CDA 3201L
Sequential Logic Circuits (II)
Lab 6

***Demonstration Due Date**: Friday, March 20th by end of class.*

***Report Due Date**: Sunday, March 22nd by 11:59PM.*

Part A

Design a 4-bit synchronous left-shift register using either D flip-flops (7474) or JK flip-flops (7476). Your shift register should have an asynchronous parallel load, serial in, serial out, and parallel out bus. You may convert a flip-flop of another type into a D flip-flop, if needed. Answer the following questions in the report:

1. How would you modify this design to provide synchronous parallel load instead of asynchronous parallel load?
2. How would you modify this design to allow a synchronous right-shift along with synchronous parallel load?

Part B

The 74LS194 is a 4-bit bi-directional shift register with parallel and serial operating modes. Design a circuit using only one 74LS194 IC to perform all the following 3 functions. You are required to provide control signals of your choice to select the functions.

1. Parallel load
2. Circular Left shift or rotate left
3. Circular Right shift or rotate right

IMPORTANT: You must demonstrate your solution to part A and B on the breadboard. Lab grade will depend on the working of the circuit and will be checked off by the lab instructor. This demonstration must be completed within the window of your lab section meeting.