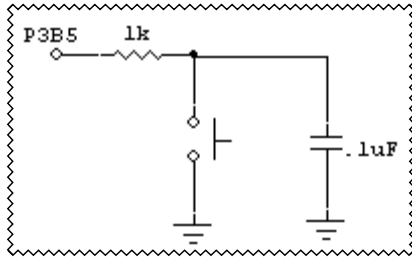


Lab G Timers and Counters

1. Assemble the following circuit:



```

Rep:      MOV      TH0,#00H
          SETB     TR0
          JNB      TF0,Rep
          CLR      TR0
          CLR      TF0
          RET
          END

```

2. Create the following program and add appropriate comments:

```

; Input and Counter Section
          ORG      00H
          AJMP     Main
          ORG      100H
Main:     NOP
Again:    MOV      TMOD,#50H
          SETB     P3.5
          MOV      TL1,#0FCH
          MOV      TH1,#0FFH
          SETB     TR1
Back:     MOV      A,TL1
          MOV      P1,A
;          MOV      A,TH1
;          MOV      P1,A
          JNB      TF1,Back
          CLR      TR1
          CLR      TF1

;Display Section
Display:  NOP
          MOV      R0,#10H
          MOV      A,#80H
          MOV      P1,A
Spin:     RR        A
          MOV      P1,A
          ACALL    Delay
          DJNZ     R0,Spin
          SJMP     Again

;Timer and Delay Section
          ORG      250H
Delay:    NOP
          MOV      TMOD,#01H
          MOV      TL0,#00H

```

3. Calculate the delay in between each shift of the LEDs.

4. Modify the program to count 5 events.

5. The timer seems to be at the maximum count size. Modify the program so that an even longer delay is seen between the LED shifts.

6. Identify the following commands or registers:

TMOD - Timer Mode
TL1 - Timer 1 Low byte
TH1 - Timer 1 High byte
TR1 - Timer 1 (start or stop)
TF1 - Timer flag 1
TL0 - Timer 0 Low byte
TH0 - Timer 0 High byte
TR0 - Timer 0 (start or stop)
TF0 - Timer flag 0