#include <18f4520.h>

#DEVICE ADC=10

#fuses INTRC\_IO,NOPROTECT,BROWNOUT,NOMCLR,NOCPD,NOWDT,NOPUT,FCMEN

#use delay(clock=8000000)//,restart\_wdt)

#use rs232(baud=9600, xmit=PIN\_C6, rcv=PIN\_C7)

#byte adresh = 0x1e

#bit adfm = 0x1f.7

#define BUZZ\_ON OUTPUT\_HIGH(PIN\_C5);

#define BUZZ\_OFF OUTPUT\_LOW(PIN\_C5);

#define RS\_HI OUTPUT\_HIGH(PIN\_A5);

#define RS\_LO OUTPUT\_LOW(PIN\_A5);

#define EN\_HI OUTPUT\_HIGH(PIN\_A4);

#define EN\_LO OUTPUT\_LOW(PIN\_A4);

#define D4\_HI OUTPUT\_HIGH(PIN\_A3);

#define D4\_LO OUTPUT\_LOW(PIN\_A3);

#define D5\_HI OUTPUT\_HIGH(PIN\_A2);

#define D5\_LO OUTPUT\_LOW(PIN\_A2);

#define D6\_HI OUTPUT\_HIGH(PIN\_A1);

#define D6\_LO OUTPUT\_LOW(PIN\_A1);

#define D7\_HI OUTPUT\_HIGH(PIN\_A0);

#define D7\_LO OUTPUT\_LOW(PIN\_A0);

#define sel\_ON OUTPUT\_HIGH(PIN\_D2);

#define sel\_OFF OUTPUT\_LOW(PIN\_D2);

#define trigg\_ON OUTPUT\_HIGH(PIN\_B1);

#define trigg\_OFF OUTPUT\_LOW(PIN\_B1);

#define trigg2\_ON OUTPUT\_HIGH(PIN\_A7);

#define trigg2\_OFF OUTPUT\_LOW(PIN\_A7);

#define trigg3\_ON OUTPUT\_HIGH(PIN\_A5);

#define trigg3\_OFF OUTPUT\_LOW(PIN\_A5);

#define RLY1\_ON OUTPUT\_HIGH(PIN\_D0);

#define RLY1\_OFF OUTPUT\_LOW(PIN\_D0);

#define RLY5\_ON OUTPUT\_HIGH(PIN\_D1);

#define RLY5\_OFF OUTPUT\_LOW(PIN\_D1);

#define RLY3\_ON OUTPUT\_HIGH(PIN\_D1);

#define RLY3\_OFF OUTPUT\_LOW(PIN\_D1);

#define RLY4\_ON OUTPUT\_HIGH(PIN\_C3);

#define RLY4\_OFF OUTPUT\_LOW(PIN\_C3);

#define RLY2\_ON OUTPUT\_HIGH(PIN\_D0);

#define RLY2\_OFF OUTPUT\_LOW(PIN\_D0)

//////////////////////////////////////////////////////////////////////////////////////////////////////////////////////

#define LCD\_LINE\_1\_START\_ADDRESS 0x80

#define LCD\_LINE\_2\_START\_ADDRESS 0xC0

#define LCD\_LINE\_3\_START\_ADDRESS 0x90

#define LCD\_LINE\_4\_START\_ADDRESS 0xD0

#define LCD\_LINE\_1\_END\_ADDRESS 0x8F

#define LCD\_LINE\_2\_END\_ADDRESS 0xCF

#define LCD\_LINE\_3\_END\_ADDRESS 0x9F

#define LCD\_LINE\_4\_END\_ADDRESS 0xDF

#define LCD\_DATA\_WRITE 1

#define LCD\_CMD\_WRITE 0

int8 ucKeyPressed = 0;

int16 uiTemp = 0;

int8 ucLatLongArr[30] = {0,0,0,0,0,0,0,0,0,0,0,0};

int8 ucsendsmsf = 0;

volatile int16 hbyte = 0;

int8 index = 0;

int8 h = 0;

int8 ucpowerf = 0;

int8 uc2ndpowerf = 0;

int8 ucSmsNo = 0;

int8 ucactionf = 0;

int8 ucget\_data = 0;

volatile int8 Q1\_array[67] = {0,0,0,0,0,0,0,0,0,0,0};

volatile int8 ucRxARR[85] = {0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0};

int16 uiRvlt\_adc = 0;

int8 ucRx\_Array[20] = {0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0};

int8 i = 0;

int16 ui1SecCNT = 5;//11;

int16 uiVltg = 0;

int8 ucRxTimOut = 0;

float ucfat= 0;

int16 uimoistadc = 0;

int16 ui4SecCNT = 0;

int8 ucmetalf = 0;//1;//10;

int8 ucdisplayf = 0;

int16 ui10SecCNT = 0;

int16 ui2SecCNT = 0;

int16 uiLcd10Sec = 80;

int8 ucuser\_f = 0;

int16 ui5SecCnt = 0;

int16 uiprev\_xaxis = 0;

int16 uiprev\_yaxis = 0;

int16 uiprev\_zaxis = 0;

int8 ucdust3 = 0;

int8 ucvibretflag = 0;

int8 ucir = 0;

int8 ucmoist = 0;

int8 ucDecimal\_Array[18] = {0,0,0,0,0,0,0,0,0,0,0,0};

int8 ucASCII\_Array[18] = {0,0,0,0,0,0,0,0,0,0,0,0};

BYTE CONST ucBLANK\_Array[17] = " ";//1

BYTE CONST ucWelcm\_1\_Array[17] = "IOT BASED MILK ";//22

BYTE CONST ucWelcm\_2\_Array[17] = "QUALITY ANALYSIS ";//23

BYTE CONST ucCITY1\_Array[17] = "PH: TEMP: ";//24

BYTE CONST ucCITY2\_Array[17] = "HUMID: WL: ";//25

BYTE CONST ucCITY3\_Array[17] = "TEST SAMPLE: ";//25

BYTE CONST ucCITY4\_Array[17] = "GENERATE BILL: ";//25

BYTE CONST ucWARD1\_Array[17] = "TEST QUALITY ";//24

BYTE CONST ucWARD2\_Array[17] = "QUALITY ACCEPTED";//25

BYTE CONST ucWARD3\_Array[17] = "QUALITY REJECTED ";//25

void main(void)

{

SETUP\_ADC(ADC\_OFF); //disable ADC i/p

SETUP\_ADC\_PORTS(NO\_ANALOGS); //disable analog i/p

setup\_comparator(NC\_NC\_NC\_NC);

SETUP\_CCP1(CCP\_OFF);

SET\_TRIS\_A(0x5D);//0110 1100

SET\_TRIS\_B(0x1F);//0000 1000

SET\_TRIS\_C(0x87);//1000 0010

SET\_TRIS\_D(0xF0);//1111 0001

SET\_TRIS\_E(0x07);//0000 0111

SETUP\_TIMER\_1(T1\_INTERNAL|T1\_DIV\_BY\_8); //enables timer1

SET\_TIMER1(40536); // timer of 200ms (64286);//10msec

enable\_interrupts(INT\_RDA);

ENABLE\_INTERRUPTS(INT\_TIMER1);

ENABLE\_INTERRUPTS(INT\_EXT);

setup\_timer\_2(T2\_DIV\_BY\_16, 30, 1);//(1/10000000)\*4\*16\*32= 204.3 us or 3.1 khz

set\_pwm1\_duty(0);//ok

ENABLE\_INTERRUPTS(GLOBAL);

RLY1\_ON;

RLY2\_ON;

RLY3\_ON;

RLY4\_ON;

BUZZ\_ON;

delay\_ms(500);

BUZZ\_OFF;

RLY1\_OFF;

RLY2\_OFF;

RLY3\_OFF;

RLY4\_OFF;

RLY5\_OFF;

INIT\_LCD();

ENABLE\_INTERRUPTS(GLOBAL);

uiLcd10Sec = 30;

LCD\_WRITE\_Const\_ARRAY(1,0,15,16);//Blank

LCD\_WRITE\_Const\_ARRAY(2,0,16,16);//Blank

sel\_OFF;

printf("HELLO");

uiLcd10Sec = 30;

trigg\_ON;

delay\_ms(500);

trigg\_OFF;

sel\_ON;

Get\_Key();

while(1)

{

Get\_Key();

if(ucKeyPressed == 1)

{

LCD\_WRITE\_Const\_ARRAY(1,0,19,16);//Blank

LCD\_WRITE\_Const\_ARRAY(2,0,1,16);//Blank

ucget\_data = 1;

BUZZ\_ON;

delay\_ms(500);

BUZZ\_OFF;

delay\_ms(1500);

delay\_ms(1500);

LCD\_WRITE\_Const\_ARRAY(1,0,1,16);//Blank

LCD\_WRITE\_Const\_ARRAY(2,0,1,16);//Blank

}

if(ucKeyPressed == 2)

{

LCD\_WRITE\_Const\_ARRAY(1,0,20,16);//Blank

LCD\_WRITE\_Const\_ARRAY(2,0,1,16);//Blank

ucget\_data = 2;

BUZZ\_ON;

delay\_ms(500);

BUZZ\_OFF;

delay\_ms(1500);

delay\_ms(1500);

LCD\_WRITE\_Const\_ARRAY(1,0,1,16);//Blank

LCD\_WRITE\_Const\_ARRAY(2,0,1,16);//Blank

}

if(ucKeyPressed == 3)

{

LCD\_WRITE\_Const\_ARRAY(1,0,21,16);//Blank

LCD\_WRITE\_Const\_ARRAY(2,0,1,16);//Blank

ucget\_data = 3;

BUZZ\_ON;

delay\_ms(500);

BUZZ\_OFF;

delay\_ms(1500);

}

if(ucRxTimOut == 1)

{

ucRxTimOut = 0;

for(i = 0;i<50;i++)

{

if(ucget\_data == 3)

{

if((ucRxARR[i] == '+'))//&&(ucRx\_Array[i+1] == 'A'))

{

LCD\_WRITE\_Const\_ARRAY(2,0,23,16);//Blank

}

else if((ucRxARR[i] == '-'))//&&(ucRx\_Array[i+1] == 'A'))

{

LCD\_WRITE\_Const\_ARRAY(2,0,22,16);//Blank

}

}

if(ucget\_data == 1)

{

if((ucRxARR[i] == '\*'))//&&(ucRx\_Array[i+1] == 'A'))

{

LCD\_Init\_Command(0x80);//

delay\_ms(10);

LCD\_Data('P');

LCD\_Data('H');

LCD\_Data(':');

LCD\_Data(ucRxARR[i+1]);

LCD\_Data(ucRxARR[i+2]);

LCD\_Data(ucRxARR[i+3]);

LCD\_Data(ucRxARR[i+4]);

LCD\_Data(' ');

}

if((ucRxARR[i] == '%'))//&&(ucRx\_Array[i+1] == 'A'))

{

LCD\_Init\_Command(0xC0);//

delay\_ms(10);

LCD\_Data('F');

LCD\_Data('A');

LCD\_Data('T');

// LCD\_Data('L');

LCD\_Data(':');

LCD\_Data(ucRxARR[i+3]);

LCD\_Data(ucRxARR[i+4]);

LCD\_Data(ucRxARR[i+5]);

}

if((ucRxARR[i] == '@'))//&&(ucRx\_Array[i+1] == 'A'))

{

LCD\_Init\_Command(0xC9);//

delay\_ms(10);

LCD\_Data('T');

LCD\_Data('E');

LCD\_Data('M');

LCD\_Data('P');

LCD\_Data(':');

LCD\_Data(ucRxARR[i+1]);

LCD\_Data(ucRxARR[i+2]);

}

}

if(ucget\_data == 2)

{

if((ucRxARR[i] == '$'))//&&(ucRx\_Array[i+1] == 'A'))

{

// LCD\_Data(' ');

LCD\_Init\_Command(0xC8);//

delay\_ms(10);

LCD\_Data('B');

LCD\_Data('I');

LCD\_Data('L');

// LCD\_Data('L');

LCD\_Data(':');

LCD\_Data(ucRxARR[i+1]);

LCD\_Data(ucRxARR[i+2]);

LCD\_Data(ucRxARR[i+3]);

LCD\_Data(ucRxARR[i+4]);

}

if((ucRxARR[i] == '&'))//&&(ucRx\_Array[i+1] == 'A'))

{

LCD\_Init\_Command(0x80);//

delay\_ms(10);

LCD\_Data('L');

LCD\_Data('I');

LCD\_Data('T');

// LCD\_Data('L');

LCD\_Data(':');

LCD\_Data(ucRxARR[i+1]);

LCD\_Data(ucRxARR[i+2]);

LCD\_Data(ucRxARR[i+3]);

LCD\_Data(ucRxARR[i+4]);

LCD\_Data(' ');

LCD\_Data('L');

}

if((ucRxARR[i] == '%'))//&&(ucRx\_Array[i+1] == 'A'))

{

LCD\_Init\_Command(0xC0);//

delay\_ms(10);

LCD\_Data('F');

LCD\_Data('A');

LCD\_Data('T');

// LCD\_Data('L');

LCD\_Data(':');

LCD\_Data(ucRxARR[i+3]);

LCD\_Data(ucRxARR[i+4]);

LCD\_Data(ucRxARR[i+5]);

}

}

}

// LCD\_WRITE\_Const\_ARRAY(2,0,33,16);//Blank

index = 0;

}

ADC\_CALL(9);//PH

uiGas\_adc = current\_adc\_val;

ADC\_CALL(11);//Lamp Current

uiprev\_yaxis = current\_adc\_val/12;

if(ucget\_data == 1)

{

LCD\_Init\_Command(0x88);//

delay\_ms(10);

LCD\_Data(' ');

LCD\_Data('G');

LCD\_Data('A');

LCD\_Data('S');

LCD\_Data(':');

Show\_Float\_No\_ONLine\_At\_Offset\_IntDig\_FltDig(1,13,uiprev\_yaxis,3,0);

// Show\_Float\_No\_ONLine\_At\_Offset\_IntDig\_FltDig(1,12,ucfat,4,0);

}

///Show\_Float\_No\_ONLine\_At\_Offset\_IntDig\_FltDig(1,12,ucfat,3,0);

}

}