

## ECE238 – Lab 4

Name :.....

Date :.....

Section :.....

### Part 1

Design a 4-bit rising edge triggered synchronous shifting register (Right or Left). Simulate the system and then implement on the Spartan 3E board. Use Switches to give the input bits and use discrete LEDs to display shifted value.

### Part 2

Modify your design in such a way that the circuit can perform shifting right or rotating left (Barrel Shifter). Add an additional 1-bit control signal which specifies the direction of shifting.

The design may have a

- One Rotate Right circuit
- One Rotate Left circuit
- One 2-to-1 Multiplexer circuit to select desired result