

C Code

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#include <p18f4520.h>
#include <delays.h>
#include <stdio.h>

#pragma config WDT = OFF

extern void LCDInit(void); /* LCD initialize */
extern void LCDLine_1(void); /* get LCD to line 1 */
extern void LCDLine_2(void); /* get LCD to line 2 */
extern void i_write(void);
extern void end_line(void);
extern void d_write(void); /* write data to LCD */
extern unsigned int temp_wr; /*

const char volts[] = "Volts";

void convertDisplay(unsigned char);

void main(void){

    unsigned char result;
    int i;

    ADCON0 = ADCON0 ^ 0x01; /* turn on AD
    TRISB = 0; /* PORTB to outputs
    PORTB = 0; /* Clear PORTB

    LCDInit(); /* Initialize LCD */

    TXSTA = 0xA4; /* setup USART */
    SPBRG = 25; /* 9.6 KBAUD @ 4 MHz*/
    RCSTA = 0x90;

    LCDLine_1(); /* Setup first Line */

    temp_wr = 0x85; /* Set position to line 1 spot 5
    i_write();

    for(i = 0; i < 5; i++){ // Write volts to LCD
        temp_wr = volts[i];
        d_write();
    }

    temp_wr = 0x80; // Reset position to start of line 1
    i_write();

    while(1){
        ADCON0 = ADCON0 ^ 0x02; // Start Conversion
        while(ADCON0 & 0x02){} // Wait for conversion to finish
        result = ADRESH; // Read result

        convertDisplay(result);

        //Blink All LEDs
        if(result > 0xE5){ // result > 4.5
```

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        PORTB = 0x0F;           // All 4 on
        Delay1KTCYx(100); // Delay 250 ms
        PORTB = 0x00;           // Clear LEDs
        Delay1KTCYx(100); // Delay 250 ms
    }
    else if(result <= 0xE5 && result >= 0x99){           // 4.5 >=
result => 3.0
        PORTB = 0x0F;           // All LEDs on
        Delay1KTCYx(100); // Delay 250 ms
    }
    else if(result < 0x99 && result >= 0x66){           // 3.0 >
result => 2.0
        PORTB = 0x07;           // First 3 on
        Delay1KTCYx(100); // Delay 250 ms
    }
    else if(result < 0x66 && result >= 0x33){           // 2.0 >
result => 1.0
        PORTB = 0x03;           // First 2 on
        Delay1KTCYx(100); // Delay 250 ms
    }
    else if(result < 0x33 && result >= 0x19){           // 1.0 >
result >= 0.5
        PORTB = 0x01;           // First 1 on
        Delay1KTCYx(100); // Delay 250 ms
    }
    else if(result < 0x19){ // result < 0.5
        PORTB = 0x01;           // 1st LED on
        Delay1KTCYx(100); // Delay 250 ms
        PORTB = 0x00;           // Clear LEDs
        Delay1KTCYx(100); // Delay 250 ms
    }
    else{
        PORTB = 0;           // Clear LEDs if we get weird
results
    }
}
}

```

```

// Convert value from POT and send to LCD
void convertDisplay(unsigned char temp1){

```

```

    int i;
    unsigned char countUp = 0;
    unsigned int j = 0;
    unsigned char converted[4] = "000";

    // Loop until temp1 = 0
    // This gives the decimal value of temp1.
    while(temp1 != 0){
        temp1 -= 0x01;           // temp1 = temp1 - 1
        countUp += 1;           // countUp = countUp + 1
    }

    j = countUp * 1.96;           // Convert decimal value to volts
    on a 0-500 scale

    sprintf(converted, "%i", j); // Read value of j into converted

```

```

// if volts > 1, than write it out
if(j >= 100){
    for(i = 0; i < 3; i++){
        temp_wr = converted[i];
        d_write();

        // Places period in correct spot
        if(i == 0){
            temp_wr = '.';
            d_write();
        }
    }
}
// If volts is between 1 and .10, then write out here
// Places decimal in correct spot with extra zero
else if(j < 100 && j > 9){
    temp_wr = '0';
    d_write();
    temp_wr = '.';
    d_write();

    for(i = 0; i < 2; i++){
        temp_wr = converted[i];
        d_write();
    }
}
// If volts is between .1 and 0, then write out here
// Places decimal in correct spot with extra zeros
else if(j < 10 && j > 0){
    temp_wr = '0';
    d_write();
    temp_wr = '.';
    d_write();
    temp_wr = '0';
    d_write();

    for(i = 0; i < 1; i++){
        temp_wr = converted[i];
        d_write();
    }
}

temp_wr = 0x80; // Reset to start of line
i_write();

return;
}

```