

# Internship Heimatverse

## Task-1:

Bluetooth device has to turn on automatically when there is no wifi in the desired location, and it has to connect to the wifi during the absence of the Bluetooth connectivity to the same device.

## Approach:

Before developing the desired code, I would be verifying the connectivity of the Bluetooth and the wifi by glowing the onboard led and check if the final code is matching the three checklists first- If Bluetooth is available connect to it, second-if wifi is available connect to it, third – if both Bluetooth and the wifi is available connect the wifi and the disconnect the Bluetooth, for satisfying the requirements of the code.

## Code for verifying the Connectivity of the Wifi:

```
#include <WiFi.h>

#define WIFI_SSID "moto g32_8989"

#define WIFI_PASSWORD "imironman"

const int LED_PIN = 2; // Built-in LED pin on ESP32

void setup() {
    pinMode(LED_PIN, OUTPUT);
    digitalWrite(LED_PIN, LOW); // Initially turn off the LED
    Serial.begin(115200);
    Serial.print("Connecting to WiFi...");
    WiFi.begin(WIFI_SSID, WIFI_PASSWORD)
    // Infinite attempts to connect to WiFi
    while (WiFi.status() != WL_CONNECTED) {
        delay(500);
        Serial.print(".");
    }
    Serial.println("");
    Serial.println("WiFi connected.");
    Serial.print("IP Address: ");
    Serial.println(WiFi.localIP());
    digitalWrite(LED_PIN, HIGH); // Turn on the LED when connected
}
```

```

void loop() {

    // Continuously check the WiFi connection status and update the LED
    if (WiFi.status() == WL_CONNECTED) {

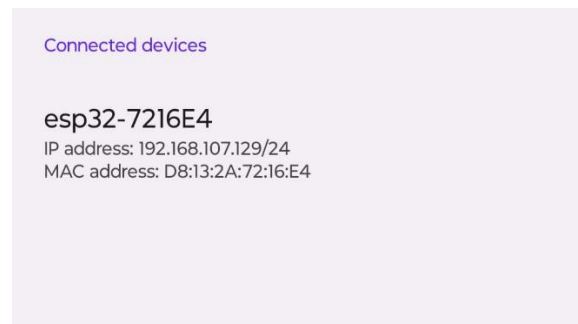
        digitalWrite(LED_PIN, HIGH); // Turn on the LED when connected
    } else {

        digitalWrite(LED_PIN, LOW); // Turn off the LED when disconnected
    }

    delay(10000); // Check every 10 seconds
}

```

OUTPUT:



Code for verifying the connectivity of the Bluetooth:

```

#include "BluetoothSerial.h"

String device_name = "moto";

// Check if Bluetooth is available
#if !defined(CONFIG_BT_ENABLED) || !defined(CONFIG_BLUEDROID_ENABLED)
#error Bluetooth is not enabled! Please run make menuconfig to and enable it
#endif

// Check Serial Port Profile
#if !defined(CONFIG_BT_SPP_ENABLED)
#error Serial Port Profile for Bluetooth is not available or not enabled. It is only available for the ESP32 chip.
#endif

BluetoothSerial SerialBT;

const int ledPin = 2; // Built-in LED pin

void setup() {

```

```

Serial.begin(115200);

SerialBT.begin(device_name); // Bluetooth device name

// SerialBT.deleteAllBondedDevices(); // Uncomment this to delete paired devices; Must be called
after begin

pinMode(ledPin, OUTPUT);

digitalWrite(ledPin, LOW); // Ensure the LED is off initially

Serial.printf("The device with name \"%s\" is started.\nNow you can pair it with Bluetooth!\n",
device_name.c_str());
}

void loop() {

    if (Serial.available()) {

        SerialBT.write(Serial.read());

    }

    if (SerialBT.available()) {

        Serial.write(SerialBT.read());

    }

    if (SerialBT.hasClient()) {

        digitalWrite(ledPin, HIGH); // Turn on the LED if connected

    } else {

        digitalWrite(ledPin, LOW); // Turn off the LED if not connected

    }

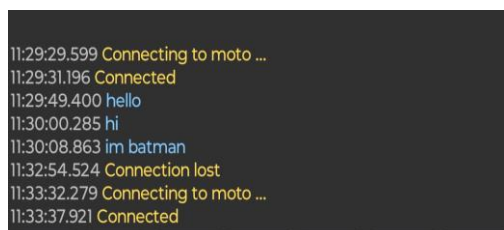
    delay(20);

}

```

OUTPUT:

Transmitted Message:

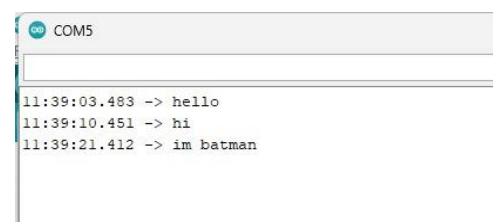


```

11:29:29.599 Connecting to moto ...
11:29:31.196 Connected
11:29:49.400 hello
11:30:00.285 hi
11:30:08.863 im batman
11:32:54.524 Connection lost
11:33:32.279 Connecting to moto ...
11:33:37.921 Connected

```

Received Message:



```

COM5
11:39:03.483 -> hello
11:39:10.451 -> hi
11:39:21.412 -> im batman

```

### Final Code:

```
#include <WiFi.h>
#include <BluetoothSerial.h>

#define WIFI_SSID "motowifi"
#define WIFI_PASSWORD "imironman"
#define LED_PIN 2 // Built-in LED pin on ESP32

BluetoothSerial SerialBT;
const String device_name = "moto";

void setup() {
    // Initialize serial communication
    Serial.begin(115200);

    // Initialize LED pin
    pinMode(LED_PIN, OUTPUT);
    digitalWrite(LED_PIN, LOW); // Ensure LED is off initially

    // Initialize Bluetooth
    if (!SerialBT.begin(device_name)) {
        Serial.println("Bluetooth initialization failed");
    } else {
        Serial.println("Bluetooth initialized");
        SerialBT.end(); // Initially, turn off Bluetooth
    }

    // Initialize WiFi
    Serial.print("Connecting to WiFi...");
    WiFi.begin(WIFI_SSID, WIFI_PASSWORD);

    // Wait for WiFi connection
    while (WiFi.status() != WL_CONNECTED) {
        delay(500);
        Serial.print(".");
    }
    Serial.println("");
    Serial.println("WiFi connected.");
    Serial.print("IP Address: ");
    Serial.println(WiFi.localIP());

    // Turn on LED when WiFi is connected
    digitalWrite(LED_PIN, HIGH);
}

void loop() {
    bool wifiAvailable = (WiFi.status() == WL_CONNECTED);
    bool btAvailable = SerialBT.hasClient(); // Check if Bluetooth is connected
```

```

if (wifiAvailable) {
  if (btAvailable) {
    // Priority 3: Both WiFi and Bluetooth are available
    SerialBT.end(); // Disconnect Bluetooth
    Serial.println("WiFi is connected, Bluetooth disconnected");
  }
  // Turn on LED when WiFi is connected
  digitalWrite(LED_PIN, HIGH);
} else {
  if (btAvailable) {
    // Priority 1: Only Bluetooth is available
    Serial.println("Bluetooth is available, connected");
    // Ensure Bluetooth is on
  } else {
    // Neither WiFi nor Bluetooth is available
    Serial.println("Neither WiFi nor Bluetooth is available");
    // Turn off LED
    digitalWrite(LED_PIN, LOW);
  }
}

// Manage Bluetooth connection based on WiFi availability
if (!wifiAvailable && !btAvailable) {
  // If WiFi is not available and Bluetooth is not connected
  if (!SerialBT.isReady()) {
    SerialBT.begin(device_name); // Turn on Bluetooth
    Serial.println("Bluetooth is now discoverable");
  }
  // Turn off LED when WiFi is disconnected
  digitalWrite(LED_PIN, LOW);
}

delay(1000); // Check every second
}

```

## OUTPUT:

You are expected to get a output like this.

\* Executing task in folder first\_project: C:\Users\ASUS\.platformio\penv\Scripts\platformio.exe  
device monitor

--- Terminal on COM5 | 115200 8-N-1

--- Available filters and text transformations: colorize, debug, default, direct,  
esp32\_exception\_decoder, hexlify, log2file, nocontrol, printable, send\_on\_enter, time

--- More details at <https://bit.ly/pio-monitor-filters>

--- Quit: Ctrl+C | Menu: Ctrl+T | Help: Ctrl+T followed by Ctrl+H

ets Jul 29 2019 12:21:46

rst:0x1 (POWERON\_RESET),boot:0x13 (SPI\_FAST\_FLASH\_BOOT)

configsip: 0, SPIWP:0xee

clk\_drv:0x00,q\_drv:0x00,d\_drv:0x00,cs0\_drv:0x00,hd\_drv:0x00,wp\_drv:0x00

mode:DIO, clock div:2

load:0x3fff0030,len:1184

load:0x40078000,len:13232

load:0x40080400,len:3028

entry 0x400805e4

Bluetooth initialized

Connecting to WiFi.....

WiFi connected.

IP Address: 192.168.107.129

Neither WiFi nor Bluetooth is available

[ 11320][E][BluetoothSerial.cpp:1079] isReady(): BT is not initialized. Call begin() first

Bluetooth is now discoverable

Neither WiFi nor Bluetooth is available

Neither WiFi nor Bluetooth is available

Neither WiFi nor Bluetooth is available

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Bluetooth is available, connected

WiFi is connected, Bluetooth disconnected

\* Terminal will be reused by tasks, press any key to close it.