

無題

```
; 4 bit interface with LCD 16x2, using PIC 16F876A
; using PORT B: RB0, RB1 & RB2 as RS, R/W & E line
; using PORT C: RC0, RC0, RC2 RC3 as DB4, DB5, DB6 & DB7
```

```
    __CONFIG H'39B1'      ; set the configuration word
```

```
; ***** Set up the constants *****
```

```
STATUS equ 03h
TRISA  equ 85h
TRISB  equ 86h
TRISC  equ 87h
PORTA  equ 05h
PORTB  equ 06h
PORTC  equ 07h
```

```
COUNT1 equ 20h      ;counter1 for delay loop
COUNT2 equ 21h      ;counter2 for delay loop
COUNT3 equ 22h      ;counter3 for delay loop
COUNT4 equ 23h      ;counter4 for delay loop
COUNT5 equ 24h      ;counter5 for delay loop
COUNT6 equ 25h      ;counter6 for delay loop
COUNT7 equ 26h      ;counter2 for delay loop
COUNT8 equ 27h      ;counter3 for delay loop
```

```
; *****Ports setup *****
```

```
org 00h
bsf STATUS,5      ; shift to Bank1
movlw 00h
movwf TRISB      ; set PortB to output mode
movlw 00h
movwf TRISC
bcf STATUS,5      ; return to Bank0
```

```
; *****Turn the Port pins *****
```

```
Start
    call Delay
    call Init

    movlw 05h
    movwf PORTC
    call Data_control
    call Delay1
    movlw 02h
    movwf PORTC
```

無題

```
        call    Data_control
        call    Delay1

        movlw  03h
        movwf  PORTC
        call   Data_control
        movlw  01h
        movwf  PORTC
        call   Data_control

    call    Loop

; ***** Command & Data Function *****
    Command_control
    movlw  04h
    movwf  PORTB    ; use RB0, RB1, RB2 for RS, R/W, E
    call   Delay1
    movlw  00h
    movwf  PORTB
    return

; ***** Data Function *****

    Data_control
    movlw  05h
    movwf  PORTB    ; use RB0, RB1, RB2 for RS, R/W, E
    call   Delay1
    movlw  01h
    movwf  PORTB
    return

;***** Functions Definitions*****
    Init
        movlw  20h
        movwf  PORTC
        call   Command_control
        call   Delay1

        movlw  00h
        movwf  PORTC
        call   Command_control
        call   Delay1
        movlw  0Fh
        movwf  PORTC
        call   Command_control
        call   Delay1
```

無題

```
return

;***** Delay subroutine - 4mS interval *****
Delay
loop1 decfsz COUNT1,1      ; decrease 1 from 255
goto loop1
loop2 decfsz COUNT2,1      ; decrease 1 from 255
goto loop2
loop3 decfsz COUNT3,1      ; decrease 1 from 255
goto loop3
loop4 decfsz COUNT4,1      ; decrease 1 from 255
goto loop4
loop5 decfsz COUNT5,1      ; decrease 1 from 255
goto loop5
loop6 decfsz COUNT6,1      ; decrease 1 from 255
goto loop6
loop7 decfsz COUNT7,1      ; decrease 1 from 255
goto loop7
loop8 decfsz COUNT8,1      ; decrease 1 from 255
goto loop8
return

;***** Delay1 subroutine - 1.5mS interval *****
Delay1
loop9 decfsz COUNT1,1      ; decrease 1 from 255
goto loop9
loop10 decfsz COUNT2,1     ; decrease 1 from 255
goto loop10
return

Loop
loop13 decfsz COUNT1,1     ; decrease 1 from 255
goto loop13
incfsz COUNT1,1           ; decrease 1 from 255
goto loop13
return

end ; end of the program
```