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