ENSE 452 - Lab 3
CLI Part 2 on the Target

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1 Objective

The objective here is to improve our Command-Line Interface (CLI) through which you can communicate with your target board. You will abandon the polling method used in USART communications and use interrupts. You also will create safer code by incorporating a timer in your USART driver code. Of course at each step of the development, we will be paying attention to good software design principles.

2 Procedure

2.1 Phase 1 - USART 2 Interrupt

Create a Lab 3 directory in your repository and create a new project. Modify and add to the previous lab to receive characters via the USART2 interrupt. Instead of polling you can check a global flag that you create to indicate a character has been received.

2.2 Phase 2 - Improve USART 2

Last lab you wrote a function to transmit a character like so:

```
/**
Send an 8-bit byte to the serial port, using the configured bit-rate, # of bits, etc. Returns (
  @param b the 8-bit quantity to be sent.
  @pre must have already called serial_open()
*/

int sendbyte(uint8_t b);
```

There is a possibility for your code to lock up in that you should be waiting for the TC flag to be set to indicate successful transfer. To solve this, add a timeout, or how long in ms you should wait.

```
while((USART2->SR&(1<<6)) == 0);  //wait until the TC flag is set
```

```
/**
  Send an 8-bit byte to the serial port, using the configured bit-rate, # of bits, etc.
  Returns 0 on success and non-zero on failure.
    @param b the 8-bit quantity to be sent.
    @pre must have already called serial_open()
  */

  int sendbyte(uint8_t b, uint32_t Timeout);
```

User Timer 2 to create this timeout. If the timer expires then you should exit the loop to check that the TX buffer is empty. This will prevent the code from locking in the while loop. Add this functionality to the getbyte() routine also even though in this you receive via interrupts.

2.3 Tagging

In the lab I demonstrated tagging. There is also some references in URCourses. Please tag your assignment as Lab3Submission. Make sure this gets pushes to the remote.

3 What To Submit

Nothing! Just make sure to use your repository accordingly.