

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 # 6

Student Name (print) : Robert Bara

TUId# : 915614617

Date : 10/7/20

Grade : _____ /100

TA Name : Sung Choi

ACTIVITIES:

Activity 2

0.5 second delay code

```
//LED 0 Blinking
LDI R16,HIGH(RAMEND)
OUT SPH,R16
LDI R16,LOW(RAMEND)
OUT SPL,R16

LDI R20, 0xFF
OUT DDRA, R20 ;make PORTA an output port

HERE:
SBI PORTA,0 ;set bit PA0
CALL DELAY ;DELAY before next one
CBI PORTA,0 ;turn on PA1
CALL DELAY ;DELAY before next one
RJMP HERE

//0.1 seconds time delay
DELAY: LDI R20,64
      L1: LDI R21, 200
      L2: LDI R22, 250
      L3: NOP
          NOP
          DEC R22
          BRNE L3
      DEC R21
      BRNE L2
      DEC R20
      BRNE L1
RET
```

1 second delay code

```
//LED 0 Blinking
LDI R16,HIGH(RAMEND)
OUT SPH,R16
LDI R16,LOW(RAMEND)
OUT SPL,R16

LDI R20, 0xFF
OUT DDRA, R20 ;make PORTA an output port

HERE:
SBI PORTA,0 ;set bit PA0
CALL DELAY ;DELAY before next one
CBI PORTA,0 ;turn on PA1
CALL DELAY ;DELAY before next one
RJMP HERE

//0.1 seconds time delay
DELAY: LDI R20,64
      L1: LDI R21, 200
      L2: LDI R22, 250
```

```

L3: NOP
    NOP
    DEC R22
    BRNE L3
DEC R21
BRNE L2
DEC R20
BRNE L1
RET

```

I was checked off by Jeremy in the Lab 10/7/20 at 4:15pm

Activity 3

Part I

Code (Full Comment):

```

//activity 3 PART 1
//INITIALIZING INPUTS AND OUTPUTS
LDI R16, 0X00
OUT DDRB,R16
LDI R17, 0XFF
OUT DDRA, R17
OUT PORTB, R17

//LOADING VALUES TO BE DISPLAYED AS BINARY
LDI R17, 0X01
LDI R18, 0X02
LDI R19, 0X03
LDI R20, 0X04
LDI R21, 0X05
LDI R22, 0X06
LDI R23, 0X07

MAIN: //MONITERING EACH BIT AND LIGHTING UP LEDS FOR BINARY
SBIS PINB,0 ;SKIP IF SW 0 IS OPENED
OUT PORTA, R16

SBIS PINB, 1 ;SKIP IF SW 1 IS OPENED
OUT PORTA, R17 ;DISPLAYING '1'
SBIC PINB, 1 ; SKIP IF SW 0 IS OPENED
OUT PORTA, R16 ;DISPLAYING 0

SBIS PINB, 2 ;SKIP IF SW 2 IS OPENED
OUT PORTA, R18 ;DISPLAYING '2'
SBIC PINB, 2 ; SKIP IF SW 0 IS OPENED
OUT PORTA, R16 ;DISPLAYING 0

SBIS PINB, 3 ;SKIP IF SW 3 IS OPENED
OUT PORTA, R19 ;DISPLAYING '3'
SBIC PINB, 3 ; SKIP IF SW 0 IS OPENED
OUT PORTA, R16 ;DISPLAYING 0

SBIS PINB, 4 ;SKIP IF SW 4 IS OPENED

```

```

OUT PORTA, R20 ;DISPLAYING '4'
SBIC PINB, 4 ; SKIP IF SW 0 IS OPENED
OUT PORTA, R16 ;DISPLAYING 0

SBIS PINB, 5 ;SKIP IF SW 5 IS OPENED
OUT PORTA, R21 ;DISPLAYING '5'
SBIC PINB, 5 ; SKIP IF SW 0 IS OPENED
OUT PORTA, R16 ;DISPLAYING 0

SBIS PINB, 6 ;SKIP IF SW 6 IS OPENED
OUT PORTA, R22 ;DISPLAYING '6'
SBIC PINB, 6 ; SKIP IF SW 0 IS OPENED
OUT PORTA, R16 ;DISPLAYING 0

SBIS PINB, 7 ;SKIP IF SW 7 IS OPENED
OUT PORTA, R23 ;DISPLAYING '7'
SBIC PINB, 7 ; SKIP IF SW 0 IS OPENED
OUT PORTA, R16 ;DISPLAYING 0

RJMP MAIN

```

Result Video Link:

Both parts are uploaded to the same youtube link:

Timestamp (0:00)

https://www.youtube.com/watch?v=95pyv-fZnVM&ab_channel=RobertBara

Part II

Code (Full Comment):

```

//ACTIVITY 3 PART II
//INITIALIZING INPUTS AND OUTPUTS
LDI R16, 0X00
OUT DDRB,R16
LDI R17, 0XFF
OUT DDRA, R17
OUT PORTB, R17

MAIN: //MONITERING EACH BIT AND LIGHTING UP LEDS FOR BINARY
SBIC PINB,0
RJMP CHECK1

SBIS PINB,0
RJMP CHECK2

RJMP MAIN
//CHECKING SW1 IF SW0=0
CHECK1:
    SBIC PINB,1
    CALL OFF

```

```

        SBIS PINB,1
        CALL LED_DOWN
        RJMP MAIN
//CHECKING SW1 IF SW0=1
CHECK2:
        SBIC PINB,1
        CALL LED_UP
        SBIS PINB,1
        CALL OFF
        RJMP MAIN
LED_DOWN:
SBI PORTA,0 ;set bit PA0
CALL DELAY ;DELAY before next one
CBI PORTA,0 ;turn on PA1
CALL DELAY ;DELAY before next one, the rest of the code does this til it reaches pin 7
SBI PORTA,1
CALL DELAY
CBI PORTA, 1
CALL DELAY
SBI PORTA,2
CALL DELAY
CBI PORTA, 2
CALL DELAY
SBI PORTA,3
CALL DELAY
CBI PORTA, 3
CALL DELAY
SBI PORTA,4
CALL DELAY
CBI PORTA, 4
CALL DELAY
SBI PORTA,5
CALL DELAY
CBI PORTA, 5
CALL DELAY
SBI PORTA,6
CALL DELAY
CBI PORTA, 6
CALL DELAY
SBI PORTA,7
CALL DELAY
CBI PORTA, 7
CALL DELAY
RET

```

//THIS WORKS THE SAME WAY AS LED_DOWN BUT IN REVERSE

```

LED_UP:
SBI PORTA,7
CALL DELAY
CBI PORTA, 7
CALL DELAY
SBI PORTA,6
CALL DELAY
CBI PORTA, 6
CALL DELAY
SBI PORTA,5
CALL DELAY

```

```

CBI PORTA,5
CALL DELAY
SBI PORTA,4
CALL DELAY
CBI PORTA, 4
CALL DELAY
SBI PORTA,3
CALL DELAY
CBI PORTA, 3
CALL DELAY
SBI PORTA,2
CALL DELAY
CBI PORTA, 2
CALL DELAY
SBI PORTA,1
CALL DELAY
CBI PORTA, 1
CALL DELAY
SBI PORTA,0
CALL DELAY
CBI PORTA, 0
CALL DELAY
RET
//MAKING ALL LEDS ARE OFF
OFF:
CBI PORTA,0
CBI PORTA,1
CBI PORTA,2
CBI PORTA,3
CBI PORTA,4
CBI PORTA,5
CBI PORTA,6
CBI PORTA,7
RET

//0.5 seconds time delay
DELAY: LDI R20,32
      L1: LDI R21, 100
      L2: LDI R22, 250
      L3: NOP
          NOP
          DEC R22
          BRNE L3
      DEC R21
      BRNE L2
      DEC R20
      BRNE L1
RET

```

Result Video Link:

Timestamp (0:40 for Part II demonstration)

https://www.youtube.com/watch?v=95pyv-fZnVM&ab_channel=RobertBara

ECE3613 Processor System Laboratory Rubric**Lab #: 5****Section: 002 / 003****Name:** _____

Activity	Part	Task	Full Points	Earned Points	Comment
2		0.5 sec delay LED	5		In Lab Activity
		0.5 sec Data Visualizer	5		In Lab Activity
		1.0 sec delay LED	5		In Lab Activity
		1.0 sec Data Visualizer	5		In Lab Activity
Subtotal			20		
3	I	Code	20		
		Video Link	20		
	II	Code	20		
		Video link	20		
Subtotal			80		
Total			100		