**Prompt:**

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

When the buttons of the keypad matrix button shown below are pressed, the proper LED should be turned on.

When button 1 is pressed, LED 6 should turn on.

When button 2 is pressed, LED 5 should turn on.

When button 3 is pressed, LED 4 should turn on.

When button 4 is pressed, LED 3 should turn on.

When button 5 is pressed, LED 2 should turn on.

When button 6 is pressed, LED 1 should turn on.

If the button is not pressed, the corresponding LED should be off.

**Code that works for button 1 and button 2:**

**#include** <msp430.h>

/\*\*

\* main.c

\*/

**int** **main**(**void**)

{

WDTCTL = WDTPW | WDTHOLD; // stop watchdog timer

PM5CTL0 &= ~LOCKLPM5;

P7DIR |= 0x03;

P3DIR &= ~0x07;

P5DIR |= 0x0B;

P5OUT |= 0x0B;

P8DIR |= 0x0F;

P8OUT |= 0x0F;

**while**(1)

{

P7OUT |= 0x03;

P7OUT &= ~0x01;

\_delay\_cycles(1000);

**if**((P3IN & 0x01) ==0){

P8OUT &= ~0x01;

\_delay\_cycles(250000);

P8OUT |= 0x01;

}

**if**((P3IN & 0x02) ==0){

P8OUT &= ~0x02;

\_delay\_cycles(250000);

P8OUT |= 0x02;

}

}

**return** 0;

}

**Connections:**

MSP430FR5994 Launchpad

P5.3 Connects to LED 1

P5.1 Connects to LED 2

P5.0 Connects to LED 3

P8.2 Connects to LED 4

P8.1 Connects to LED 5

P8.0 Connects to LED 6

P3.0 Controls buttons 1, 4, 7, \* (lateral)

P3.1 Controls buttons 2, 5, 8, 0 (lateral)

P3.2 Controls buttons 3, 6, 9, # (lateral)

P3.3 Controls buttons A, B, C, D (lateral)

P7.0 Controls buttons 1, 2, 3, A (longitudinal)

P7.1 Controls buttons 4, 5, 6, 8 (longitudinal)

Tips for buttons:

The port direction for P3.0 to P3.2 need to be configured as input

The port direction for P7.0 to P7.1 need to be configured as output

P3 controls the columns (input)

P7 controls the rows (OUTOUT)

P5 and P8 control the LEDs

All LEDS ARE ACTIVE LOW!!!!!