Laboratory 5

(Due date: November 14th)

OBJECTIVES

- ✓ Learn how to use Asynchronous serial communication with an external PC.
- ✓ Learn how to perform full duplex data transfer serially.
- ✓ Learn how to use an existing C library.

FIRST ACTIVITY (100/100)

- You will design a program to communicate serially using your Dragon12 Light board. You can use the provided library `sci1.h`.
- Select Baud rate of 9600 bps for SCI1.
- Request user to enter a character via serial terminal Putty & display corresponding 8-bits (the ASCII value will be sent) on the LEDs (PORTB) until any other character is pressed from the keyboard.
- Display message on Putty terminal 'Would you like to continue? (Y/N)'. Based on User Response, repeat above step.
- Display message on Putty terminal 'End of Program!!'.

- **Demonstrate that your code works to the TA and submit the working code on Moodle Submission page**

TA signature: _____ **Date:** _____

EXTRA CREDIT ACTIVITY (25/100)

- You will modify above program to display received character on LCD Screen on your Dragon12 Board.

  OR

- You will design a program to communicate serially with another Dragon12 Board. Program second board to send numbers from 0-9 through SCI1 and display received data on 7-segment display of first Dragon12 board.

- **Demonstrate that your code works to the TA and submit the working code on Moodle Submission page**

TA signature: _____ **Date:** _____

HINTS

- Port S pins i.e PS0 & PS1 are used for SCI0 serial communication receive & transmit respectively
- Port S pins i.e PS2 & PS3 are used for SCI1 serial communication receive & transmit respectively
- SCI1 includes a TTL to USB chip for PC interfacing via the USB jack P2
- SCI1 Baud rate is programmable using SCI1BDH and SCI1BDL registers
- ACSII codes are transmitted serially with least significant bit getting transmitted first
- Install Putty terminal & connect via serial communication to SCI1 at the selected baud rate

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Putty Terminal Configuration: