

Temple University
College of Engineering
Department of Electrical and Computer Engineering (ECE)

Student Lab Report Cover Page

Course Number : 3613

Course Section : 002

Experiment # : Lab #7

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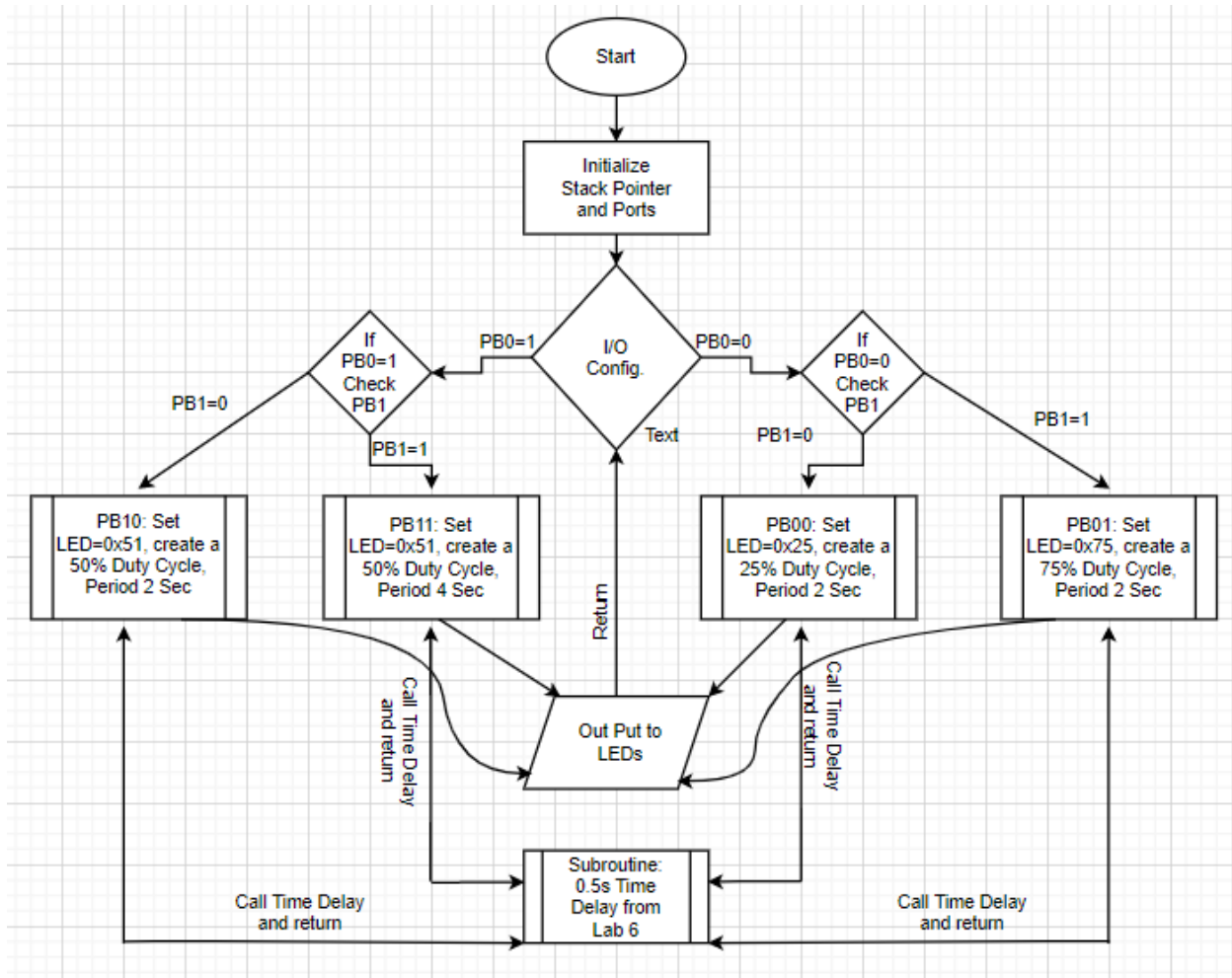
Date : 10/14/2020

Grade : _____ /100

TA Name : Sung Choi

ACTIVITY:

1. Flowchart



[Figure. Flow Chart for Overall Program Process]

2. Code and Description

Code must be with the full-comment: each section description and line description

```
start:
//Stack Pointer
LDI R16, LOW(RAMEND)
OUT SPL, R16
LDI R16, HIGH(RAMEND)
OUT SPH, R16
//PORT CONFIGURATION
LDI R16, 0X00
OUT DDRB, R16
LDI R16, 0XFF
```

```

OUT DDRA,R16
OUT PORTB,R16 ;setup pullup resistor

//CONDITIONING FOR I/O
IO:  SBIC PINB,0 //CHECK PB0=0
     CALL PB_1  //IF PB0=0, PB0=1
     SBIS PINB,0 //CHECK PB1=1
     CALL PB_2  //IF PB0=0
     rjmp start
//CASE OF PB0=1
PB_1: SBIC PINB,1 //CHECK PB1=0
     CALL PB11   //IF PB1=1,PB1=1
     SBIS PINB,1 //CHECK PB1=1
     CALL PB10   //IF PB0=1,PB1=0
     RET
//CASE OF PB0=0
PB_2: SBIC PINB,1
     CALL PB01   //IF PB0=0,PB1=1
     SBIS PINB,1
     CALL PB00   //IF PB0=0,PB1=0
     RET
//PB0=0, PB1=0, LED=0X25
PB00: SBI PORTA,0
     SBI PORTA,0
     SBI PORTA, 2
     SBI PORTA, 5
     CALL DELAY //25% DUTY CYCLE
     CBI PORTA,0
     CBI PORTA, 2
     CBI PORTA, 5
     CALL DELAY //PERIOD 2 SEC
     CALL DELAY
     CALL DELAY
     RET
//PB0=1, PB1=0, LED=0X51
PB10: SBI PORTA,0
     SBI PORTA,4
     SBI PORTA,6
     CALL DELAY //50% DUTY CYCLE
     CALL DELAY
     CBI PORTA,0
     CBI PORTA,4
     CBI PORTA,6
     CALL DELAY //PERIOD 2 SEC
     CALL DELAY
     RET
//PB0=0, PB1=1, LED=0X75
PB01: SBI PORTA,0
     SBI PORTA,2
     SBI PORTA,4
     SBI PORTA,5
     SBI PORTA,6
     CALL DELAY //75% DUTY CYCLE
     CALL DELAY
     CALL DELAY
     CBI PORTA,0
     CBI PORTA,2

```

```

CBI PORTA,4
CBI PORTA,5
CBI PORTA,6
CALL DELAY //PERIOD 2 SEC
CALL DELAY
RET

//PB0=1, PB1=1, LED=0X51
PB11: SBI PORTA,0
      SBI PORTA,4
      SBI PORTA,6
      CALL DELAY //DUTY CYCLE 50%
      CALL DELAY
      CBI PORTA,0
      CBI PORTA,4
      CBI PORTA,6
      CALL DELAY //4 SEC PERIOD
      CALL DELAY
      CALL DELAY
      RET

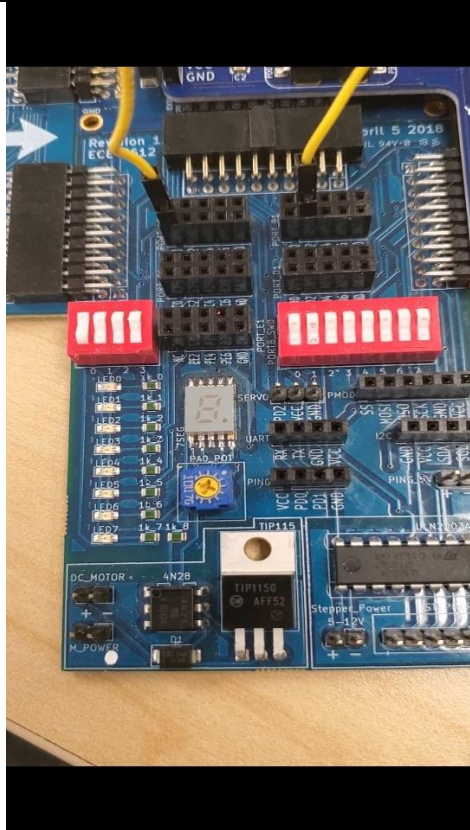
//TIME DELAY FOR 0.5 SEC
DELAY: LDI R20,32
      L1: LDI R21, 200
      L2: LDI R22, 250
      L3:  NOP
          NOP
          DEC R22
          BRNE L3
          DEC R21
      BRNE L2
      DEC R20
      BRNE L1
      RET

```

3. Result: Result Picture, Table, and Description:

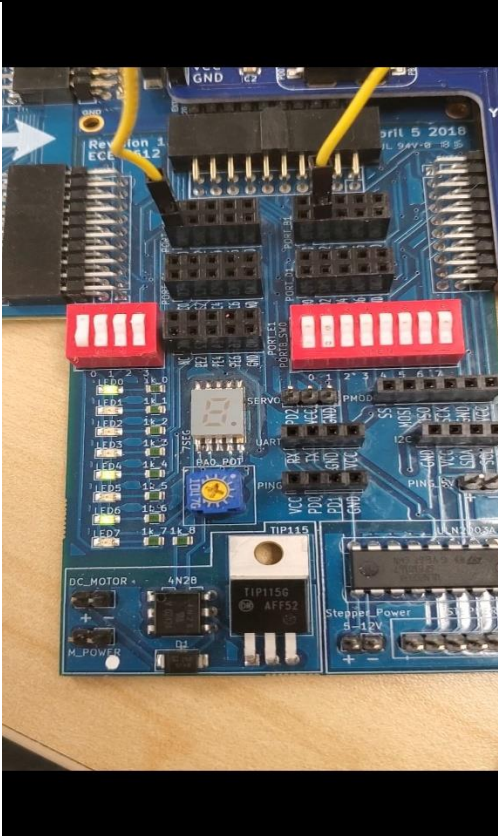
- Case 1: PB0=0, PB1=0

| |
|---|
| Resulted pictures of input switches (5 pts) |
|---|



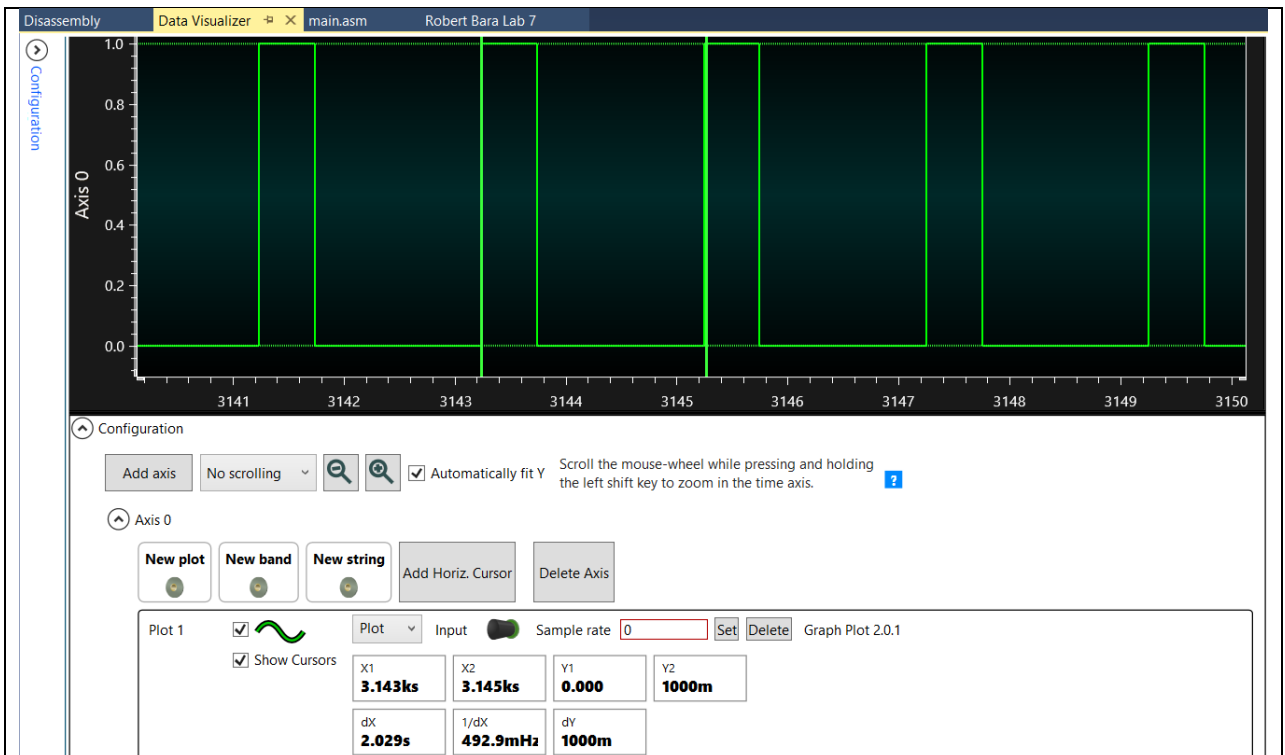
[Figure. Input switches PB0=0, PB1=0]

Output LEDs picture (5 pts)



[Figure. LED results PB0=0, PB1=0]

Reading of data visualizer screenshot (5 pts)



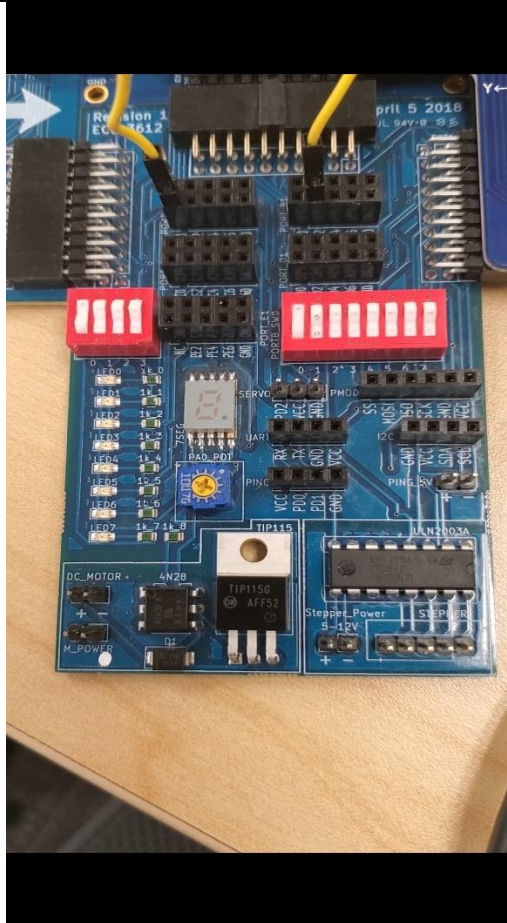
[Figure. Data Visualizer for 2 sec period, 25% duty cycle]

Result video (5 pts)

<https://youtu.be/iloEV52Rp0A> time stamp (0:00)

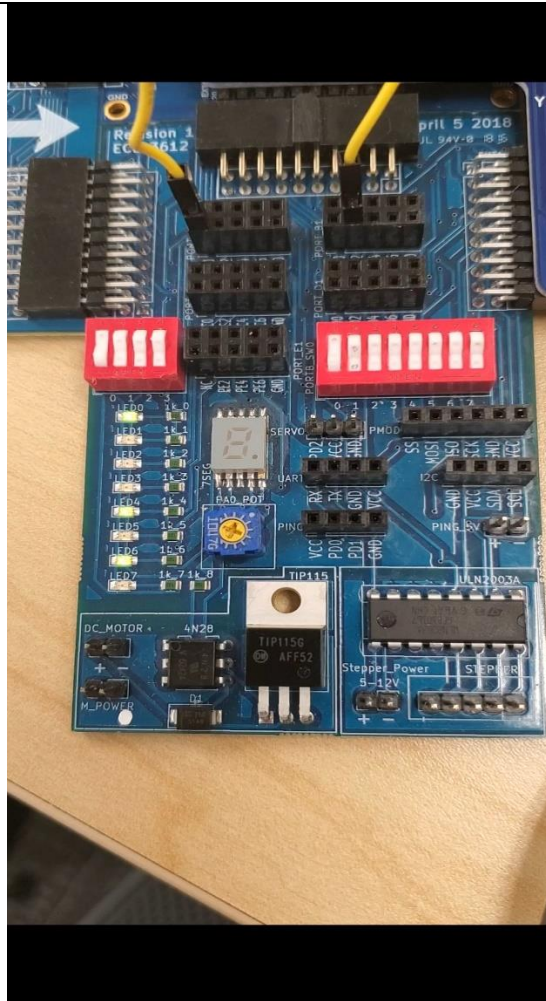
- Case 2: PB0=1, PB1=0

Resulted pictures of input switches (5 pts)



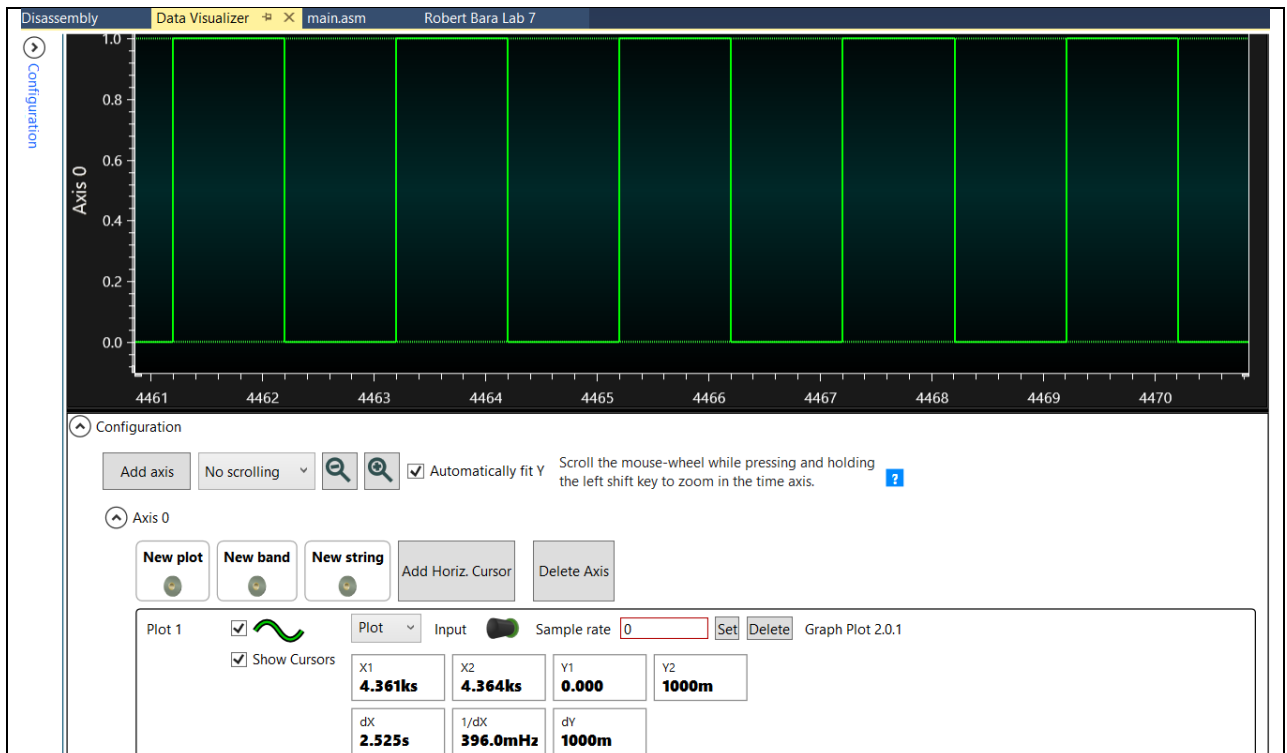
[Figure. Input switches PB0=1, PB1=0]

Output LEDs picture (5 pts)



[Figure. LED results PB0=1, PB1=0]

Reading of data visualizer screenshot (5 pts)



[Figure. Data Visualizer for 2 sec period, 50% duty cycle]

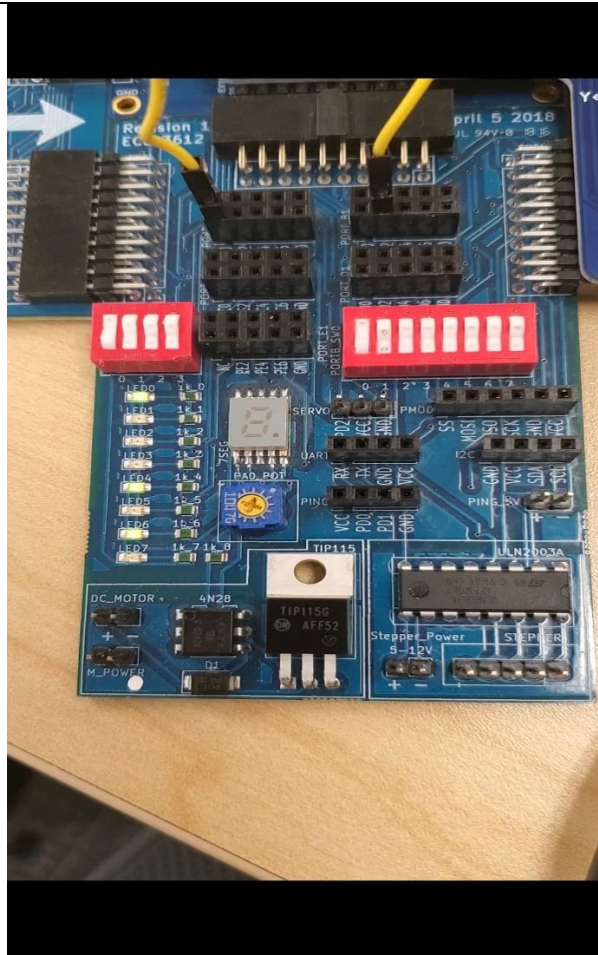
Result video (5 pts)

<https://youtu.be/iloEV52Rp0A?t=50> time stamp (0:50)

- Case 3: PB0=0, PB1=1

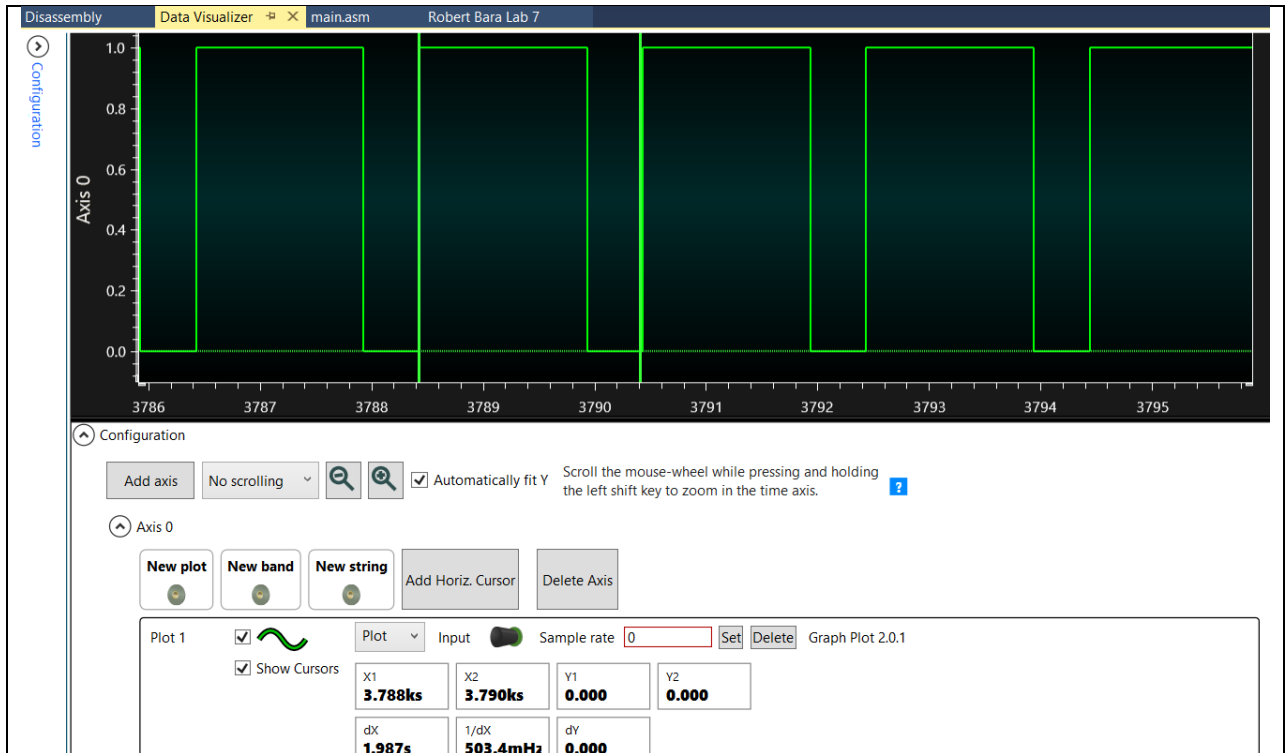
Resulted pictures of input switches (5 pts)





[Figure. LED results PB0=0, PB1=1]

Reading of data visualizer screenshot (5 pts)



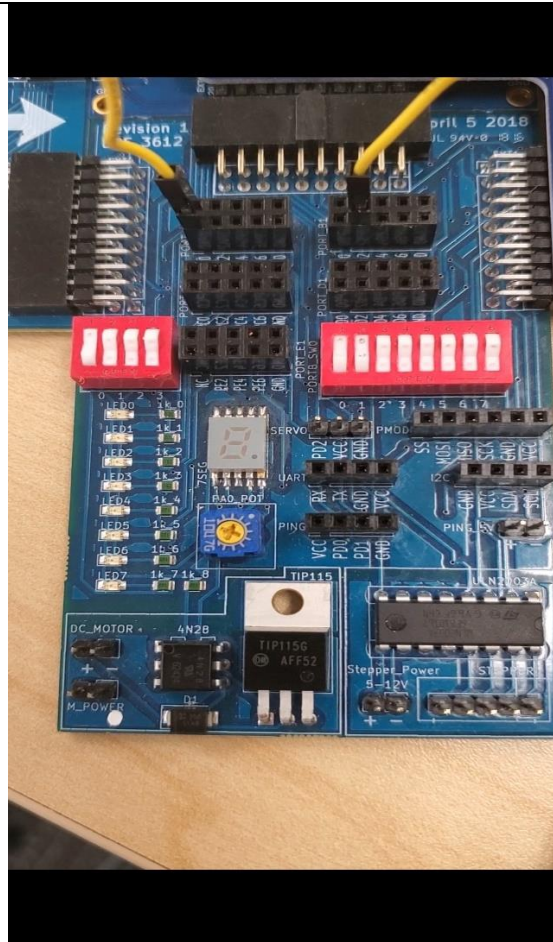
[Figure. Data Visualizer for 2 sec period, 75% duty cycle]

Result video (5 pts)

<https://youtu.be/iloEV52Rp0A?t=84> time stamp (1:27)

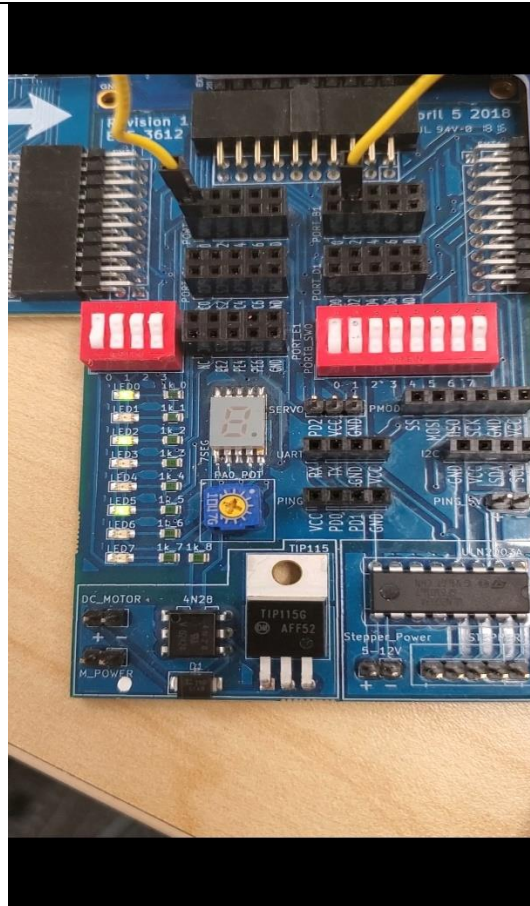
- Case 4: PB0=1, PB1=1

Resulted pictures of input switches (5 pts)



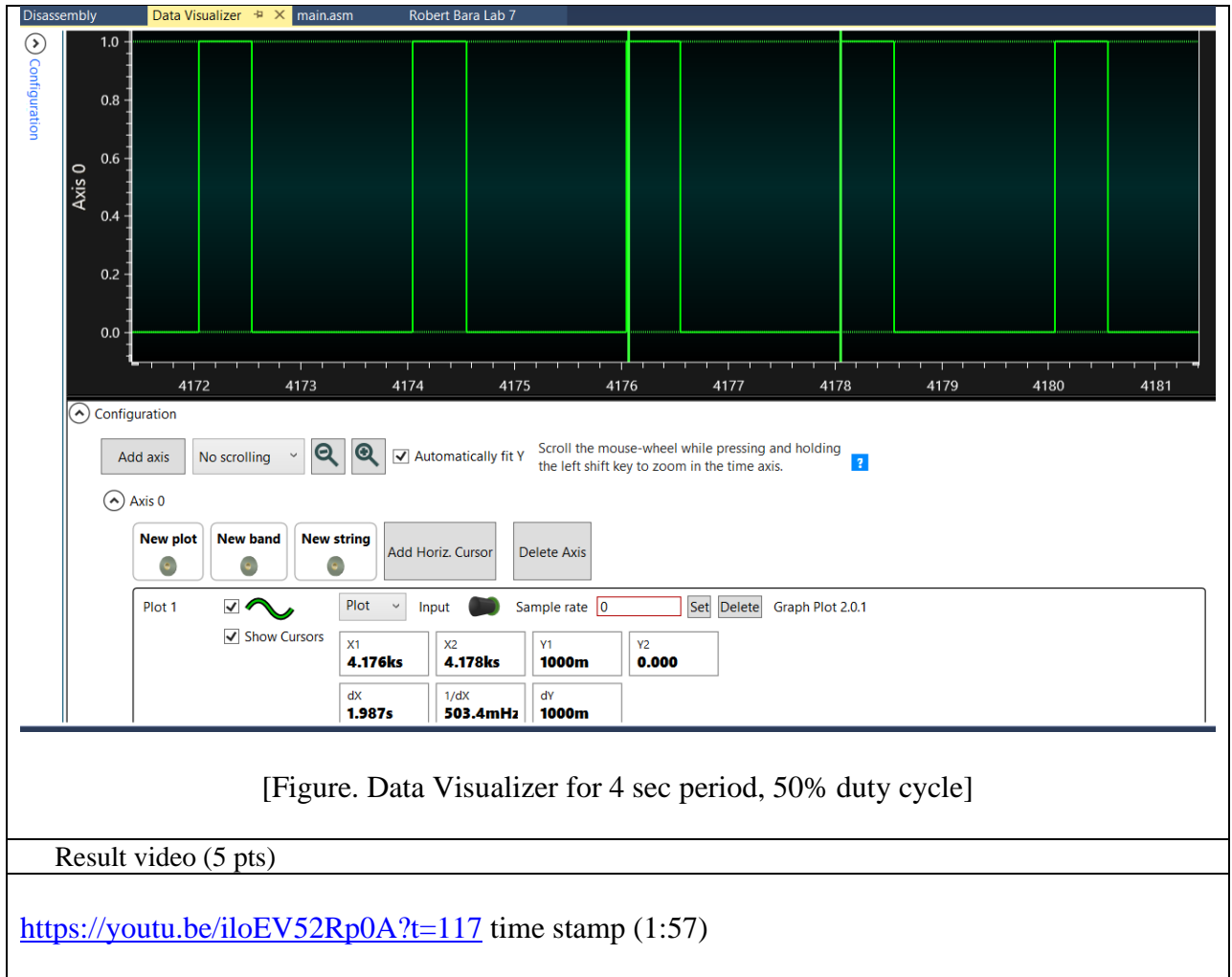
[Figure. Input switches PB0=1, PB1=1]

Output LEDs picture (5 pts)



[Figure. LED results PB0=1, PB1=1]

Reading of data visualizer screenshot (5 pts)



ECE3613 Processor System Laboratory Rubric

Lab #: 7

Section: 01 / 02

Name: _____

| Activity | Task | Full Points | Earned Points | Comment |
|----------|-----------|-------------|---------------|---------|
| 1 | Flowchart | 10 | | |

| | | | | |
|--------------|----------------------|----|--|--|
| | Code and Description | 10 | | Code (5 pts), Comments (5 pts) |
| | Result 1 | 20 | | Resulted pictures of input switches (5 pts), output LEDs (5 pts), and the reading of data visualizer (5 pts), and result video (5 pts) |
| | Result 2 | 20 | | Resulted pictures of input switches (5 pts), output LEDs (5 pts), and the reading of data visualizer (5 pts), and result video (5 pts) |
| | Result 3 | 20 | | Resulted pictures of input switches (5 pts), output LEDs (5 pts), and the reading of data visualizer (5 pts), and result video (5 pts) |
| | Result 4 | 20 | | Resulted pictures of input switches (5 pts), output LEDs (5 pts), and the reading of data visualizer (5 pts), and result video (5 pts) |
| Total | | | | |