ΕΡΓΑΣΤΗΡΙΟ ΠΡΟΗΓΜΕΝΩΝ ΜΙΚΡΟΕΠΕΞΕΡΓΑΣΤΩΝ 2022

1 η ΕΡΓΑΣΤΗΡΙΑΚΗ ΑΣΚΗΣΗ

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Ομάδα: B3

Ημερομηνία: 31/3/2022

Ώρα: 10:00-12:00

ΚΩΔΙΚΑΣ

```
#define F_CPU 1000000UL

#include <avr/io.h>
#include <util/delay.h>
#include <stdlib.h>
#include <avr/interrupt.h>

#define del 10
#define ped 20

int interr = 0;

ISR(PORTF_PORT_vect){
        int intflags = PORTF.INTFLAGS;
        PORTF.INTFLAGS = intflags;              //breakpoint
        interr = 1;
}
```

```c
ISR(TCA0_CMP0_vect){

        TCA0_SINGLE_CTRLA = 0;

        int intflags = TCA0.SINGLE.INTFLAGS;

        TCA0.SINGLE.INTFLAGS = intflags;  //breakpoint

        interr = 0;

}


int main()

{

        while(1){

                int sensor = random() % 9 + 0;  //ais8ithras mikrou dromou


                PORTD_DIR |= PIN0_bm;    //Fanari megalou dromou

                PORTD_DIR |= PIN1_bm;    //Fanari mikrou dromou

                PORTD_DIR |= PIN2_bm;           //Fanari pezwn

                PORTD_OUTCLR |= PIN0_bm; //on

                PORTD_OUT |= PIN1_bm;    //off

                PORTD_OUT |= PIN2_bm;    //off


                //pullup enable and Interrupt enabled with sense on both edges

                PORTF.PIN5CTRL |= PORT_PULLUPEN_bm | PORT_ISC_BOTHEDGES_gc;


                sei();            //enable interrupts


                //O sensoras vlepei oti uparxei autokinito ston mikro dromo

                while(sensor==0 || sensor==5 || sensor==8){  //breakpoint

                        PORTD.OUT |= PIN0_bm;

                        PORTD_OUTCLR = PIN1_bm;

                        PORTD_OUTCLR = PIN2_bm;
```

```c
        sensor = random() % 9 + 0;

        }


        PORTD_OUTCLR = PIN0_bm;  //on

        PORTD_OUT |= PIN1_bm;    //off

        PORTD_OUT |= PIN2_bm;    //off



//otan to interr ginei 1 pataei o pezos to switch ara vgainei apo to while

while (interr==0){

}


PORTD.OUT = PIN0_bm;

PORTD_OUTCLR = PIN1_bm;

PORTD_OUTCLR = PIN2_bm;


TCA0.SINGLE.CNT = 0;

TCA0.SINGLE.CTRLB = 0;

TCA0.SINGLE.CMP0 = ped;

TCA0.SINGLE.CTRLA = TCA_SINGLE_CLKSEL_DIV1024_gc;

TCA0.SINGLE.CTRLA |= 1;

TCA0.SINGLE.INTCTRL = TCA_SINGLE_CMP0_bm;


while (interr==1){

}


PORTD.OUTCLR = PIN0_bm;

PORTD_OUT |= PIN1_bm;

PORTD_OUT |= PIN2_bm;


cli();
```

```
        }
}
```