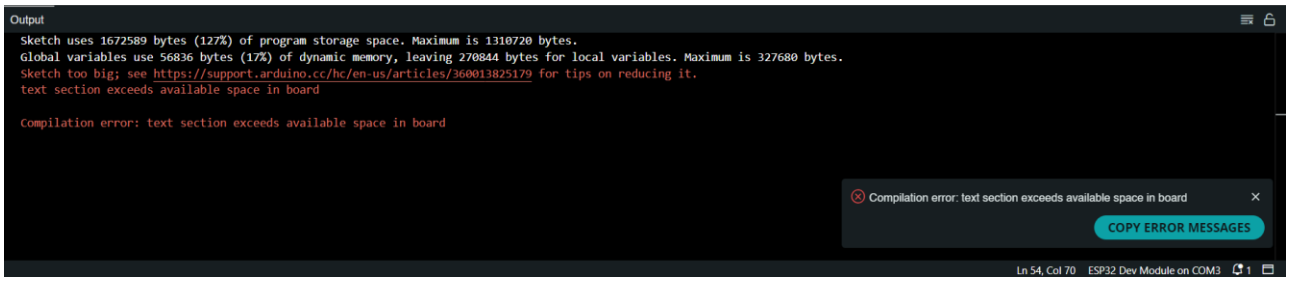
- **BLE Protocol: Used for connectivity with the nRF Connect Mobile Application.**
- **Wi-Fi Protocol: Used to connect the microcontroller to the WLAN network.**

Firmware

Link: Firmware .ino File

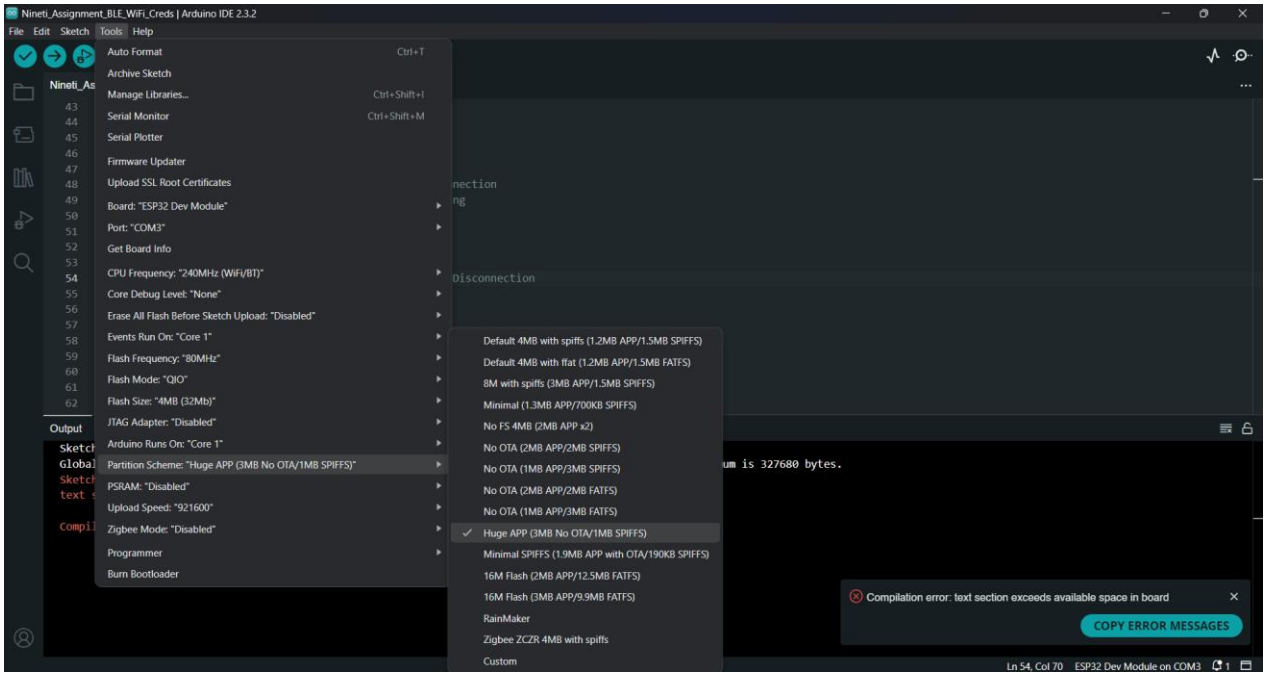
Issues Faced and Resolution

Space Problem in the ESP32 Devkit V1 Board



Approach 1:

- **Changed the board type to ESP32 Dev Module (as both could be used for uploading the code, i.e., they have the same ESP32-WROOM chip).**
- **Result: Same error.**
- **Comment: There was the same amount of space in both development boards (same program and flash memory).**

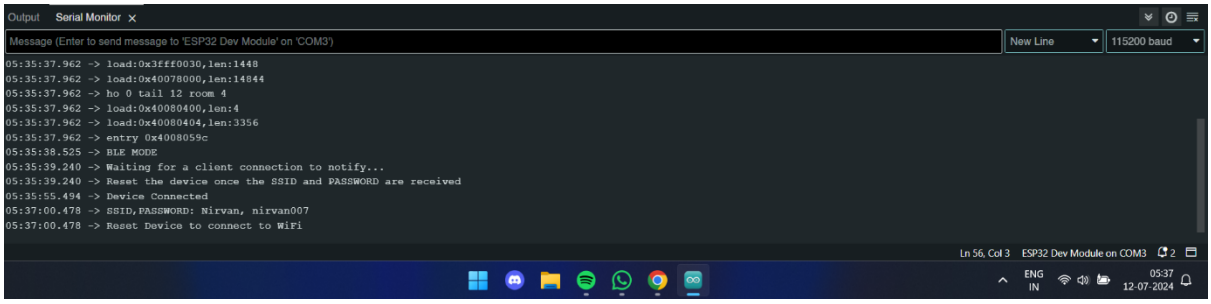


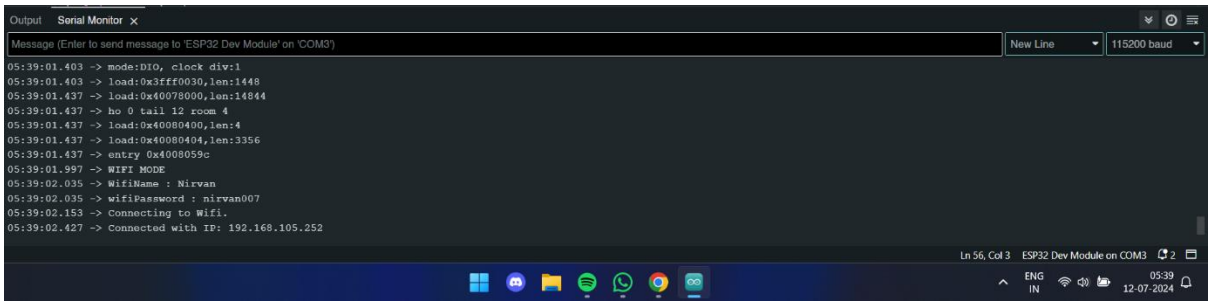
Approach 2:

- **Changed the board type to ESP32 Dev Module and switched the "Partition Scheme" setting in tools to "Huge APP (3MB No OTA/1MB SPIFFS)".**
- **Result: This resolved the compilation error and uploaded properly onto the board successfully.**
- **Comment: There is a lot of space available in the board memory, but it has different default partitions preset which can be changed as per use case.**

Outputs

Serial Monitor Messages





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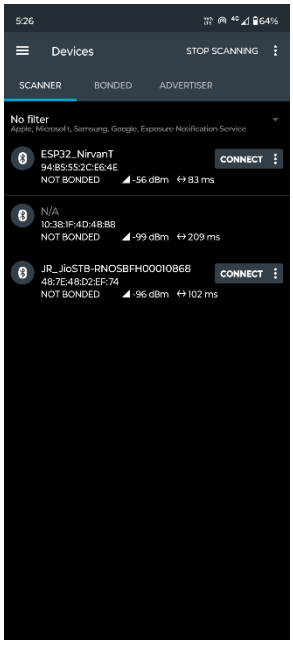
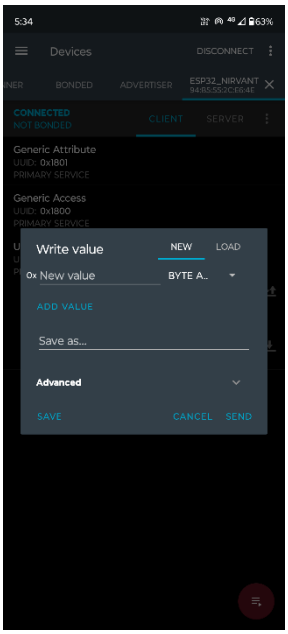
nRF Connect Application interface

Connecting to the ESP32 Board

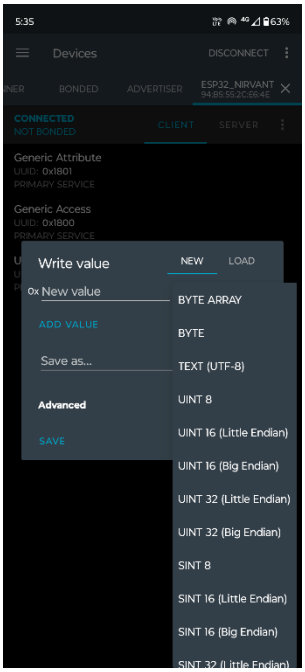


Opening the User-Created Unknown Service

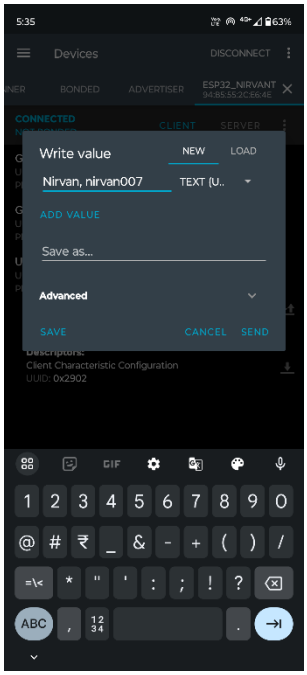
Writing to the Board by Using the "Upward Arrow" in the Characteristic which Denotes the "Write" Command



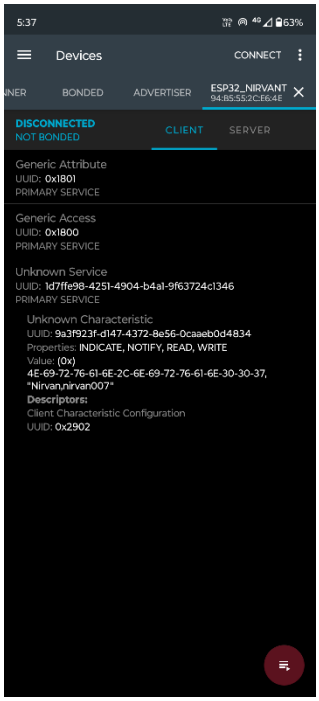
Setting the "Write Value" to "TEXT(UTF-8)" to Send a String Value to the Board



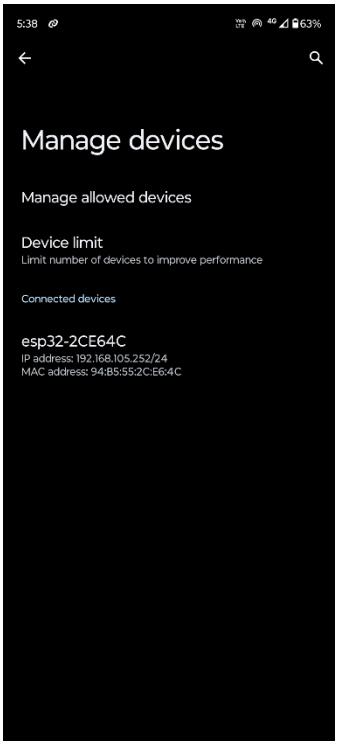
Typing the Wi-Fi SSID and Password in the Format: "SSID,PASS" and Clicking Send

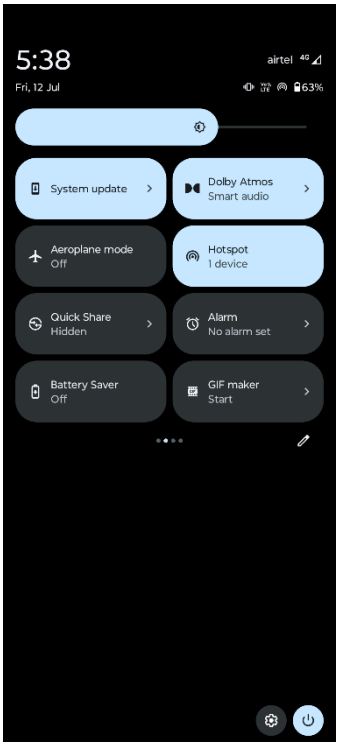


Value is Being Written to the board



The Device Receives the SSID and Password, then it has to be Reset so that it can Turn OFF the BLE and Connect to the Provided Wi-Fi SSID





References

1. [Random Nerd Tutorials: ESP32 Wi-Fi Provisioning BLE Arduino]
2. [iOS Bluetooth ESP32 WiFi]
3. [EspBlufiForAndroid Releases]
4. [ThatProject: Esp32_wifi_ssid_pw_via_ble]
5. [Arduino Stack Exchange: Text Section Exceeds Available Space in Board]
6. [ESP32 Forum: View Topic]

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