

'-----Title-----

```
' File.....shift1.pbp
' Started....5/21/08
' Microcontroller used:  Microchip Technology PIC16F88
'                          microchip.com
' PicBasic Pro Code:  micro-Engineering Labs, Inc.
'                          melabs.com
```

'-----Program Description-----

```
' Program uses the shift left operator, <<, to shift
' variable to the left 1 time (same as multiply by 2).
' Both decimal and binary values are displayed on an LCD.
```

'-----PIC Connections-----

16F88 Pin	Wiring
RA0	LCD pin 11(DB4)
RA1	LCD pin 12(DB5)
RA2	LCD pin 13(DB6)
RA3	LCD pin 14(DB7)
RA4	LCD Register Select(RS)
RB3	LCD Enable(E)
Vdd	+5 V
Vss	Ground
MCLR	4.7K Resistor to +5 V

'-----LCD Connections-----

LCD Pin	Wiring
1	Ground(Vss)
2	+ 5v(Vdd)
3	Center of 20K Pot(Contrast)
4	RA4(Register Select,RS)
5	Ground(Read/Write,R/W)
6	RB3(Enable)
7	No Connection(DB0)
8	No Connection(DB1)
9	No Connection(DB2)
10	No Connection(DB3)
11	RA0(DB4)
12	RA1(DB5)
13	RA2(DB6)
14	RA3(DB7)

'-----Variables-----

```
  i    VAR    BYTE    ' BYTE to store counter variable, i
  s0   VAR    BYTE    ' BYTE to store shift variable, s0
```

'-----Initialization-----'

```
ANSEL = 0           ' Configure all pins to digital
                    ' operation since not using ADC
                    ' (Analog to Digital Converter)

OSCCON = $60        ' Sets the internal oscillator in the
                    ' 16F88 to 4 MHz
```

'-----Main Code-----'

loop:

```
s0 = 3              ' Start out with s0 = 1

FOR i = 1 TO 7      ' Cycle through FOR..NEXT loop 7 times

LCDOUT $fe,1,"Decimal ",DEC s0
                    ' Display decimal value of s0 on first
                    ' line of LCD

LCDOUT $fe,$C0,"Binary ", "%",BIN s0
                    ' Display binary value of s0 on second
                    ' line of LCD

PAUSE 2000         ' Pause 2000 ms or 2 seconds

s0 = (s0<<1)       ' Shift left operator shifts value of
                    ' s0 to left 1 time (same as multiply by 2).
                    ' The new bits that are shifted in are set
                    ' to 0.

NEXT i             ' Go back to the FOR statement and do
                    ' next count

GOTO loop          ' Loop forever

END
```