Building on what was done in the previous project, 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 five 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 half-second)
   Repeat this pattern three times and then go back to Step 2.

Repeat steps 2-3-4 continuously.

As with the first 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 in class.

2. Bring your board to my office some time on Friday to demonstrate the operation of the program. I will connect it to my computer to power the board, which should execute the program in its flash memory.

   Alternatively, you can send me a video that demonstrates the above behavior. I must see and hear you in the video, describing the operation of the board.