

## Lampiran 1

/\*\*\*\*\*\*

Project : Coba sistem minimum At mega 16

Version :

Date : 22/01/2014

Author :

Company :

Comments:

Chip type : ATmega16

Program type : Application

Clock frequency : 11,059200 MHz

Memory model : Small

External RAM size : 0

Data Stack size : 256

\*\*\*\*\*/

#include <mega16.h>

#include <delay.h>

// Declare your global variables here

void main(void)

{

// Declare your local variables here

// Input/Output Ports initialization

// Port A initialization

// Func7=Out Func6=Out Func5=Out Func4=Out Func3=Out Func2=Out Func1=Out  
Func0=Out

// State7=0 State6=0 State5=0 State4=0 State3=0 State2=0 State1=0 State0=0

PORTA=0x00;

DDRA=0xFF;

// 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=T State1=T State0=T

PORTB=0x00;

DDRB=0x00;

// Port C initialization

// Func7=Out Func6=Out Func5=Out Func4=Out Func3=Out Func2=Out Func1=Out  
Func0=Out

// State7=0 State6=0 State5=0 State4=0 State3=0 State2=0 State1=0 State0=0

PORTC=0x00;

DDRC=0xFF;

// 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;

TCCR0=0x00;
TCNT0=0x00;
OCR0=0x00;

ASSR=0x00;
TCCR2=0x00;
TCNT2=0x00;
OCR2=0x00;

MCUCR=0x00;
MCUCSR=0x00;

ACSR=0x80;
SFIOR=0x00;

while (1)
{
    // Place your code here
    PORTA.0=0;
    delay_ms(300);
    PORTA.0=1;
    delay_ms(500);
    PORTA.1=0;
    delay_ms(300);
    PORTA.1=1;
};
}
```

## Lampiran 2

/\*\*\*\*\*\*

Project : Coba LCD M1632

Version :

Date : 22/01/2014

Author :

Company :

Comments:

Chip type : ATmega16  
Program type : Application  
Clock frequency : 11,059200 MHz  
Memory model : Small  
External RAM size : 0  
Data Stack size : 256

\*\*\*\*\*/

```
#include <mega16.h>
```

```
#include <delay.h>
```

```
//=====
```

```
// Alphanumeric LCD Module functions
```

```
#asm
```

```
.equ __lcd_port=0x15 ;PORTC
```

```
#endasm
```

```
#include <lcd.h>
```

```
// Declare your global variables here
```

```
void main(void)
```

```
{
```

```
// Declare your local variables here
```

```
// Input/Output Ports initialization
```

```
// Port A initialization
```

```
// Func7=Out Func6=Out Func5=Out Func4=Out Func3=Out Func2=Out Func1=Out  
Func0=Out
```

```
// State7=0 State6=0 State5=0 State4=0 State3=0 State2=0 State1=0 State0=0
```

```
PORTA=0x00;
```

```
DDRA=0xFF;
```

```
// 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=T State1=T State0=T
```

```
PORTB=0x00;
```

```
DDRB=0x00;
```

```
// Port C initialization
```

```

// Func7=Out Func6=Out Func5=Out Func4=Out Func3=Out Func2=Out Func1=Out
Func0=Out
// State7=0 State6=0 State5=0 State4=0 State3=0 State2=0 State1=0 State0=0
PORTC=0x00;
DDRC=0xFF;

// 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;

TCCR0=0x00;
TCNT0=0x00;
OCR0=0x00;

ASSR=0x00;
TCCR2=0x00;
TCNT2=0x00;
OCR2=0x00;

MCUCR=0x00;
MCUCSR=0x00;

ACSR=0x80;
SFIOR=0x00;
Lcd_init(16);

while (1)
{
    // Place your code here
    lcd_gotoxy(0,0);
    lcd_putsf("TEST LCD M1632");
    lcd_gotoxy(0,1);
    lcd_putsf("    READY    ");
    delay_ms(300);
};
}

```

### Lampiran 3

```
PORTD = 0b01111111;

delay_ms(30);
if (PIND.2 == 0) {a=0;lcd_clear();delay_ms(300);}
while(a==0)
{
    lcd_gotoxy(0,0);
    lcd_putsf("  SET ALARM  ");
    delay_ms(100);
    k=6;
    for (i=0;i<6;i++)
    {
        do {
            scand_keypad();//delay_ms(500);
        } while (data>9);
        sprintf(bof,"%x",data);
        lcd_puts(bof);
        nilai[i+1]=data;
    }
    j = (nilai[1]*10)+nilai[2];
    m = (nilai[3]*10)+nilai[4];
    s = (nilai[5]*10)+nilai[6];
    alarm_jam=j;
    alarm_menit=m;
    alarm_detik=s;
    a=1;
    lcd_clear();
}
};
```

#### Lampiran 4

```
PORTD = 0b01111111;

delay_ms(30);

if (PIND.0 == 0) {a=0;lcd_clear();delay_ms(300);}

while(a==0)

{

    lcd_gotoxy(0,0);

    lcd_putsf("  SET JAM  ");

    delay_ms(100);

    k=6;

    for (i=0;i<6;i++)

    {

        do {

            scand_keypad();//delay_ms(500);

        } while (data>9);

        sprintf(bof,"%x",data);

        lcd_puts(bof);

        nilai[i+1]=data;

    }

    j = (nilai[1]*10)+nilai[2];

    m = (nilai[3]*10)+nilai[4];

    s = (nilai[5]*10)+nilai[6];

    rtc_init(0,0,0);

    rtc_set_time(j,m,s);

    a=1;

    lcd_clear();

}
```

## Lamparan 5

```
PORTD = 0b01111111;

delay_ms(30);

if (PIND.2 == 0) {a=0;lcd_clear();delay_ms(300);}

while(a==0)
{
    lcd_gotoxy(0,0);
    lcd_putsf("  SET ALARM  ");
    delay_ms(100);
    k=6;
    for (i=0;i<6;i++)
    {
        do {
            scand_keypad();//delay_ms(500);
        } while (data>9);
        sprintf(bof,"%x",data);
        lcd_puts(bof);
        nilai[i+1]=data;
    }
    j = (nilai[1]*10)+nilai[2];
    m = (nilai[3]*10)+nilai[4];
    s = (nilai[5]*10)+nilai[6];
    alarm_jam=j;
    alarm_menit=m;
    alarm_detik=s;
    a=1;
    lcd_clear();
}
};
```

## Lampiran 6

/\*\*\*\*\*

This program was produced by the

CodeWizardAVR V2.03.4 Standard

Automatic Program Generator

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Project :

Version :

Date : 22/02/2015

Author :

Company :

Comments:

Chip type : ATmega16

Program type : Application

Clock frequency : 11,059200 MHz

Memory model : Small

External RAM size : 0

Data Stack size : 256

\*\*\*\*\*/

```
#include <mega16.h>
```

```
#include <delay.h>
```

```
#include <stdio.h>
```

```
// I2C Bus functions
```

```
#asm
```



```

.equ __i2c_port=0x15 ;PORTC
.equ __sda_bit=0
.equ __scl_bit=1
#endasm

#include <i2c.h>

// DS1307 Real Time Clock functions
#include <ds1307.h>

// Alphanumeric LCD Module functions
#asm
.equ __lcd_port=0x1B ;PORTA
#endasm
#include <lcd.h>
eeprom char alarm_jam,alarm_menit,alarm_detik;
unsigned char j,m,s;
unsigned char h,b,t;
unsigned char buffer[16];
char nilai[6];
char data;
char bof[33],bif[33];
char a=1,b,c=1;

void scand_keypad()
{
char keluar=0;
char lama=50;
do
{

```

```

PORTD = 0b11101111;

delay_ms(30);

if (PIND.0 == 0) {data=1;keluar=1;delay_ms(lama);}
if (PIND.1 == 0) {data=4;keluar=1;delay_ms(lama);}
if (PIND.2 == 0) {data=7;keluar=1;delay_ms(lama);}
if (PIND.3 == 0) {delay_ms(300);}

PORTD = 0b11011111;

delay_ms(30);

if (PIND.0 == 0) {data=2;keluar=1;delay_ms(lama);}
if (PIND.1 == 0) {data=5;keluar=1;delay_ms(lama);}
if (PIND.2 == 0) {data=8;keluar=1;delay_ms(lama);}
if (PIND.3 == 0) {data=0;keluar=1;delay_ms(lama);}

PORTD = 0b10111111;

delay_ms(30);

if (PIND.0 == 0) {data=3;keluar=1;delay_ms(lama);}
if (PIND.1 == 0) {data=6;keluar=1;delay_ms(lama);}
if (PIND.2 == 0) {data=9;keluar=1;delay_ms(lama);}
if (PIND.3 == 0) {delay_ms(300);}

PORTD = 0b01111111;

delay_ms(30);

if (PIND.0 == 0) {delay_ms(300);}
if (PIND.1 == 0) {delay_ms(300);}
if (PIND.2 == 0) {delay_ms(300);}
if (PIND.3 == 0) {delay_ms(300);}
}

while (keluar ==0);

```

```

}

// Declare your global variables

void main(void)
{
// Declare your local variables here

int i,k;

unsigned char menit;

// 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=Out Func6=Out Func5=Out Func4=Out Func3=Out Func2=Out
Func1=Out Func0=Out

// State7=0 State6=0 State5=0 State4=0 State3=0 State2=0 State1=0 State0=0

PORTB=0x00;

DDRB=0xFF;

// 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=Out Func6=Out Func5=Out Func4=Out Func3=In Func2=In Func1=In
Func0=In

// State7=0 State6=0 State5=0 State4=0 State3=P State2=P State1=P State0=P

PORTD=0x0F;
DDRD=0xF0;

// Timer/Counter 0 initialization
// Clock source: System Clock
// Clock value: Timer 0 Stopped
// Mode: Normal top=FFh
// OC0 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.
// 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;

// I2C Bus initialization

// DS1307 Real Time Clock initialization
// Square wave output on pin SQW/OUT: Off
// SQW/OUT pin state: 0

// LCD module initialization
lcd_init(16);
lcd_gotoxy(0,0);
lcd_putsf("  SISTEM  ");
lcd_gotoxy(0,1);
lcd_putsf(" PAKAN OTOMATIS ");
delay_ms(1000);
lcd_gotoxy(0,0);
lcd_putsf("ARI EKO MURTANTO");
lcd_gotoxy(0,1);
lcd_putsf("NIM 10520218  ");
delay_ms(1000);
i2c_init(); // PROGRAM RTC
rtc_init(0,0,0);
//rtc_set_time(20,40,00);
//rtc_set_date(25,02,15);
```

```

PORTB.0=1;

lcd_clear();

while (1)
{
    // Place your code here

    rtc_get_time(&j,&m,&s);
    sprintf(buffer,"%d:%d:%d",j,m,s); // LCD MENAMPILKAN JAM

    lcd_gotoxy(8,0);
    lcd_puts(buffer);
    lcd_gotoxy(0,0);
    lcd_putsf("JAM");

    // rtc_get_date(&h,&b,&t);
    // sprintf(buffer,"%d:%d:%d",h,b,t);
    sprintf(buffer,"%d:%d:%d",alarm_jam,alarm_menit,alarm_detik); //LCD
MENAMPILKAN ALARM

    lcd_gotoxy(8,1);
    lcd_puts(buffer);
    lcd_gotoxy(0,1);
    lcd_putsf("ALARM");

    while((alarm_jam==j)&&(alarm_menit==m)&&(alarm_detik==s))
    {
        lcd_clear();
        lcd_gotoxy(0,0);
        lcd_putsf("HIDUP ");
        delay_ms(200);
        PORTB.0=0;
        PORTB.1=1;PORTB.2=0;PORTB.3=1;PORTB.4=0; // MOTOR HIDUP
        c=0;
    }
}

```

```

alarm_menit=(m+2);
}
while(c==0)
{
//PORTB.0=1;

rtc_get_time(&j,&m,&s);
sprintf(buffer,"%d:%d:%d",j,m,s);

lcd_gotoxy(8,0);

lcd_puts(buffer);

sprintf(buffer,"%d:%d:%d",alarm_jam,alarm_menit,alarm_detik);

lcd_gotoxy(8,1);

lcd_puts(buffer);

while((alarm_jam==j)&&(alarm_menit==m)&&(alarm_detik==s))
{
PORTB.0=1;

PORTB.1=0;PORTB.2=0;PORTB.3=0;PORTB.4=0; // MOTOR MATI

c=1;

alarm_jam=0;alarm_menit=0;alarm_detik=0;

lcd_clear();

}

}

```

```

PORTD = 0b01111111;

delay_ms(30);

if (PIND.0 == 0) {a=0;lcd_clear();delay_ms(300);}

while(a==0)

{

lcd_gotoxy(0,0);

```



```

lcd_putsf(" SET JAM ");
delay_ms(100);
k=6;
for (i=0;i<6;i++)
{
    do {
        scand_keypad();//delay_ms(500);
    } while (data>9);
    sprintf(bof,"%x",data);
    lcd_puts(bof);
    nilai[i+1]=data;
}
j = (nilai[1]*10)+nilai[2];
m = (nilai[3]*10)+nilai[4];
s = (nilai[5]*10)+nilai[6];

//lcd_gotoxy(9,1);
//sprintf(bif,"%x",j);
//lcd_puts(bif);

rtc_init(0,0,0);
rtc_set_time(j,m,s);
a=1;
lcd_clear();
//PORTD = 0b01111111;
//delay_ms(30);
//if (PIND.1 == 0) {a=1;lcd_clear();delay_ms(300);}
}

```

```

PORTD = 0b01111111;
delay_ms(30);
if (PIND.1 == 0) {a=0;lcd_clear();delay_ms(300);}
while(a==0)
{
    lcd_gotoxy(0,0);
    lcd_putsf(" SET TANGGAL ");
    delay_ms(100);
    k=6;
    for (i=0;i<6;i++)
    {
        do {
            scand_keypad();//delay_ms(500);
        } while (data>9);
        sprintf(bof,"%x",data);
        lcd_puts(bof);
        nilai[i+1]=data;
    }
    j = (nilai[1]*10)+nilai[2];
    m = (nilai[3]*10)+nilai[4];
    s = (nilai[5]*10)+nilai[6];

    //lcd_gotoxy(9,1); //uji
    //sprintf(bif,"%x",j);
    //lcd_puts(bif);

    rtc_init(0,0,0);
    rtc_set_date(j,m,s);
    a=1;

```

```
lcd_clear();  
//PORTD = 0b01111111; //uji  
//delay_ms(30);  
//if (PIND.1 == 0) {a=1;lcd_clear();delay_ms(300);}  
}
```

```
PORTD = 0b01111111;  
delay_ms(30);  
if (PIND.2 == 0) {a=0;lcd_clear();delay_ms(300);}  
while(a==0)  
{  
    lcd_gotoxy(0,0);  
    lcd_putsf("  SET ALARM  ");  
    delay_ms(100);  
    k=6;  
    for (i=0;i<6;i++)  
    {  
        do {  
            scand_keypad();//delay_ms(500);  
        } while (data>9);  
        sprintf(bof,"%x",data);  
        lcd_puts(bof);  
        nilai[i+1]=data;  
    }  
    j = (nilai[1]*10)+nilai[2];  
    m = (nilai[3]*10)+nilai[4];  
    s = (nilai[5]*10)+nilai[6];  
  
    alarm_jam=j;
```

```
alarm_menit=m;
```

```
alarm_detik=s;
```

```
a=1;
```

```
lcd_clear();
```

```
}
```

```
};
```

```
}
```