#include<pic.h>

#define TRIGGER1 RD2

#define ECHO1 RD3

#define ECHO2 RD4

#define TRIGGER2 RD5

#define LCD PORTC

#define RS RD0

#define EN RD1

#define \_XTAL\_FREQ 4000000

void DATA();

void delay(unsigned int x);

void CMD();

void latch();

void start();

void ultra1();

void ultra2();

void main()

{

TRISA=0x00;

ANSELH=0x00;

ANSEL=0x00;

TRISC=0X00;

TRISD=0X18;

PORTC=0X00;

PORTD=0X00;

PORTA=0x00;

T1CON=0X00;

start();

while(1)

{

ultra1();

ultra2();

}

}

void latch()

{

EN=1;

\_\_delay\_us(1000);

EN=0;

\_\_delay\_us(1000);

}

void DATA()

{

RS=1;

latch();

}

void CMD()

{

RS=0;

latch();

}

void start()

{

LCD=0X38;

CMD();

LCD=0X0E;

CMD();

LCD=0X01;

CMD();

LCD=0x82;

CMD();

char start1[]="WELCOME!!!";

for(int i=0;start1[i]!='\0';i++)

{

LCD=start1[i];

DATA();

\_\_delay\_ms(100);

}

\_\_delay\_ms(2000);

LCD=0X01;

CMD();

LCD=0x82;

CMD();

char start2[]="IOT GARBAGE";

for(int i=0;start2[i]!='\0';i++)

{

LCD=start2[i];

DATA();

\_\_delay\_ms(100);

}

LCD=0xc3;

CMD();

char start3[]="MONITORING";

for(int i=0;start3[i]!='\0';i++)

{

LCD=start3[i];

DATA();

\_\_delay\_ms(100);

}

LCD=0x01;

CMD();

char start4[]="WAIT...";

LCD=0x85;

CMD();

for(int i=0;start4[i]!='\0';i++)

{

LCD=start4[i];

DATA();

\_\_delay\_ms(100);

}

LCD=0xCf;

CMD();

/\* char start5[]="Calculating Height Of Dustbin";

for(int i=0;start5[i]!='\0';i++)

{

LCD=start5[i];

DATA();

\_\_delay\_us(100);

}

for(int i=0;i<30;i++)

{

LCD=0x1c;

CMD();

\_\_delay\_ms(200);

}\*/

LCD=0x01;

CMD();

}

void ultra1()

{

TMR1H =0; TMR1L =0;

TRIGGER1=1;

\_\_delay\_us(10);

TRIGGER1=0;

while (ECHO1==0);

TMR1ON = 1;

while (ECHO1==1);

TMR1ON = 0;

int dist,dist1;

float Time,time\_taken;

time\_taken = (TMR1L | (TMR1H<<8));

Time=time\_taken\*0.000001;

dist=(time\_taken\*0.034)/2;

dist1=dist;

LCD=0x80;

CMD();

LCD=0x0c;

CMD();

int n,j=0x85;

char LCD4[]=" ";

char LCD1[]="D1:";

for(int i=0;LCD1[i]!='\0';i++)

{

LCD=LCD1[i];

DATA();

}

if(dist1<6)

{

LCD=0x80;

CMD();

char LCD2[]="Dustbin1 Is Full";

for(int i=0;LCD2[i]!='\0';i++)

{

LCD=LCD2[i];

DATA();

\_\_delay\_us(100);

}

\_\_delay\_ms(100);

RA0=1;

RA2=1;

}

else if(dist1<10)

{

LCD=0x83;

CMD();

LCD=48;

DATA();

LCD=0x84;

CMD();

LCD=48;

DATA();

LCD=0x85;

CMD();

LCD=dist+48;

DATA();

\_\_delay\_ms(100);

LCD=0x86;

CMD();

for(int i=0;LCD4[i]!='\0';i++)

{

LCD=LCD4[i];

DATA();

\_\_delay\_us(100);

}

}

else if(dist1<100)

{

LCD=0x83;

CMD();

LCD=48;

DATA();

while(dist!=0)

{

n=dist%10;

LCD=j;

CMD();

LCD=n+48;

DATA();

j--;

dist=dist/10;

\_\_delay\_ms(100);

}

LCD=0x86;

CMD();

for(int i=0;LCD4[i]!='\0';i++)

{

LCD=LCD4[i];

DATA();

\_\_delay\_us(100);

}

}

else if(dist1<400)

{

while(dist!=0)

{

n=dist%10;

LCD=j;

CMD();

LCD=n+48;

DATA();

j--;

dist=dist/10;

\_\_delay\_ms(100);

}

LCD=0x86;

CMD();

for(int i=0;LCD4[i]!='\0';i++)

{

LCD=LCD4[i];

DATA();

}

}

else

{

LCD=0x83;

CMD();

char LCD3[]="OUT OF RANGE";

for(int i=0;LCD3[i]!='\0';i++)

{

LCD=LCD3[i];

DATA();

\_\_delay\_us(100);

}

\_\_delay\_ms(100);

}

if(dist1>6 && dist1<400)

{

LCD=0x86;

CMD();

LCD='c';

DATA();

LCD='m';

DATA();

\_\_delay\_ms(1000);

}

}

void ultra2()

{

TMR1H =0; TMR1L =0;

TRIGGER2=1;

\_\_delay\_us(10);

TRIGGER2=0;

while (ECHO2==0);

TMR1ON = 1;

while (ECHO2==1);

TMR1ON = 0;

int dist,dist1;

float Time,time\_taken;

time\_taken = (TMR1L | (TMR1H<<8));

Time=time\_taken\*0.000001;

dist=(time\_taken\*0.034)/2;

dist1=dist;

LCD=0xc0;

CMD();

LCD=0x0c;

CMD();

int n,j=0xc5;

char LCD4[]=" ";

char LCD1[]="D2:";

for(int i=0;LCD1[i]!='\0';i++)

{

LCD=LCD1[i];

DATA();

}

if(dist1<6)

{

LCD=0xc0;

CMD();

char LCD2[]="Dustbin2 Is Full";

for(int i=0;LCD2[i]!='\0';i++)

{

LCD=LCD2[i];

DATA();

\_\_delay\_us(100);

}

\_\_delay\_ms(100);

RA0=1;

RA2=1;

}

else if(dist1<10)

{

LCD=0xc3;

CMD();

LCD=48;

DATA();

LCD=0xc4;

CMD();

LCD=48;

DATA();

LCD=0xc5;

CMD();

LCD=dist+48;

DATA();

\_\_delay\_ms(100);

LCD=0xc6;

CMD();

for(int i=0;LCD4[i]!='\0';i++)

{

LCD=LCD4[i];

DATA();

\_\_delay\_us(100);

}

}

else if(dist1<100)

{

LCD=0xc3;

CMD();

LCD=48;

DATA();

while(dist!=0)

{

n=dist%10;

LCD=j;

CMD();

LCD=n+48;

DATA();

j--;

dist=dist/10;

\_\_delay\_ms(100);

}

LCD=0xc6;

CMD();

for(int i=0;LCD4[i]!='\0';i++)

{

LCD=LCD4[i];

DATA();

\_\_delay\_us(100);

}

}

else if(dist1<400)

{

while(dist!=0)

{

n=dist%10;

LCD=j;

CMD();

LCD=n+48;

DATA();

j--;

dist=dist/10;

\_\_delay\_ms(100);

}

LCD=0xc6;

CMD();

for(int i=0;LCD4[i]!='\0';i++)

{

LCD=LCD4[i];

DATA();

}

}

else

{

LCD=0xc3;

CMD();

char LCD3[]="OUT OF RANGE";

for(int i=0;LCD3[i]!='\0';i++)

{

LCD=LCD3[i];

DATA();

\_\_delay\_us(100);

}

\_\_delay\_ms(100);

}

if(dist1>6 && dist1<400)

{

RA0=0;

RA2=0;

LCD=0xc6;

CMD();

LCD='c';

DATA();

LCD='m';

DATA();

\_\_delay\_ms(1000);

}

}