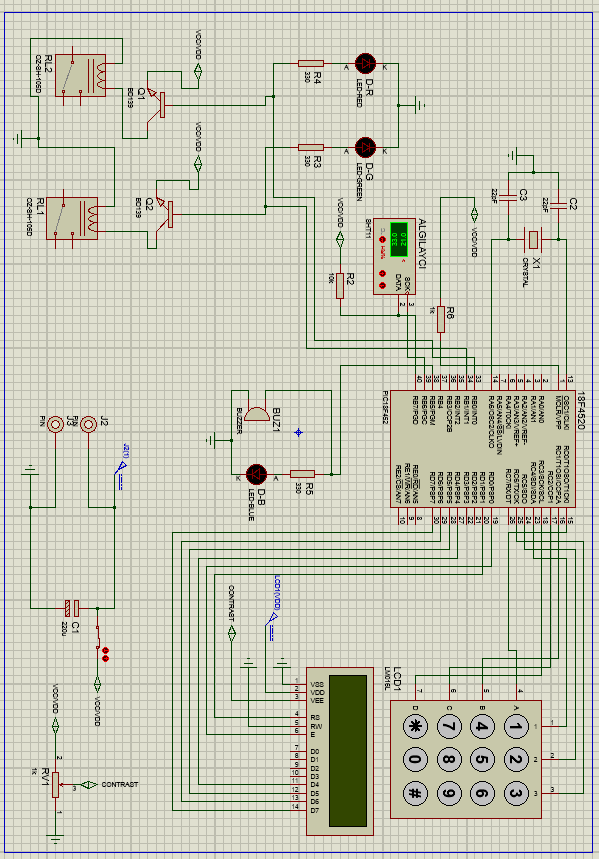
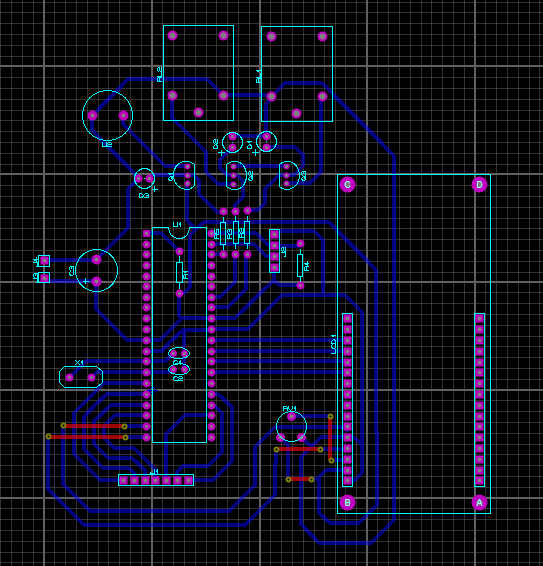
**EK-1 (Devrenin Proteus Çizimi)**



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**EK-2 (Kaynak Kod)**

#include <18F452.h>

#device adc=8

#FUSES NOWDT //No Watch Dog Timer

#FUSES WDT128 //Watch Dog Timer uses 1:128 Postscale

#FUSES XT //Crystal osc <= 4mhz for PCM/PCH , 3mhz to 10 mhz for PCD

#FUSES NOPROTECT //Code not protected from reading

#FUSES NOOSCSEN //Oscillator switching is disabled, main oscillator is source

#FUSES NOBROWNOUT //No brownout reset

#FUSES BORV20 //Brownout reset at 2.0V

#FUSES NOPUT //No Power Up Timer

#FUSES NOSTVREN //Stack full/underflow will not cause reset

#FUSES NODEBUG //No Debug mode for ICD

#FUSES NOLVP //No low voltage prgming, B3(PIC16) or B5(PIC18) used for I/O

#FUSES NOWRT //Program memory not write protected

#FUSES NOWRTD //Data EEPROM not write protected

#FUSES NOWRTB //Boot block not write protected

#FUSES NOWRTC //configuration not registers write protected

#FUSES NOCPD //No EE protection

#FUSES NOCPB //No Boot Block code protection

#FUSES NOEBTR //Memory not protected from table reads

#FUSES NOEBTRB //Boot block not protected from table reads

#use delay(clock=4000000)

#include "SHT11.c"

#include "new\_lcd.c"

//3x4 tuş takımı

#define sat1 pin\_c0

#define sat2 pin\_c1

#define sat3 pin\_c2

#define sat4 pin\_c3

#define sut1 pin\_c4

#define sut2 pin\_c5

#define sut3 pin\_c6

// ısıtıcı ve soğutucu

#define isitici pin\_b0

#define sogutucu pin\_b1

//sht11 algılayıcı

#define sht\_data\_pin PIN\_b7//(Data pin veya input)

#define sht\_clk\_pin PIN\_b6

// sensor kontrol

#define ses\_sensor pin\_b5

float temp=0,humid=0,sicaklik=0,nem=0;

int i=1, negatif=0, flag=0, derece=25, tus=99, pres = 99;

int anticounter=10000, counterpid=0, flagmode=0, mode=0;

//fonksiyonlar

int keypad\_oku() // Fonksiyon ismi

{

output\_c(0x00); // D portu çıkışı sıfırlanıyor

output\_high(sat1);

if (input(sut1))

{ delay\_ms(20); tus=1;output\_low(sat1);}

else if (input(sut2))

{ delay\_ms(20); tus=2;output\_low(sat1);}

else if (input(sut3))

{ delay\_ms(20); tus=3;output\_low(sat1);}

else

output\_low(sat1);

output\_high(sat2);

if (input(sut1))

{ delay\_ms(20); tus=4;output\_low(sat2);}

else if (input(sut2))

{ delay\_ms(20); tus=5;output\_low(sat2);}

else if (input(sut3))

{ delay\_ms(20); tus=6;output\_low(sat2);}

else

output\_low(sat2);

output\_high(sat3);

if (input(sut1))

{ delay\_ms(20); tus=7;output\_low(sat3);}

else if (input(sut2))

{ delay\_ms(20); tus=8;output\_low(sat3);}

else if (input(sut3))

{ delay\_ms(20); tus=9;output\_low(sat3);}

else

output\_low(sat3);

output\_high(sat4);

if (input(sut1))

{ delay\_ms(20); tus=10;output\_low(sat4);}

else if (input(sut2))

{ delay\_ms(20); tus=0;output\_low(sat4);}

else if (input(sut3))

{ delay\_ms(20); tus=19;output\_low(sat4);}

else

output\_low(sat4);

return tus;

}

void allkeypadlow()

{

output\_low(sat1);

output\_low(sat2);

output\_low(sat3);

output\_low(sat4);

output\_low(sut1);

output\_low(sut2);

output\_low(sut3);

tus=99;

}

void pid()

{

if(negatif == 1 && derece != 0)

{

output\_low(isitici);

output\_high(sogutucu);

}

else if(derece >= sicaklik-0.2 && derece <= sicaklik+0.2)

{

output\_low(isitici);

output\_low(sogutucu);

}

else if(derece > sicaklik )

{

output\_high(isitici);

output\_low(sogutucu);

}

else if(derece < sicaklik)

{

output\_low(isitici);

output\_high(sogutucu);

}

counterpid -= 1;

}

float absdiff(float x,float y)

{

if(x>y)

return x-y;

else

return y-x;

}

// ana program

void main()

{

setup\_adc\_ports(NO\_ANALOGS);

setup\_adc(ADC\_CLOCK\_DIV\_2);

setup\_psp(PSP\_DISABLED);

setup\_spi(SPI\_SS\_DISABLED);

setup\_wdt(WDT\_OFF);

setup\_timer\_1(T1\_DISABLED);

setup\_timer\_2(T2\_DISABLED,0,1);

setup\_ccp1(CCP\_OFF);

lcd\_init();

delay\_ms(100);

sht\_init();

delay\_ms(100);

set\_tris\_a(0x00); // A portu komple çıkış

set\_tris\_b(0x00);

set\_tris\_c(0x0f);

set\_tris\_d(0x00);

lcd\_init(); // LCD hazırlanıyor

while(1)

{

allkeypadlow();

keypad\_oku();

pres = tus;

allkeypadlow();

//kare

if(pres == 19)

{

flagmode = 1;

printf(lcd\_putc,"\f");

}

while(flagmode==1)

{

lcd\_gotoxy(1,1);

printf(lcd\_putc,"Mod gir");

keypad\_oku();

pres = tus;

if(pres == 19)

pres = 99;

allkeypadlow();

if(pres == 1)

{

lcd\_gotoxy(2,2);

printf(lcd\_putc,"%d",pres);

mode = 0;

delay\_ms(1000);

printf(lcd\_putc,"\f");

lcd\_gotoxy(1,1);

printf(lcd\_putc,"On-Off Ayarlandi.");

delay\_ms(1000);

flagmode = 0;

}

if(pres == 2)

{

lcd\_gotoxy(2,2);

printf(lcd\_putc,"%d",pres);

mode = 1;

delay\_ms(1000);

printf(lcd\_putc,"\f");

lcd\_gotoxy(1,1);

printf(lcd\_putc,"PID Ayarlandi.");

delay\_ms(1000);

flagmode = 0;

counterpid = absdiff(sicaklik,derece)\* 10000;

}

if(pres == 3)

{

lcd\_gotoxy(2,2);

printf(lcd\_putc,"%d",pres);

mode = 1;

delay\_ms(1000);

printf(lcd\_putc,"\f");

lcd\_gotoxy(1,1);

printf(lcd\_putc,"P Ayarlandi.");

delay\_ms(1000);

flagmode = 0;

counterpid = absdiff(sicaklik,derece)\* 10000;

}

if(pres == 4)

{

lcd\_gotoxy(2,2);

printf(lcd\_putc,"%d",pres);

mode = 1;

delay\_ms(1000);

printf(lcd\_putc,"\f");

lcd\_gotoxy(1,1);

printf(lcd\_putc,"PI Ayarlandi.");

delay\_ms(1000);

flagmode = 0;

counterpid = absdiff(sicaklik,derece)\* 10000;

}

if(pres == 5)

{

flagmode = 0;

printf(lcd\_putc,"\f");

lcd\_gotoxy(1,1);

printf(lcd\_putc,"CikiS.");

delay\_ms(1000);

}

}

//yıldız

if(pres == 10)

{

flag = 1;

printf(lcd\_putc,"\f");

}

while(flag==1)

{

lcd\_gotoxy(1,1);

printf(lcd\_putc,"SIC gir");

keypad\_oku();

pres = tus;

if(pres == 10 && i == 1)

pres = 99;

allkeypadlow();

if( pres >= 0 && pres <= 9)

{

lcd\_gotoxy(i,2);

if(i==1)

derece = 0;

printf(lcd\_putc,"%d",pres);

delay\_ms(1000);

derece = (derece\*10) + pres;

i += 1;

}

else if(pres == 19)

{

printf(lcd\_putc,"\f%d derece \nayarlandi.",derece);

flag = 0;

negatif = 0;

delay\_ms(1000);

i=1;

printf(lcd\_putc,"\f");

}

else if(pres == 10)

{

printf(lcd\_putc,"\f-%d derece \nayarlandi.",derece);

flag = 0;

delay\_ms(1000);

negatif = 1;

i=1;

printf(lcd\_putc,"\f");

}

else{;}

}

sht\_rd (temp, humid);

sicaklik=(float)temp;

nem=(float)humid;

lcd\_gotoxy(1,1);

printf(lcd\_putc,"SICAKLIK %2.2f C",sicaklik);

lcd\_gotoxy(1,2);

printf(lcd\_putc,"NEM %2.2f RH",nem);

//sensor kontrol

output\_low(ses\_sensor);

delay\_ms(1000);

if(nem < 1)

{

output\_high(ses\_sensor);

delay\_ms(1000);

}

if(negatif == 1 && derece != 0 && mode == 0)

{

output\_low(isitici);

output\_high(sogutucu);

delay\_ms(1000);

}

else if(derece >= sicaklik-0.2 && derece <= sicaklik+0.2 && mode == 0)

{

output\_low(isitici);

output\_low(sogutucu);

delay\_ms(1000);

}

else if(derece > sicaklik && mode == 0)

{

output\_high(isitici);

output\_low(sogutucu);

delay\_ms(1000);

}

else if(derece < sicaklik && mode == 0)

{

output\_low(isitici);

output\_high(sogutucu);

delay\_ms(1000);

}

if(mode == 2 && counterpid != 0)

{

pid();

anticounter = 10000; //bekleme süresi

}

else if(mode == 2 && counterpid == 0)

{

if(anticounter == 0)

counterpid = absdiff(sicaklik,derece)\* 50000; //2 derece arasındaki farkla orantılı çalışma süresi

else

{

anticounter -= 1;

output\_low(isitici);

output\_low(sogutucu);

}

}

}

}