LAB REPORT

Lab 07

MUHAMMAD ARHAM KHAN

21701848 - CS

SECTION 06

SPRING 2019

Dated: 15 May, 2019

Program No 1:

```
#Muhammad Arham Khan
#21701848
#Section 6

.text

#void initspi( void)
init_spi:
        # SPI2CONbits.ON = 0;
        lui     $t0, 0xBF80
        ori     $t0, $t0, 0x5A00
        lw      $t1, 0($t0)
        andi    $t1, $t1, 0x7FFF
        sw      $t1, 0($t0)

        #junk = SPI2BUF;
        lui     $t2, 0xBF80
        ori     $t2, $t2, 0x5A20
        lw      $t3, 0($t2)
        sw      $t3, junk

        #SPI2BRG = 7;
        lui     $t3, 0xBF80
        ori     $t3, $t3, 0x5A30
        lui     $t4, 7
        sw      $t4, 0($t3)
```

```
            #SPI2CONbits.MSTEN = 1;
            lw          $t1, 0($t0)
            ori         $t1, $t1, 0x0020
            sw          $t1, 0($t0)

            #SPI2CONbits.CKE = 1;
            lw          $t1, 0($t0)
            ori         $t1, $t1, 0x0100
            sw          $t1, 0($t0)

#while(!SPI2CONbits.SSEN);
while:      lw          $t1, 0($t0)
            andi        $t1, $t1, 0x0080
            beq         $t1, $0, while

            #SPI2CONbits.ON = 1;
            lw          $t1, 0($t0)
            ori         $t1, $t1, 0x8000
            sw          $t1, 0($t0)
            jr          $ra

.data

#char junk
junk        .word 4
```

Program No 2:

```
#Muhammad Arham Khan
#21701848
#Section 6

.text

#int stop = 0;
sw        $0, stop

#int initial  = 0b01110111;
lui       $t1, 0x77
sw        $t1, initial

#int right = 1;
li        $t2, 1
sw        $t2, right

#void main(), TRISD = 0x0;
main:     lui       $t3, 0xBF88
          ori       $t3, $t3, 0x60C6
          sw        $0, 0($t3)

          #TRISA = 0b111;
          lui       $t3, 0xBF88
          ori       $t3, $t3, 0x6000
          lui       $t4, 0x7
          sw        $t4, 0($t3)
```

```
        #PORTD = initial;
        lui     $t3, 0xBF88
        ori     $t3, $t3, 0x60D0
        lw      $t2, initial
        sw      $t2, 0($t3)

#while(1)
while:
        #if(PORTABits.RA1 == 0)

        lui     $t3, 0xBF88
        ori     $t3, $t3, 0x6010
        lw      $t4, 0($t3)
        andi    $t3, $t4, 2

        #if(PORTABits.RA1 == 0)
        beq     $t3, $0, ifPORTABits
        j       whileContinued

# if(PORTABits.RA1 == 0)
ifPORTABits:

    #stop = !stop;
    lw      $t0, stop
    nor     $t0, $t0, $t0
    sw      $t0, stop

    #if(!stop)
    beq     $t0, $0, ifNotStop1
    j       whileContinued
```

```
#if(!stop)
ifNotStop1:

     #PORTD = initial;
     lui        $t3, 0xBF88
     ori        $t3, $t3, 0x60D0
     lw         $t0, initial
     sw         $t0, 0($t3)

     j    whileContinued

#after the first if condition
whileContinued:
     #if(!stop)
     lw         $t0, stop
     beq        $t0, $0, ifNotStop2

     #PORTD = 0b11111111;
     lui        $t3, 0xBF88
     ori        $t3, $t3, 0x60D0
     lui        $t4, 0xFF
     sw         $t4, 0($t3)

     j          delay
```

```
#if(!stop)
ifNotStop2:
     #lsb = PORTD & 0x1;
     lui        $t3, 0xBF88
     ori        $t3, $t3, 0x60D0
     lw         $t4, 0($t3)
     andi       $t5, $t4, 1
     sw         $t5, lsb

     #mask = lsb << 7;
     sll        $t6, $t5, 7
     sw         $t6, mask

     #PORTD = (PORTD >> 1) | mask;
     lw         $t1, 0($t3)
     srl        $t7, $t1, 1
     lw         $t5, mask
     or         $t6, $t7, $t5
     sw         $t6, 0($t3)

     j          delay

delay:
     #delay_ms(1000);
     li $v0, 32
     li $a0, 1000
     syscall

     #while(1)
     j    while
```

```
.data

#int initial, right, stop, lsb, mask
intial:         .word 4
right:          .word 4
stop:           .word 4
lsb:            .word 4
mask:           .word 4
```