Lab 1
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Section: 112D

Initial Pseudocode (Lab 2)

Part B Pseudocode:

```
Initialize PORTA switches to be input

Initialize PORTC LED to be output


LOOP:

Load value at PORTA_IN to Register 16

Transfer data at Register 16 to PORTC_OUT

Jump back to LOOP for infinite loop
```

Part C Pseudocode

```
Initialize stack pointer address at 0x3FFF

Load stack pointer address at Y register

Output Y register value to Stack Pointer register

Initialize the last LED at PORTC as output


LOOP                    ;to do the 10ms delay or multiples of 10ms delay

OUTTGL last LED at PORT C

Call Delay_10ms or Delay_Multiple subroutine

Back to LOOP (Delay_10ms or Delay_Multiple)              ;the main code basically stop here.

                                                               ; the rest are just subroutine
```

SUBROUTINE

1. three nested loop here

2. use two nested loop to do the 10ms delay.

3. use the third nested loop to do the multiple of the 10ms delay

4. If the Delay_10ms is called. Use just two of the nested loop code. I used two loops to make sure it is long enough to be a 10ms delay. Push and pop at the beginning and end of this subroutine. Return to main code at the end of this subroutine.

5. If the Delay_Mulitple is called. Use all three nested loop. The third nested loop is to do the multiple of the delay by loading a register with the number of multiples that you want to delay. Push and pop at the beginning and end of this subroutine. Return to main code at the end of this subroutine.

Part D Pseudocode

```
Initialize Stack Pointer
Load Stack Pointer address into Y register
Output Y register value to Stack Pointer register
Initialize PORTC LED as output
Initialize S2 and S1 as input
Initialize Green and Red LED as output
Make sure that S2 runs at a slower speed ensure user is not holding it for a long time to win the game.

MAIN
while ( Green or Red LED not on)   {          ;while loop to continue game is green or red is not on
        if ( (S2 = true) AND (LED 3,4 not on)) {
                Turn on Red LED
        }
        else If ((S2=true) AND (LED 3,4 on))
                Turn on Green LED
        }
        else {
        Shift LED towards middle and then outward with delay of 100 ms. One goes 0,1,2,3,4,5,6,7,1,2.etc…… Another one goes 7,6,5,4,3,2,1,0,1,2,3,4,5.etc

        }

}

RESET
Read input from S1 to reset game
Back to RESET if red and green LED is still on.        ;to make sure user reset game.
Back to MAIN
```