

Lampiran

Program Alat

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#include <Wire.h>

#include <LiquidCrystal.h>

#include <TimerOne.h>

volatile int i[4], j;

volatile boolean zero_cross[4] = {0,0,0,0};

int AC[4] = {10,11,12,13};

int ACenable[4] = {1,1,1,1};

int output[4] = {0,0,0,0};           // Create output vars for Dimming level (0-
128) 0 = on, 128 = Off

int dim = 0;                        // Dimming level (0-128) 0 = on, 128 = Off

int freqStep = 59;

LiquidCrystal lcd(4, 5, 6, 7, 8, 9);

int Sens_Kmr_Tidur = A2;

int Sens_Ruang_Tamu = A3;

int BH1750_Kmr_Tidur = 0x23; //i2c Adresse

int BH1750_Ruang_Tamu = 0x5C;

byte buff[2];

unsigned char data_terima[2]={0,0};

void setup() {

    pinMode(AC[0], OUTPUT);         //Kamar Mandi

    pinMode(AC[1], OUTPUT);         //Kamar Tidur
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pinMode(AC[2], OUTPUT);    //Ruang Tamu
pinMode(AC[3], OUTPUT);    //Teras
pinMode(Sens_Kmr_Tidur, OUTPUT);
pinMode(Sens_Ruang_Tamu, OUTPUT);
digitalWrite(Sens_Kmr_Tidur,LOW);
digitalWrite(Sens_Ruang_Tamu,HIGH);
Wire.begin();
BH1750_Init(BH1750_Kmr_Tidur);
BH1750_Init(BH1750_Ruang_Tamu);
attachInterrupt(0, zero_cross_detect, FALLING); // Attach an Interupt to Pin 2
(interupt 0) for Zero Cross Detection
Timer1.initialize(freqStep);
Timer1.attachInterrupt(output_check, freqStep);
Serial.begin(9600);
output[0] = 160; output[1] = 160; output[2] = 160; output[3] = 160;
lcd.begin(16, 2);
lcd.print(" INTENSITAS ");
lcd.setCursor(0, 1);
lcd.print(" CAHAYA LAMPU ");
delay(1000);
}

void zero_cross_detect() { zero_cross[0] = 1; zero_cross[1] = 1; zero_cross[2] =
1; zero_cross[3] = 1; }

void output_check() {
for( j=0; j<4; j++ ) {

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if(zero_cross[j]) {
    if(i[j] >= output[j] && ACenable[j]) {
        digitalWrite(AC[j], HIGH);
        delayMicroseconds(2);
        digitalWrite(AC[j], LOW);
        i[j]=0;
        zero_cross[j] = 0;
    } else {
        i[j]++;
    }
}
}
}
}

void loop() {
    lcd.setCursor(0, 0); lcd.print("R.TIDUR =  lx");
    lcd.setCursor(0, 1); lcd.print("R.TAMU =  lx");
    float valf_Kmr_Tidur=0;
    if(BH1750_Read(BH1750_Kmr_Tidur) == 2)
    {
        valf_Kmr_Tidur=((buff[0]<<8)|buff[1])/1.2;
        lcd.setCursor(9, 1);
        if(valf_Kmr_Tidur < 0) lcd.print(">65K");
        else lcd.print((int)valf_Kmr_Tidur,DEC);
    }
}

```

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}

float valf_Ruang_Tamu=0;

if(BH1750_Read(BH1750_Ruang_Tamu) == 2)
{
    valf_Ruang_Tamu=((buff[0]<<8)|buff[1])/1.2;
    lcd.setCursor(9, 0);
    if(valf_Ruang_Tamu < 0) lcd.print(">65K");
    else lcd.print((int)valf_Ruang_Tamu,DEC);
}

for (int k=0; k <= 500;k++){
    if (Serial.available() > 0)
    {
        data_terima[0] = Serial.read(); delay(50);
        data_terima[1] = Serial.read(); delay(50);

        if (data_terima[0] == 1){output[1] = 160;} //150 = redup banget 160=mati 5
= hidup banget
        if (data_terima[0] == 2){output[1] = 100;}
        if (data_terima[0] == 3){output[1] = 70;}
        if (data_terima[0] == 4){output[1] = 5;}
        if (data_terima[0] == 5){output[2] = 160;}
        if (data_terima[0] == 6){output[2] = 100;}
        if (data_terima[0] == 7){output[2] = 70;}
        if (data_terima[0] == 8){output[2] = 5;}
        if (data_terima[0] == 16) {output[0] = 5;}
        if (data_terima[0] == 17) {output[0] = 160;}
    }
}

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    if (data_terima[0] == 32) {output[3] = 5;}
    if (data_terima[0] == 33) {output[3] = 160;}
  }
  delayMicroseconds(500);          // Delay after each step to slow down
the fade
  }
}

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void BH1750_Init(int address){
  Wire.beginTransmission(address);
  Wire.write(0x10);    // 1 [lux] aufloesung
  Wire.endTransmission();
}

byte BH1750_Read(int address){
  byte i=0;
  Wire.beginTransmission(address);
  Wire.requestFrom(address, 2);
  while(Wire.available()){ buff[i] = Wire.read(); i++; }
  Wire.endTransmission();
  return i;
}

```



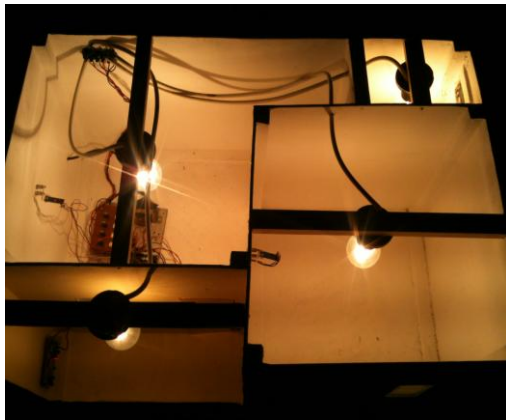
Prototipe Saat Semua Lampu Dimatikan



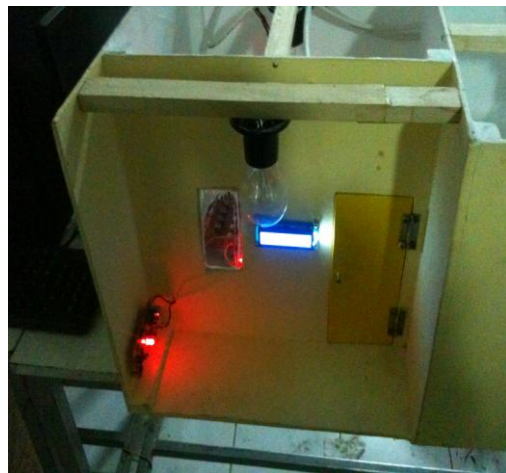
Tampilan Awal LCD Saat Catu Daya Dihidupkan



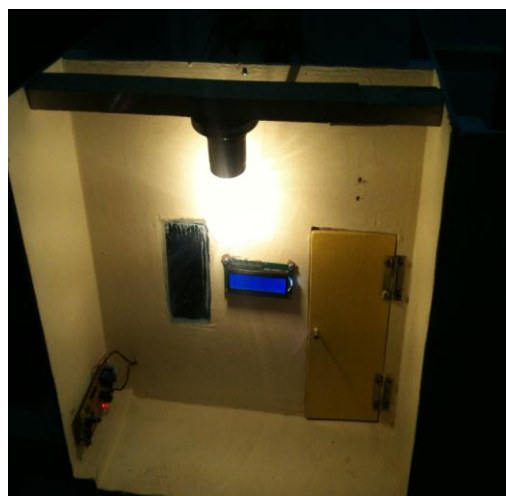
Tampilan LCD Saat Catu Daya Dihidupkan Beberapa Detik



Prototipe Saat Semua Lampu Dinyalakan



Prototipe Saat Lampu Teras Rumah Mati



Prototipe Saat Lampu Teras Rumah Menyala



Prototipe Saat Lampu Kamar Mandi Mati



Prototipe Saat Lampu Kamar Mandi Menyala



Prototipe Saat Lampu Kamar Tidur Mati



Prototipe Saat Lampu Kamar Tidur Redup



Prototipe Saat Lampu Kamar Tidur Agak Terang



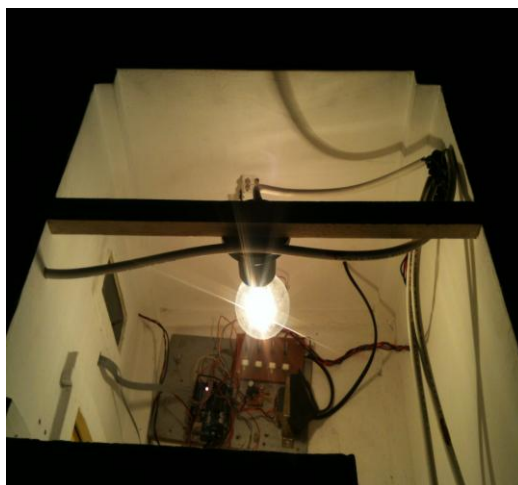
Prototipe Saat Lampu Kamar Tidur Terang Maksimal



Prototipe Saat Lampu Ruang Tamu Mati



Prototipe Saat Lampu Ruang Tamu Redup



Prototipe Saat Lampu Ruang Tamu Agak Terang



Prototipe Saat Lampu Ruang Tamu Terang Maksimal