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1  /*****
2  Author: Gabe DiMartino
3  Lab 1: GPIO and C Language
4  Date Created: January 21, 2025
5  Last Modified: January 21, 2025
6  Description: this program will display RGB LED according to the value read
7  from SW1 and SW2.
8  If both switches SW1 and SW2 are pressed, the LED should be blue
9  If just SW1 switch is pressed, the LED should be red
10 If just SW2 switch is pressed, the LED should be green
11 If neither SW1 or SW2 is pressed, the LED should be off
12 Inputs: SW1 and SW2
13 Outputs: RGB LED
14 *****/
15
16 #include "TM4C123GH6PM.h"
17
18 // Dataclass to store the LED color values
19 #define RED_LED    0x02
20 #define BLUE_LED   0x04
21 #define GREEN_LED  0x08
22
23 void Delay(void){ // Delay the time by 0.1S
24     unsigned long volatile time;
25     time = 727240*200/91;
26     while(time){
27         time--;
28     }
29 }
30
31 int main(void){
32     SYSCTL_RCGCGPIO_R |= 0x20; //Initialize Clock and Port F
33     while((SYSCTL_PRGPIO_R & 0x20) == 0){}
34
35     GPIO_PORTF_LOCK_R = 0x4C4F434B;
36     GPIO_PORTF_CR_R = 0x1F;
37     GPIO_PORTF_AMSEL_R = 0x00;
38     GPIO_PORTF_PCTL_R = 0x00000000;
39     GPIO_PORTF_DIR_R = 0x0E;
40     GPIO_PORTF_AFSEL_R = 0x00;
41     GPIO_PORTF_PUR_R = 0x11;
42     GPIO_PORTF_DEN_R = 0x1F;
43
44     while(1){ // Infinite Loop to check if a switch is activated
45         unsigned char sw1 = (GPIO_PORTF_DATA_R & 0x10);
46         unsigned char sw2 = (GPIO_PORTF_DATA_R & 0x01);
47
48         // Reset LED
49         GPIO_PORTF_DATA_R &= ~0x0E;
50
51         // Output the color designated by the switch
52         if (!sw1 && !sw2) {
53             GPIO_PORTF_DATA_R |= BLUE_LED;
54         }
55         else if (!sw1 && sw2) {
56             GPIO_PORTF_DATA_R |= RED_LED;
57         }
58         else if (sw1 && !sw2) {
59             GPIO_PORTF_DATA_R |= GREEN_LED;
60         }
61
62         // Keep the color for 0.1 before reset
63         Delay();
64     }
65 }

```