Laboratory 7

Interrupt-Driven Input and Output

Due Date: Beginning of Week 9 Lab

Introduction

Microcomputers must often interact with the "outside world", meaning that they must receive inputs and generate outputs.

Assignment

Write a program that meets the following requirements. The program for Lecture 21 is available as an assembly file. Use this file as a template for generating interrupts. You should add comments to any sections that you use.

- When the program is executed, the RTI device's divider should be initialized with a coefficient of 7 and an exponent of 12.
- Initially, the 7-segment display should read "0000" and should increment approximately once per second at the RTI's starting configuration. The program must use the RTI interrupt to generate this time.
- If SW5 is pressed, it must generate an interrupt that increments the RTI divider's exponent by 1 up to the maximum value.
- If SW4 is pressed, it must generate an interrupt that decrements the RTI divider's exponent by 1 down to the minimum value.
- If SW3 is pressed, it must generate an interrupt that increments the RTI divider's coefficient by 1 up to the maximum value.
- If SW2 is pressed, it must generate an interrupt that decrements the RTI divider's coefficient by 1 down to the minimum value.

Extra Credit: Implement the following additional requirement.

- The current value of RTICTL should be displayed in binary on the eight individual LEDs below the 7-segment display.

What to Demonstrate/Submit

- Listing file.
- Instructor check-off.