EE335 Advanced Microcontroller Engineering
Oregon Tech Portland, Winter 2014

Lab Assignment #6 - *Buffering*
Due February 20

Objectives:

Implement and demonstrate buffering of the serial port to provide a reasonable human interface.

Equipment Required:

Your Dragon12 board, ee333template.asm

Background Information:

Use the ee333template.asm file as a starting point for this problem, to display a four digit number on the 7-segment LED display.

You need a line buffered serial interface. You could use the one given as the example in the book, or write one of your own, which can be much simpler for this assignment!

Characters received from the serial port need to be placed in a line buffer. This needs be done with an interrupt driven interface. Each character needs to be echoed back to the user. Interrupts are not needed for this. Just read the status register and write the character to the data register. You can't type commands faster than the program can respond.

At the end of the line, a CR character will be received. Echo this character and the terminal program in AsmIDE will go to the start of the next line.

Remember that you need to use the second serial port in order to use interrupts.

When the line is complete, set a flag bit. The main program loop then moves and translates the characters in the line buffer into the four values needed for the LED display.

The program must only accept exactly four digits 0 to 9 followed by the carriage return character and must ignore all other input.

Assignment:

Implement a program that accepts a 4 digit number from the RS232 terminal and display the number on the LED display. Don't forget the heartbeat monitor!

To turn in:

- Commented program listing
- Discussion of what you did