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/*
 * LEDNEW2.c
 *
 * Created: 2017-04-24 13:58:57
 * Author : kem14sak
 */
// IMPORTS(?)
#include <avr/io.h>
#include <avr/interrupt.h>
#define F_CPU 16000000UL //16MHZ
#include<util/delay.h>
//FUNCTIONS
void settime();
void timeRunner();
void counter();
void nbrvector();
void showclock();
void displaytime();
//VARIABLES
unsigned int LAMPA = 0;
unsigned int HOUR = 0;
unsigned int MIN = 0;
unsigned int SEC = 0;
unsigned int HOURORMIN = 1; //0=timmar, 1=minuter
unsigned int PRESSEDBUTTON;
unsigned int blsPressed = 0; // sant falskt
unsigned int pauseTime = 0;
unsigned int count = 0;
unsigned int count1 = 0;
unsigned int count2 = 0;
unsigned int count3 = 0;
unsigned int place = 0;
unsigned int playpause = 0; //0 = PAUS
unsigned int hourfirst = 0;
unsigned int hoursecond = 0;
unsigned int minfirst = 0;
unsigned int minsecond = 0;
unsigned int onepos = 0;
unsigned int roundtime = 0;
static int numbers[11][5] = {
    {193, 190, 190, 190, 193}, //0
    {238, 222, 128, 254, 254}, //1
    {222, 188, 186, 182, 206}, //2
    {221, 190, 182, 182, 201}, //3
    {135, 247, 247, 247, 128}, //4
    {133, 182, 182, 182, 184}, //5
    {193, 182, 182, 182, 217}, //6
    {191, 191, 188, 179, 143}, //7
    {201,182, 182, 182, 201}, //8
    {207, 183, 183, 183, 128}, //9
    {255, 255, 204, 255, 255} //dots
};
// INTERRUPTS FROM BUTTONS
ISR(INT0_vect){
blsPressed = 1;
PRESSEDBUTTON = PINB;
_delay_ms(20);
}
//INTERRUPTS FROM LIGHT SENSOR
ISR(INT2_vect){
roundtime = count2;
onepos = roundtime/60;
count2=0;
count3=0;

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GIFR = 1<<INTF2;
}
/*INTERRUPTS FOR TIME*/
ISR(TIMER1_OVF_vect){
    TCNT1 = 0xffff - 5;
    if(playpause ==1){
        count = 1;
        //counter();
    }
}
//MAIN
int main(void)
{
    SEC = 0;
    GICR = 1<<INT0|1<<INT2; // ENABLE INT0 & INT2
    MCUCR = 1<<ISC01 |1<<ISC00; //RISING EDGE ON INT0
    MCUCSR = 1<<ISC2; //RISING EDGE ON INT2
    GIFR = 1<<INTF2;

    TCCR1B|= (1 << CS12);//(0 << CS10); //Prescaler 1024, skalar ner klockan --> 15625 Hz
    TIMSK |= (1 << TOIE1);
    TCNT1 =0xffff - 5;

    sei();//Enable global interrupt

    DDRA = 0xff; //PORTA output (lampa) 0 = LYSER
    PORTA = 0xff; //PORTA '1' (släckt)
    DDRB = 0x00; //PORTB input (knapp)
    PORTB = 0xff; //PORTB internall pullup (ska reagera då vi trycker
    LAMPA = 127;
    PORTA = LAMPA;
    playpause = 0;

//DET SOM SKA KÖRAS HELA TIDEN
while (1){
    if (blsPressed==1){
        PRESSEDBUTTON = PRESSEDBUTTON & 0b11110000;
        if(PRESSEDBUTTON== 0b10000000){//OM PLAY/PAUS-KNAPP BLIR INTRYCKT
            if(playpause == 0){
                playpause=1; //1 = PLAY
                showclock();
            } else {
                playpause = 0; //0 = PAUS
            }
        }
        settime();
    }
    if (count == 1){
        counter();
    }
}
}
// KNAPPAR
void settime(){
    blsPressed=0;
    if(playpause ==1){

    } else {
        PRESSEDBUTTON = PRESSEDBUTTON & 0b11110000;
        if(PRESSEDBUTTON == 0b00010000 ){//OM GUL KNAPP BLIR INTRYCKT
            if(HOURORMIN == 0){
                MIN = 191 - LAMPA; //SPARAR MINUTER
                HOURORMIN =1;//TIMME
                LAMPA= 127 - HOUR; //LADDAR TIMMAR
            }
        }
    }
}

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    }
    else {
        HOUR = 127 - LAMPA; //SPARAR TIMMAR
        HOURORMIN = 0; //MINUT
        LAMPA = 191 - MIN; //LADDAR MINUTER
    }
    PRESSEDBUTTON = 0;
}
if(PRESSEDBUTTON == 0b00100000){ //VI VILL ÖKA TIDEN
    if(HOURORMIN == 0){
        if(LAMPA == 132){ //SKA BLI 0 MIN
            LAMPA = 191;
        }
        else {
            LAMPA = LAMPA - 1;
        }
    }
    if(HOURORMIN == 1){
        if(LAMPA == 104){ //SKA BLI 0 TIMMAR
            LAMPA = 127;
        }
        else{
            LAMPA = LAMPA - 1;
        }
    }
    PRESSEDBUTTON = 0;
}
if(PRESSEDBUTTON == 0b01000000){ //VI VILL MINSKA TIDEN
    if(HOURORMIN == 0){
        if(LAMPA == 191){ //SKA BLI 59 MIN
            LAMPA = 132;
        }
        else {
            LAMPA = LAMPA + 1;
        }
    }
    if(HOURORMIN == 1){
        if(LAMPA == 127){ //SKA BLI 23 TIMMAR
            LAMPA = 104;
        }
        else{
            LAMPA = LAMPA + 1;
        }
    }
    PRESSEDBUTTON = 0;
}
    PORTA = LAMPA;
}
//UPDATE TIME
void timeRunner(){
    SEC++;
    if (SEC >= 60)
    {
        MIN++;
        showclock();
        SEC = 0;
        if (MIN >= 60)
        {
            HOUR++;
            MIN = 0;
            if (HOUR >= 24)
            {
                HOUR = 0;
            }
        }
    }
}

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    }
}
}
}
//RÄKNA TID
void counter(){
count1++;
count2++;
if(count1 >= 12496){
    count1=0;
    timeRunner();
}
if ( count2 % onepos == 0){
    count3++;
    displaytime();
}
}
void displaytime(){
    //Första
    if (count3 >=16 && count3 <= 20){
        PORTA = numbers[hourfirst][place];
        place++;
    }
    //ANDRA
    else if (count3 >=22 && count3 <= 26){
        PORTA = numbers[hoursecond][place];
        place++;
    }
    //PRICKAR
    else if (count3 >=28 && count3 <= 32){
        PORTA = numbers[10][place];
        place++;
    }
    //TREDJE
    else if (count3 >=34 && count3 <= 38){
        PORTA = numbers[minfirst][place];
        place++;
    }
    //FJÄRDE
    else if (count3 >=40 && count3 <= 44){
        PORTA = numbers[minsecond][place];
        place++;
    }
    //RESET
    else {
        PORTA = 0xff;//Stäng av alla lampor
        place = 0;
    }
}
//SÄTT FÖRSTA OCH ANDRA DELEN I TIMMAR OCH MINUTER
void showclock(){
    hourfirst = HOUR/10;
    hoursecond = HOUR%10;
    minfirst = MIN/10;
    minsecond = MIN%10;
}

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