Zephyr Final Workshop Project

🎯 Mission Objective

Build a complete wireless data transmission system using Zephyr RTOS, where:

- The nRF52DK acts as a BLE Peripheral.

- The TMP102 temperature sensor is connected to the nRF52DK.

- The sensor data is sent over BLE to the nRF52840DK.

- The nRF52840DK acts as a BLE Central and receives the data.

- The system supports a shell command (`sensor_read`) to print the latest temperature.

- The nRF52840DK also connects to the host over USB RNDIS.

- A shell is available on the host via Telnet over RNDIS.

🧰 Required Hardware

- 1x nRF52DK

- 1x nRF52840DK

- 1x TMP102 sensor (I2C)

- Jumper wires

- 3x USB cables mini

- Linux host machine

🔌 TMP102 to nRF52DK Wiring

TMP102 Pin	nRF52DK Pin
VCC	3.3V
GND	GND
SDA	P0.26
SCL	P0.27

📋 Project Setup Summary

Peripheral (nRF52DK)

• Connect TMP102 via I2C

- Act as BLE Peripheral
- Read temperature from TMP102
- Send data using BLE notifications

Central (nRF52840DK)

- Act as BLE Central
- Connect and subscribe to temperature notifications
- Provide a shell command: sensor_read

USB Networking (nRF52840DK)

- Enable RNDIS over USB
- Assign static IP (2.2.2.2)
- Provide shell over Telnet

🧪 Host Setup

- Assign static IP to USB network interface: 2.2.2.1/24
- Ping the board at 2.2.2.2
- Access shell with: telnet 2.2.2.2