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/******
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This program was produced by the  
CodeWizardAVR V1.25.3 Standard  
Automatic Program Generator  
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Project :  
Version :  
Date : 1/2/2007  
Author : F4CG  
Company : F4CG  
Comments:
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Chip type : ATmega32L  
Program type : Application  
Clock frequency : 11.059000 MHz  
Memory model : Small  
External SRAM size : 0  
Data Stack size : 512
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#include <mega32.h>  
#include <delay.h>  
#include <math.h>  
#include <stdio.h>  
// Alphanumeric LCD Module functions  
#asm  
    .equ __lcd_port=0x15 ;PORTC  
#endasm  
#include <lcd.h>  
  
#define ADC_VREF_TYPE 0x00  
#define cancel PINB.0  
#define enter PINB.1  
#define Up PINB.2  
#define down PINB.3  
  
//eeprom unsigned long int ;  
float per_kwh,data,data1,data2,p,teg,arus,dayaaktif;  
unsigned char b,c,d,e,f,g,i,j;  
unsigned char pilih_menu,m,bit_ke[33];  
//float z;  
unsigned char buf[30]; //data1,data2,data3,data4,data5,data6,data7,data8;  
  
// Read the AD conversion result  
unsigned int read_adc(unsigned char adc_input)  
{  
    ADMUX=adc_input | (ADC_VREF_TYPE & 0xff);  
    // Start the AD conversion  
    ADCSRA|=0x40;
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// Wait for the AD conversion to complete
while ((ADCSRA & 0x10)==0);
ADCSRA|=0x10;
return ADCW;
}
/*****
program tampil untuk10 digit
*****/
void tampil(unsigned long int data){
b=data/1000000; data=data%1000000;
c=data/100000; data=data%100000;
d=data/10000; data=data%10000;
e=data/1000; data=data%1000;
f=data/100; data=data%100;
i=data/10; j=data%10;
}

// Declare your global variables here
/*****
program pilih menu
*****/
void menu(){
if(!down){
delay_ms(5);
lcd_clear();
m--;}

if(!Up){
delay_ms(5);
lcd_clear();
m++;}

if(m<1){m=5;}
if(m>5){m=1;}

if(!enter){
delay_ms(5);
lcd_clear();
pilih_menu=m;
}

lcd_gotoxy(0,0);
lcd_putsf("12345");
lcd_gotoxy(m-1,0);
lcd_putsf("\x5f"); //tanda^
lcd_gotoxy(0,1);
switch(m){
case 1:lcd_putsf("Tegangan");delay_ms(200); break;
case 2:lcd_putsf("Arus");delay_ms(200);break;

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case 3:lcd_putsf("Daya aktif");delay_ms(200);break;
case 4:lcd_putsf("Energi aktif");delay_ms(200);break;
case 5:lcd_putsf("Tagihan");delay_ms(200);break;
}
}
/*****
program tampil menu
*****/
void tampil_menu(){
unsigned char k;

utama:{
k=pilih_menu;
lcd_clear();

if(k==1){
    lcd_gotoxy(3,0);
    lcd_putsf("Tegangan");
    lcd_gotoxy(1,1);
    delay_us(20);
    data=read_adc(0)*100;
    teg=data;
    //if(data>=0 && data<=2){data==212;};
    tampil(data);
    sprintf(buf,"%i%i%i,%i",e,f,g,i,j); //000,00
    lcd_puts(buf);
    lcd_gotoxy(11,1);
    lcd_putsf("Volt");
    delay_ms(1000);
};
if(k==2){
    lcd_gotoxy(3,0);
    lcd_putsf("Arus");
    lcd_gotoxy(1,1);
    data=read_adc(7);
    if (data<513){data1=0;}
    if (data>=513 && data<523){data1=data*0.87e -3;}
    if (data>=523 && data<532){data1=data*1.7e -3;}
    if (data>=532 && data<545){data1=data*2.5e -3;}

    tampil(data1*1000);
    sprintf(buf,"%i%i,%i%i%i",e,f,g,i,j); //00,000
    lcd_puts(buf);
    lcd_gotoxy(11,1);
    lcd_putsf("Amp");
    delay_ms(1000);
};
if(k==3){
    lcd_gotoxy(3,0);
    lcd_putsf("Daya aktif");
    lcd_gotoxy(1,1);
    teg=read_adc(0);

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data=read_adc(7);
if (data<513){data1=0;arus=data1;}
if (data>=513 && data<523){data1=data*0.87e -3;arus=data1;}
if (data>=523 && data<532){data1=data*1.7e -3;arus=data1;}
if (data>=532 && data<545){data1=data*2.5e -3;arus=data1;}

data1=tteg*arus;
if (data1<100){data=0;dayaaktif=data;}
if (data1>=101 && data1<147){data=data1*0.616F;dayaaktif=data;}
if (data1>=148 && data1<280){data=data1;dayaaktif=da ta;}
if (data1>=281 && data1<450){data=data1*0.275F;dayaaktif=data;}

//data1=12345.678F;
tampil(data*1000);
sprintf(buf,"%i%i%i,%i%i%i",d,e,f,g,i,j); //00,000
lcd_puts(buf);
lcd_gotoxy(11,1);
lcd_putsf("Watt");
delay_ms(2000);
};
if(k==4){
lcd_gotoxy(3,0);
lcd_putsf("Energi aktif");
lcd_gotoxy(1,1);
teg=read_adc(0);
data=read_adc(7);
if (data<513){data1=0;arus=data1;}
if (data>=513 && data<523){data1=data*0.87e -3;arus=data1;}
if (data>=523 && data<532){data1=data*1.7e -3;arus=data1;}
if (data>=532 && data<545){data1=data*2.5e -3;arus=data1;}

data1=tteg*arus;
if (data1<100){data=0;dayaaktif=data;}
if (data1>=101 && data1<147){data=data1*0.616F;dayaaktif=data;}
if (data1>=148 && data1<280){data=data1;dayaaktif=data;}
if (data1>=281 && data1<450){data=data1*0.275F;dayaaktif =data;}
//data=read_adc(7)*read_adc(0)*10000;

data2=dayaaktif+data2;

tampil(data2);
sprintf(buf,"%i%i%i%i,%i%i%i",b,c,d,e,f,g,i);//0000,000
lcd_puts(buf);
lcd_gotoxy(11,1);
lcd_putsf("WH");
delay_ms(2000);
};
if(k==5){
lcd_gotoxy(3,0);
lcd_putsf("Tagihan");
lcd_gotoxy(3,1);
per_kwh=169*1e-3f;

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data=read_adc(7)*read_adc(0)*per_kwh*1e-2f;
data2=data2+data;
tampil(data2);
sprintf(buf,"%i%i%i%i,%i%i%i",b,c,d,e,f,g,j); //00000,00
lcd_puts(buf);
lcd_gotoxy(0,1);
lcd_putsf("Rp");
delay_ms(1000);
if(!enter){
//goto atur_biaya;
};
};

// if (arus==3){PortD.7=1;}//menghidupkan relay

if(!cancel){
lcd_clear();
goto balik;
}
goto utama;
}

balik:{
menu();
if (!enter){
    pilih_menu=m;
    goto utama;
}
goto balik;
}

atur_biaya:{
per_kwh=1000;
//if(!down){
//delay_ms(5);
//lcd_clear();
//per_kwh-=50;}

if(!Up){
delay_ms(5);
lcd_clear();
per_kwh+=50;}

if(!enter){
delay_ms(5);
lcd_clear();
per_kwh=per_kwh;
goto utama;}

lcd_gotoxy(0,0);
lcd_putsf("BIAYA PER KWH");
lcd_gotoxy(3,1);
data=10000*per_kwh;

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    tampil(data);
    sprintf(buf, "%i%i%i%i%i",b,c,d,e,f,g); //00000,00
    lcd_puts(buf);
    lcd_gotoxy(0,1);
    lcd_putsf("Rp");
    delay_ms(500);
    goto atur_biaya;
}
}
void main(void)
{
// Declare your local variables here

// Input/Output Ports initialization
// Port A initialization
// Func7=In Func6=In Func5=In Func4=In Func3=In Func2=In Func1=In Func0=In
// State7=T State6=T State5=T State4=T State3=T State2=T State1=T State0=T
PORTA=0x00;
DDRA=0x00;

// Port B initialization
// Func7=In Func6=In Func5=In Func4=In Func3=In Func2=In Func1=In Func0=In
// State7=T State6=T State5=T State4=T State3=T State2=P State1=P State0=P
PORTB=0x07;
DDRB=0x00;

// Port C initialization
// Func7=In Func6=In Func5=In Func4=In Func3=In Func2=In Func1=In Func0=In
// State7=T State6=T State5=T State4=T State3=T State2=T State1=T State0=T
PORTC=0x00;
DDRC=0x00;

// Port D initialization
// Func7=In Func6=In Func5=In Func4=In Func3=In Func2=In Func1=In Func0=In
// State7=T State6=T State5=T State4=T State3=T State2=T State1=T State0=T
PORTD=0x00;
DDRD=0x00;

// Timer/Counter 0 initialization
// Clock source: System Clock
// Clock value: Timer 0 Stopped
// Mode: Normal top=FFh
// OCO output: Disconnected
TCCR0=0x00;
TCNT0=0x00;
OCR0=0x00;

// Timer/Counter 1 initialization
// Clock source: System Clock
// Clock value: Timer 1 Stopped
// Mode: Normal top=FFFFh
// OC1A output: Discon.

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// OC1B output: Discon.
// Noise Canceler: Off
// Input Capture on Falling Edge
// Timer 1 Overflow Interrupt: Off
// Input Capture Interrupt: Off
// Compare A Match Interrupt: Off
// Compare B Match Interrupt: Off
TCCR1A=0x00;
TCCR1B=0x00;
TCNT1H=0x00;
TCNT1L=0x00;
ICR1H=0x00;
ICR1L=0x00;
OCR1AH=0x00;
OCR1AL=0x00;
OCR1BH=0x00;
OCR1BL=0x00;

// Timer/Counter 2 initialization
// Clock source: System Clock
// Clock value: Timer 2 Stopped
// Mode: Normal top=FFh
// OC2 output: Disconnected
ASSR=0x00;
TCCR2=0x00;
TCNT2=0x00;
OCR2=0x00;

// External Interrupt(s) initialization
// INT0: Off
// INT1: Off
// INT2: Off
MCUCR=0x00;
MCUCSR=0x00;

// Timer(s)/Counter(s) Interrupt(s) initialization
TIMSK=0x00;

// Analog Comparator initialization
// Analog Comparator: Off
// Analog Comparator Input Capture by Timer/Counter 1: Off
ACSR=0x80;
SFIOR=0x00;

// ADC initialization
// ADC Clock frequency: 691.188 kHz
// ADC Voltage Reference : AREF pin
ADMUX=ADC_VREF_TYPE & 0xff;
ADCSRA=0x84;

// LCD module initialization
lcd_init(16);
```

```
while (1)
{
// Place your code here
// menu();
lcd_clear();
lcd_gotoxy(0,0);lcd_putsf("Tekan MENU");delay_ms(1000);
lcd_clear();
lcd_gotoxy(3,0);lcd_putsf("Tegangan");
lcd_gotoxy(1,1);
data=read_adc(0);
delay_us(20);
data=read_adc(0)*100;
tampil(data);
sprintf(buf,"%i%i%i,%i%i",e,f,g,i,j); //000,00
lcd_puts(buf);
lcd_gotoxy(11,1);
lcd_putsf("Volt");
delay_ms(1000);

if (!cancel){tampil_menu();};
};
}
```