Design Assignment 2B

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Directory: https://github.com/armonlatifi/sub_da/tree/master/DA2B

Submit the following for all Labs:

1. In the document, for each task submit the modified or included code (only) with highlights and justifications of the modifications. Also, include the comments.

2. Use the previously create a Github repository with a random name (no CPE/301, Lastname, Firstname). Place all labs under the root folder ESD301/DA, sub-folder named LABXX, with one document and one video link file for each lab, place modified asm/c files named as LabXX-TYY.asm/c.

3. If multiple asm/c files or other libraries are used, create a folder LabXX-TYY and place these files inside the folder.

4. The folder should have a) Word document (see template), b) source code file(s) and other include files, c) text file with youtube video links (see template).

1.   COMPONENTS LIST AND CONNECTION BLOCK DIAGRAM w/ PINS

List of Components used:
- Assembler
- Simulator
- Debugger
- Breadboard
- Atmega328P
- Wires
- Microusb cord
- Atmel studio 7
- Arudino Multi-function shield
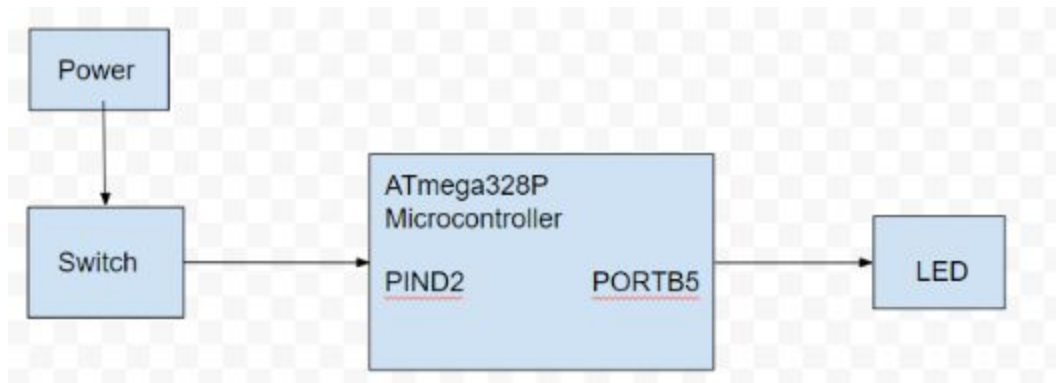
2.   INITIAL/MODIFIED/DEVELOPED CODE OF TASK 1/A

part_1.asm

```
start:
.include <m328pdef.inc>
.ORG 0 ;reset
        JMP main
.ORG 0x02
        JMP ex0_isr

main:
        LDI R20,HIGH(RAMEND)
        OUT SPH,R20
        LDI R20,LOW(RAMEND)
        OUT SPL,R20 ;initialize stack
        LDI R20,0x2 ;make INT0 falling edge triggered
        STS EICRA,R20
        SBI DDRB,2 ;set port b as output
        SBI PORTD,2 ;pull-up activated
        LDI R20,1<<INT0
        OUT EIMSK,R20
        SEI ;enable interrupts
```
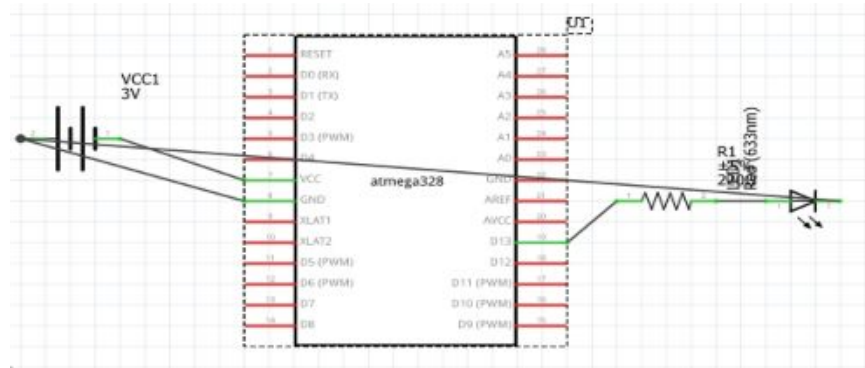
```
ex0_isr:
        IN R21,PORTB
        LDI R22,(1<<2)
        EOR R21,R22
        OUT PORTB,R21
        RETI
```

part_1.c

```c
#include <avr/io.h>
#include <avr/interrupt.h>
#include <avr/delay.h>


int main(void)
{
        DDRB = 1<<2;
        PORTD = 1<<2;
        DDRC = 0x00;
        EICRA = 0x02;

        EIMSK =(1<<INT0);
        sei();

    while (1)
    {
                PORTB = (1<<2);
                _delay_ms(12500);
    }
}

ISR(INT0_vect)
{
        PORTB ^= (1<<2);
        _delay_ms(12500);
}
```

3.   SCHEMATICS

Use fritzing.org

4.   SCREENSHOTS OF EACH TASK OUTPUT (ATMEL STUDIO OUTPUT)

Cycle Counter	12	Cycle Counter	12
Frequency	16.000 MHz	Frequency	16.000 MHz
Stop Watch	0.75 µs	Stop Watch	0.75 µs

5.   SCREENSHOT OF EACH DEMO (BOARD SETUP)
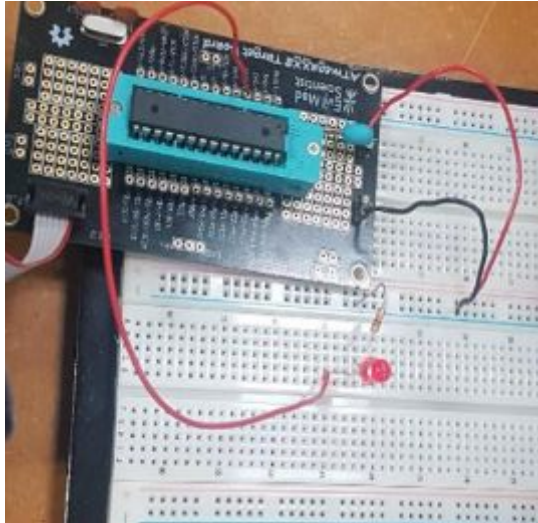
6.   GITHUB LINK OF THIS DA

https://github.com/armonlatifi/sub_da/tree/master/DA2B

Student Academic Misconduct Policy
http://studentconduct.unlv.edu/misconduct/policy.html

"This assignment submission is my own, original work".
NAME OF THE STUDENT