ECE 4623/5623
Homework #1 (Due: 9/12/2017)
Digital Design Review and Evaluation Board Introduction

1. Buy the Basys3^{TM} Evaluation Board. It is made by Digilent and the cost for students is less than $100. This is the web address:
   http://www.digilentinc.com/Products/Detail.cfm?Prod=BASYS3.

2. Answer the following digital design review questions:

   (a) What is a latch? How does it work? **(10%)**

   (b) What is a flip-flop? How does it work? **(10%)**

   (c) What is the difference between a flip-flop and a latch? **(10%)**

   (d) What is the difference between sequential and combinational logic? **(10%)**

   (e) What is a full-adder? How does it work? **(10%)**

   (f) Describe a simple state machine that performs integer division. **(20%)**

3. Create a circuit to drive the 7-segment display on the Basys3 that displays the value of the 16 switches. The value on the switches is binary, but you should display the decimal value on the 7-segment display. This part of the project must be demonstrated. **(30%)**