

**ELEC 2220 Computer Systems**  
**Homework #17**  
**Due: Friday, July 17**

Building on what was done in Homework 16, design a program that will produce the following behavior.

1. When the board first resets, perform any required initialization of variables, GPIO ports, etc.
2. Turn OFF all four LEDs, wait for the user button to be pressed, and then go to Step 3.
3. Turn ON one LED every half-second in a clockwise pattern as follows:
  - Green ON
  - Green-Orange ON
  - Green-Orange-Red ON
  - Green-Orange-Red-Blue ON (PD12-13-14-15)
  - All OFF (for one half-second)

Repeat this pattern four times and then go to Step 4.

4. Turn ON one LED every second in a counter-clockwise pattern as follows:
  - Blue ON
  - Blue-Red ON
  - Blue-Red-Orange ON
  - Blue-Red-Orange-Green ON (PD15-14-13-12)
  - All OFF (for one second)

Repeat this pattern three times and then go back to Step 2.

**Repeat steps 2-3-4 continuously.**

As with the previous Button/LED program, partition the program into subroutines, with each subroutine performing a specific function (LED\_ON, LED\_OFF, CHECK\_BUTTON, DELAY, etc.).

**Deliverables:**

1. Submit a printout of the source program. Ensure that the program includes descriptive “comments”.
2. Demonstrate the operation of the program via a Zoom meeting. Alternatively, you may upload to Canvas or email me a **video** that demonstrates the above behavior. I must see and hear you in the video, describing the operation of the board.