ECE353 In-Class Exercise

UART – Advanced Features

Problem 11A Objectives

- Generate the code for a basic circular buffer
- Implement the Receive portion of the UART ISR

1. Add gpioPort.c to the Project

A. Add your version of **`gpioPort.c`** from last week's UART polling exercise to the Keil uVision project.

2. Implement pc_buffer.c

A. Create a new c file called **`pc_buffer.c`** and add it to the Keil uVison Project

B. Implement the functions found in **`pc_buffer.c`**. For further information, see the end of the producer-consumer article on Wikipedia.

3. Modify interrupts.c

A. Modify **`UART0_Handler`** to detect if a Rx or Rx Timeout interrupt has occurred. You will need to examine the **`MIS`** (Masked Interrupt Status Register). If one of these interrupts is currently active, call **`UART0_Rx_Flow`** at the top of the file

B. Complete the function **`UART0_Rx_Flow`**. This function should completely empty the Rx hardware FIFO and place the data into the Rx circular buffer. Make sure to clear the Rx interrupts before you exit the function.

4. Observe the Serial Output

Make sure the output strings and input are displayed on the terminal.

5. What to Turn In

Turn in **`interrupts.c`** to the dropbox on the course website.