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☰ 68 lines (51 sloc) | 2.51 KB

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Lab 5: FILIP_KOCUM

Link to your Digital-electronics-2 GitHub repository:

[github link of my repository](#)

7-segment library

1. In your words, describe the difference between Common Cathode and Common Anode 7-segment display.
 - CC SSD - zde je společná katoda připojena na zem a segmenty se spínají pomocí logické jedničky.
 - CA SSD - zde je společná anoda připojena na napětí a segmenty se spínají pomocí logické nuly.

2. Code listing with syntax highlighting of two interrupt service routines (`TIMER0_OVF_vect` , `TIMER0_OVF_vect`) from counter application with at least two digits, ie. values from 00 to 59:

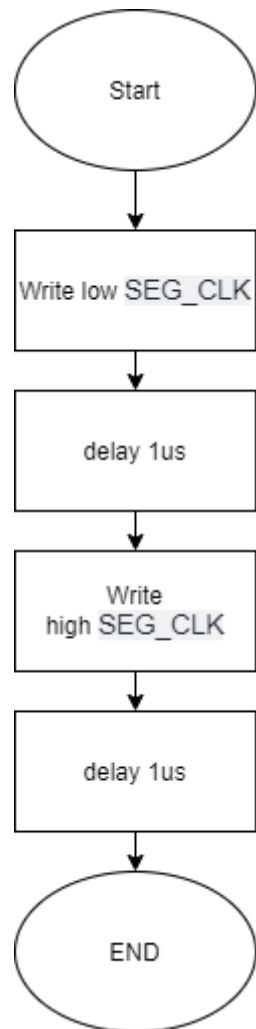
```

/*****
 * Function: Timer/Counter1 overflow interrupt
 * Purpose: Increment counter value from 00 to 59.
 *****/
uint8_t sec = 0;
uint8_t min = 0;
ISR(TIMER1_OVF_vect)
{
    sec++;
    if(sec > 9){
        sec = 0;
        min++;
        if (min > 5){
            min = 0;
        }
    }
}

/*****
 * Function: Timer/Counter0 overflow interrupt
 * Purpose: Display tens and units of a counter at SSD.
 *****/
ISR(TIMER0_OVF_vect)
{
    static uint8_t pos = 0;
    if (pos == 0){
        SEG_update_shift_regs(sec,0);
    }
    else if (pos == 1){
        SEG_update_shift_regs(min,1);
    }
}
```

```
pos++;  
if (pos > 1) {  
    pos = 0;  
}  
}
```

3. Flowchart figure for function `SEG_clk_2us()` which generates one clock period on `SEG_CLK` pin with a duration of 2 us. The image can be drawn on a computer or by hand. Use clear descriptions of the individual steps of the algorithms.



Kitchen alarm

Consider a kitchen alarm with a 7-segment display, one LED and three push buttons: start, +1 minute, -1 minute. Use the +1/-1 minute buttons to increment/decrement the timer value. After pressing the Start button, the countdown starts. The countdown value is shown on the display in the form of mm.ss (minutes.seconds). At the end of the countdown, the LED will start blinking.

1. Scheme of kitchen alarm; do not forget the supply voltage. The image can be drawn on a computer or by hand. Always name all components and their values.

