**Prompt:**

For System A, students must write a C/C++ program for the following functions.

There is the "S2" button on the MSP430FR5944 Launchpad board. While this "S2" button is pressed, the RGB LED on the BH EDU board should keep changing colors with the sequence of Red, Green, and Blue. When the button is released, the LED should be turned off.

The duration of the color change must be between 0.5 seconds to 1 second.

The following table shows the colors for the RGB LED, and the pins associated with the BH board for the given circuit diagram. Fill out the following table for the pins by choosing 0 or 1 to generate associated mixed LED colors. Make sure to include this table in your lab report.

|  |  |  |  |
| --- | --- | --- | --- |
|  | P6.0 (Red) | P6.1 (Green) | P6.2 (Blue) |
| Cyan | 0 | 1 | 1 |
| Magenta | 1 | 0 | 1 |
| Yellow | 1 | 1 | 0 |

(1 means on , 0 means off)

**Example of a program from a previous lab (That might help):**

#include <msp430.h>

#include <stdio.h>

// NAME : Blake Jackson, Kyle Rex

// Section : 501//

int main(void)

{

    WDTCTL = WDTPW | WDTHOLD;   // stop watchdog timer

    PM5CTL0 &=~LOCKLPM5;

    P3DIR |= 0xF;

    P3OUT |= 0xF;

    P8DIR |= 0xF;

    P8OUT |= 0xF;

    P6DIR &= ~BIT0;

    P6REN |= BIT0;

    P6OUT |= BIT0; // PULL UP

    while(1)

    {

       if ((P6IN & BIT0) == 0)

            {

               P3OUT &=~ 0X01;

               \_\_delay\_cycles(150000);

              P3OUT |=0X01;

              P3OUT &=~0X02;

              \_\_delay\_cycles(150000);

              P3OUT |= 0X02;

              P3OUT &=~ 0X04;

              \_\_delay\_cycles(150000);

              P3OUT |= 0X04;

              P3OUT &=~ 0X08;

              \_\_delay\_cycles(150000);

              P3OUT |= 0X08;

              P8OUT &=~0X01;

              \_\_delay\_cycles(150000);

              P8OUT |=0X01;

              P8OUT &=~ 0X02;

              \_\_delay\_cycles(150000);

              P8OUT |= 0X02;

              P8OUT &=~ 0X04;

              \_\_delay\_cycles(150000);

              P8OUT |= 0X04;

              P8OUT &=~ 0X08;

              \_\_delay\_cycles(150000);

              P8OUT |= 0X08;

              P8OUT &=~ 0X04;

              \_\_delay\_cycles(150000);

              P8OUT |= 0X04;

              P8OUT &=~ 0X02;

              \_\_delay\_cycles(150000);

              P8OUT |= 0X02;

              P8OUT &=~ 0X01;

              \_\_delay\_cycles(150000);

              P8OUT |= 0X01;

              P3OUT &=~ 0X08;

              \_\_delay\_cycles(150000);

              P3OUT |= 0X08;

              P3OUT &=~ 0X04;

              \_\_delay\_cycles(150000);

              P3OUT |= 0X04;

              P3OUT &=~ 0X02;

              \_\_delay\_cycles(150000);

              P3OUT |= 0X02;

              P3OUT &=~ 0X01;

              \_\_delay\_cycles(150000);

              P3OUT |= 0X01;

               }

       }

    return 0;

}

**Example of empty program:**

#include <msp430.h>

/\*\*

\* main.c

\*/

int main(void)

{

WDTCTL = WDTPW | WDTHOLD; // stop watchdog timer

return 0;

}

**Connections:**

MSP430FR5994 Launchpad

P6.0 Controls one color of the RGB LED

P6.1 Controls one color of the RGB LED

P6.2 Controls one color of the RGB LED

Hint: This is active low

P5.5 is for the S2 button on the launchpad

Hint: Active low

Enable S2 like any button

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This works great now add these colors after the first three

Cyan (Green and Blue on together)

Magenta (Red and Blue on together

Yellow (Green and Red on together)