**Nucleo F446RE**

This folder contains tests and documentation for the Nucleo F446RE development board.

**Purpose**

* To demonstrate Cortex-M features specific to the Nucleo F446RE board.
* To organize test suites and relevant files for this board.

**Getting Started**

* Load the appropriate default project files into STM32CubeIDE

**Nucleo F446RE**

**Nucleo\_f>Core>Src>MPU\_Config.c**

**Configuration Steps and Initial Assignments**

1. **Disable the MPU:**
   * Disables the MPU to allow modifications.

MPU->CTRL &= ~MPU\_CTRL\_ENABLE\_Msk;

1. **Configure Region 0:**
   * **Region Number:** Set to 0 (Region 0 selected).

MPU->RNR = 0;

* **Base Address:** Set to the start of SRAM (0x20000000).

MPU->RBAR = 0x20000000;

* **Region Attributes and Size:**
  + **Access Rights:** Privileged Read-Only, No User Access.
  + **Memory Type:** Normal Memory.
  + **Region Size:** 32 KB (0b011).
  + **Region Enable:** Enabled.

MPU->RASR = (0b01 << MPU\_RASR\_AP\_Pos) | // Privileged read-only

(0b000 << MPU\_RASR\_TEX\_Pos) | // Normal memory

(0b011 << MPU\_RASR\_SIZE\_Pos) | // 32 KB size

(1 << MPU\_RASR\_ENABLE\_Pos); // Enable region

1. **Enable MPU and Set Default Memory Map:**
   * Enables the MPU and retains the default memory mapping for undefined regions.

MPU->CTRL |= MPU\_CTRL\_ENABLE\_Msk | MPU\_CTRL\_PRIVDEFENA\_Msk;

1. **Enable Memory Management Faults:**
   * Configures the system to generate a fault for invalid memory access.

SCB->SHCSR |= SCB\_SHCSR\_MEMFAULTENA\_Msk;

1. **Memory Barriers:**
   * Ensures the configuration takes effect using data and instruction synchronization barriers.

DSB();

ISB();

nucleo\_UART\_console\_connection 1/21/2025

Open Console>Command shell console

Note To Self: Default settings (do not open multiple console windows without disconnecting the board)

Serial port:COM5

Baud Rate:115200

Data Size: 8

Parity: None

Stop Bits: 1