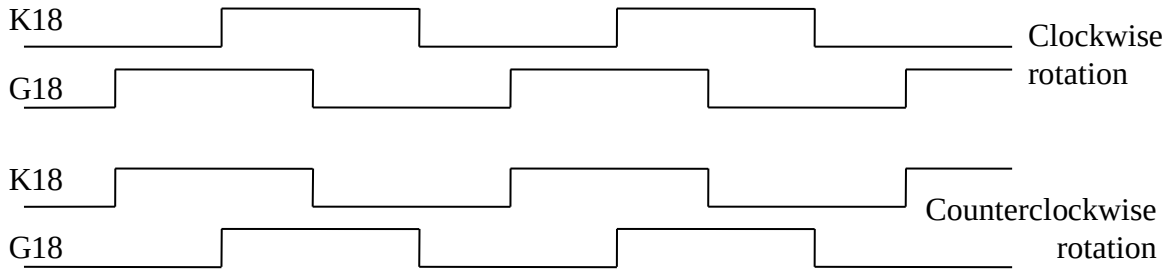
Design Name : Generic N-bit Rotary Encoder for the Rotary Knob on the Starter Kit.

Objective :

Learn how to use GENERIC keyword and use it on the N-bit rotary encoder circuit.

Information :

Rotary encoder on the Starter Kit generates two phased signals through the mechanical switches within it. Signals generated for the Clockwise/Counterclockwise rotation of the knob are illustrated in the figure.



Assignment :

1. Design an 8 bit value generator using the rotary encoder designed in the previous assignment. The easiest approach is to check for the value of one of the signals at the rising edge of the other. However, remember that the switches are mechanical type. That means the signals have a lot of chatter (bouncing).
2. Make the design generic N-bit, where N is given as a generic parameter by the top module you add.
3. Make the rotary encoder 5 bits using generic parameter. Use your design to feed 5-LEDs.

Follow Up Work :

Modify your design so that it will rotate the blinking LED just as the one in the initial design of the FPGA kit. That is, rotating the knob clockwise rotates the blinking LED to the right and rotating it counterclockwise rotates the LEDs to the left.

Homework :

Modify the design so that the speed of rotation of LEDs will double when a button is pressed while rotating the knob.