1. Introduction

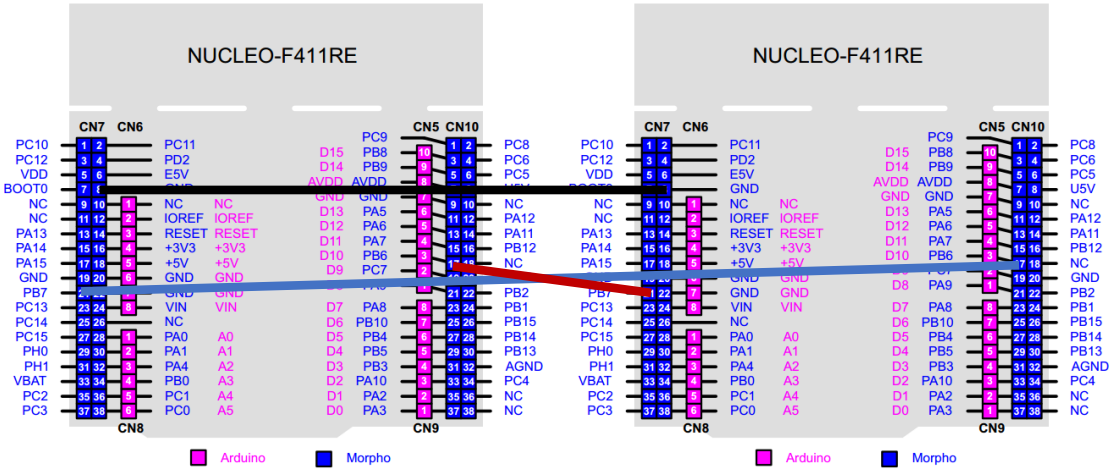
The purpose of this lab is to explore the design of firmware using UART communication driven by interrupts. Students will work in teams of 2-3 to develop a guess the number game communicated over UART1.

2. Prerequisites

- StmCubeIDE is installed on your machine.
- Pick a partner or two.
- Your MSOE Development Board with the following components assembled:
  - STM32 Microcontroller
  - Existing UART Terminal Driver

3. Activities

Write a guessing game to be run on two microcontroller boards connected using UART1 (PB6-TX, PB7-RX)



C-Level Project

Demonstrate the ability to type on your partners computer by typing in your console.

B-Level Project

Program a guessing game where Player One chooses a target number form 1-10 by entering it into their console.

Player Two then guesses a number and sends if over in the data field of a 8-N-1 UART Packet.

The guess should be printed on Player Ones console.

Play One then responds with the char ‘=’, ‘>’, or ‘<’ comparing the guess to the target number.

The response will trigger a message informing Player Two of the accuracy of their guess and total number of guesses.

The game continues until the correct number has been guessed.

A-Level

Drive UART1 with interrupts (Receiver only is fine as we are only sending one Char at a time).

Note: An Analog Discover could be helpful for debugging the application from each respective side.

4. Deliverables

- All code should include a header block with:
  - Your team members names
  - Course number and section
  - Assignment name
  - File name
  - List of any dependencies.
  - Description
- Print out you document code in the following order:
  - server.c (PlayerOne)
  - client.c (PlayerTwo)
- Print in Light mode with Line numbers, filenames, and time and date using CubeIDE or Notepad++
- Staple together packet in the top left, in order, with rubric cover sheet.
- Final packet and demonstration due by the beginning of Week12 Lab.