```
/*****************************************************
Chip type               : ATmega8
Program type            : Application
AVR Core Clock frequency: 8,000000 MHz
Memory model            : Small
External RAM size       : 0
Data Stack size         : 256
*****************************************************/

#include <mega8.h>
#include <stdio.h>
#include <delay.h>
#include <alcd.h>
char lcd_buff[33];
#define smenu  PINC.4
#define stimer PINC.5
#define hsm_t 0
#define hsm_h 1
#define mpx   2
int timer=0,start_timer=0;

/*
rumus timer:
(16bit+1)-(1detik*(xtal/prescaller)
TCNT: (65535+1)+(1*(8mhz/1024))
TCNT: 57723
jadikan HEXADESIMAL
TCNT: E17B
*/

interrupt [TIM1_OVF] void timer1_ovf_isr(void)
```

```
{
// Reinitialize Timer1 value
TCNT1H=0xE17B >> 8;
TCNT1L=0xE17B & 0xff;
if(start_timer==1){
if(timer>0)timer--;
}
}

#define ADC_VREF_TYPE 0x40
unsigned int read_adc(unsigned char adc_input)
{
ADMUX=adc_input | (ADC_VREF_TYPE & 0xff);
delay_us(10);
ADCSRA|=0x40;
while ((ADCSRA & 0x10)==0);
ADCSRA|=0x10;
return ADCW;
}

float bacatekanan(){
 float offset=0.18;
 float volt=read_adc(mpx)*((float)5/1023)-offset;     // mengubah nilai adc ke tegangan dikurangi offset
 float pressure=volt*((float)100/((float)4.68-offset)); // mengubah ke kpa

 if(pressure<0)pressure=0;
return pressure;
}
```

```
float read_voltage(unsigned short channel)
{
    register unsigned long raw_v = 0;
    float vin = 0;
    unsigned short samples = 0;
    for(samples = 0; samples < 64; samples++)
    {
        raw_v += read_adc(channel); // baca adc
    }
    raw_v >>= 6;
    vin = (raw_v * 0.0048875);

    return vin;
}

float read_humidity()
{
   register float HSM_20G = 0;
   register float v = 0;
   v = read_voltage(hsm_h);
   HSM_20G = ((3.71 * v * v * v) - (20.65 * v * v) + (64.81 * v) - 27.44);
   return HSM_20G;
}

float read_temperature()
{
   register float HSM_20G = 0;
   register float v = 0;
   v = read_voltage(hsm_t);
   HSM_20G = ((5.26 * v * v * v) - (27.34 * v * v) + (68.87 * v) - 17.81);
   return HSM_20G;
```

```
}
int menu=0;
int log1=0,log2=0;

void running(){
float humidity,temperature,pressure;
if(smenu==0)menu++;
if(menu>1)menu=0;

if(menu==0){
timer=0;
start_timer=0;
log2=0;
if(log1==0){
humidity= read_humidity();
temperature= read_temperature();
pressure= bacatekanan()*7.50062;
}
lcd_clear();
lcd_gotoxy(0,0);
sprintf(lcd_buff,"%.2f mmHg ",pressure);
lcd_puts(lcd_buff);
lcd_gotoxy(0,1);
sprintf(lcd_buff,"%.2f",temperature);
lcd_puts(lcd_buff);
lcd_putchar(0xdf);
lcd_putchar('C');
sprintf(lcd_buff," %.2f",humidity);
lcd_puts(lcd_buff);
lcd_putchar('%');
```

```
// log data
if(stimer==0)log1=1;

}

if(menu==1){
log1=0;
if(log2==0)pressure= bacatekanan()*7.50062;
lcd_clear();
lcd_gotoxy(0,0);
sprintf(lcd_buff,"%.2f mmHg",pressure);
lcd_puts(lcd_buff);

lcd_gotoxy(0,1);
sprintf(lcd_buff,"T:%d ",timer);
lcd_puts(lcd_buff);

if(log2==1){
 if(pressure<=200&&pressure>=185)lcd_putsf("Masih Layak");
 else lcd_putsf("Tidak Layak");
}
if(stimer==0){
 if(start_timer==0){timer=60;start_timer=1;log2=0;}
}
if(start_timer==1&&timer==0){
 log2=1;
 start_timer=0;
}

}
```

```
// jeda
delay_ms(500);
}


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

// Input/Output Ports initialization
// 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
// Func6=In Func5=In Func4=In Func3=In Func2=In Func1=In Func0=In
// State6=T State5=P State4=P State3=T State2=T State1=T State0=T
PORTC=0x30;
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
TCCR0=0x00;
TCNT0=0x00;

// Timer/Counter 1 initialization
// Clock source: System Clock
// Clock value: 7,813 kHz
// Mode: Normal top=0xFFFF
// OC1A output: Discon.
// OC1B output: Discon.
// Noise Canceler: Off
// Input Capture on Falling Edge
// Timer1 Overflow Interrupt: On
// Input Capture Interrupt: Off
// Compare A Match Interrupt: Off
// Compare B Match Interrupt: Off
TCCR1A=0x00;
TCCR1B=0x05;
TCNT1H=0xE1;
TCNT1L=0x7B;
ICR1H=0x00;
ICR1L=0x00;
OCR1AH=0x00;
OCR1AL=0x00;
OCR1BH=0x00;
OCR1BL=0x00;

// Timer/Counter 2 initialization
// Clock source: System Clock
// Clock value: Timer2 Stopped
```

```
// Mode: Normal top=0xFF
// OC2 output: Disconnected
ASSR=0x00;
TCCR2=0x00;
TCNT2=0x00;
OCR2=0x00;

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

// Timer(s)/Counter(s) Interrupt(s) initialization
TIMSK=0x04;

// USART initialization
// USART disabled
UCSRB=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: 1000,000 kHz
// ADC Voltage Reference: AVCC pin
ADMUX=ADC_VREF_TYPE & 0xff;
ADCSRA=0x83;
```

```
// SPI initialization
// SPI disabled
SPCR=0x00;

// TWI initialization
// TWI disabled
TWCR=0x00;

// Alphanumeric LCD initialization
// Connections are specified in the
// Project|Configure|C Compiler|Libraries|Alphanumeric LCD menu:
// RS - PORTD Bit 0
// RD - PORTD Bit 7
// EN - PORTD Bit 1
// D4 - PORTD Bit 2
// D5 - PORTD Bit 3
// D6 - PORTD Bit 4
// D7 - PORTD Bit 5
// Characters/line: 16
lcd_init(16);

// Global enable interrupts
#asm("sei")

while (1)
      {
      // Place your code here
      running();
```

PROSES PENGAMBILAN DATA


TEMPERATURE
27.1°C
53%
HUMIDITY
FLUKE DPM4 PARAMETER TESTER
50.65 mmHg
26.93°C 56.05%
MENU SCROLL
PRESS/TEMP
FLOW/TEMP
ENVIRONMENT


TEMPERATURE
26.9°C
53%
HUMIDITY
FLUKE DPM4 PARAMETER TESTER
101.16 mmHg
26.93°C 56.33%
MENU SCROLL
PRESS/TEMP
FLOW/TEMP
ENVIRONMENT


TEMPERATURE
26.9°C
53%
HUMIDITY
FLUKE DPM4 PARAMETER TESTER
119.90 mmHg
26.93°C 55.64%
MENU SCROLL
PRESS/TEMP
FLOW/TEMP
ENVIRONMENT


TEMPERATURE
26.9°C
53%
HUMIDITY
FLUKE DPM4 PARAMETER TESTER
MENU SCROLL
PRESS/TEMP
FLOW/TEMP
ENVIRONMENT


TEMPERATURE
26.8°C
57%
201.36 mmHg
26.78°C 56.61%


TEMPERATURE
26.8°C
57%
201.36 mmHg
26.78°C 56.61%