Lab 8: Keypad

Introduction

In this lab, you will add one more state to the code from Lab 6 to accept input from the numeric keypad. You need not have the serial port support in this lab.

Keypad
Add one more state to your main routine so that it will display the keypad input in the format “+X.XXX”. As new numbers are entered, you will shift them from the right. So, if the display was originally “+1.264” and you press a ‘3’, the display should show “+2.643”. Pressing the CHS button will toggle ‘+’/-’ display. Pressing the ‘.’ Button will reset the display to “+0.000”. Store the displayed string in a string variable as shown below.

The main() routine will call a KeySwitch() routine as shown below with different states. You will have to write an AnyKey() routine which determines if any key has been pressed, a GetKey() routine which determines which specific key was pressed and a HandleKeyCode() routine which modifies the variable string as necessary.

KeySwitch code

```c
char string[] = { '+', '0', '.', '0', '0', '0', 0, 0 }; char keystate; char keycode;
void KeySwitch()
{
    switch( keystate )
    {
    case 0:
        if ( AnyKey() )
            keystate = 1;
        break;

    case 1:
        keycode = GetKey();
        if ( keycode == 0 )
            keystate = 0;
        else
            keystate = 2;
        break;

    case 2:
```
HandleKeycode(keycode);
keystate = 3;
break;

case 3:
    if ( !AnyKey() )
        keystate = 4;
    break;

case 4:
    if ( !AnyKey() ) {
        DisplayC( 0x80, string );
        keystate = 0;
    }
    break;
}

AnyKey and GetKey

Make sure you set PORTB as inputs before reading the keypad. This can be done with the following code.

TRISB |= 0b00011110;

At the end, you will need to reset PORTB back to outputs again so that the LCD will still work.

RP0 = 1;
TRISB &= 0b11100001;
RP0 = 0;

Discussion and Conclusions

Keep all other functions operational. Thus BarChart, BarIntensity, DisplayV, DisplayTemp should continue to operate. Depending on your code, you may run into difficulties because the code may no longer fit in memory. If that is happening, you can disable the BarChart and BarIntensity functions. If your code exhibits difficulties, set up a watch window and use the ICD to debug.

Demonstrate your project and hand in your well-commented C code by the end of class.