

;ColorRotate Using Rotate Bits: This version creates color triangles using RGB instead of data lines.
 ;Data lines (A3-A0 & B7-B0) are scanned one after the other with shift left. (i.e: 0000 0000 0001 =>
 0000 0000 0010)

```
list      p=16F628A
#include <p16F628A.inc>
```

```
_CONFIG _CP_OFF & _WDT_OFF & _PWRTE_ON & _INTOSC_OSC_NOCLKOUT & _LVP_OFF
errorlevel -302      ; supress banksel warning messages during assembly
errorlevel -311      ; supress HIGH operator warning messages during assembly
errorlevel -305
radix    dec          ;if numbers are not identified default to decimal system
```

```
cblock0x20
    LoopCount
    FrameCount
    ColorCount
    Loop_Speed
    Frame_Speed
    Color1
    Color2
    Color3
    Col1
    Col2
    Col3
    C1
    C2
    C3
    LHigh
    LLow
```

```
endc
#define bank0 bcf STATUS,RP0
#define bank1 bsf STATUS,RP0
RESET_VECTOR org 0x000
```

```
-----
;                               Macros                               |
;-----
```

```
Paint macro Col1,Col2,Col3
    movlw Col1<<4      ;user provided colors
    movwf Color1        ;are read and placed
    movlw Col2<<4      ;in left 4 bits of each
    movwf Color2        ;color variable
    movlw Col3<<4      ;at later time added to
    movwf Color3        ;PORTA portion of data line
    call Animate        ;main program
    call Animate        ;is called 3 times
    call Animate        ;to loop the same colors 3 times
endm                    ;before user provides 3 new colors
```

```
-----
```

```

;          Main Code Starts Here          |
;-----
START
    movlw b'00000111'      ;Set all ports as outputs
    movwf CMCON             ;Disable comparators
    bank1
    clrf TRISA
    clrf TRISB
    bank0
;-----
    movlw d'10'
    movwf Loop_Speed
    movlw d'40'
    movwf Frame_Speed
Sequence
    call  MegaColor
    goto  Sequence
;-----
;          Color Entries          |
;-----
MegaColor
    Paint b'0001',b'0100',b'1000' ;User provides 3 colors to rotate 3 times
    Paint b'0001',b'0101',b'0100' ;then select 3 new colors and repeat
    Paint b'0001',b'0001',b'0101' ;comment all the lines except one
    Paint b'0001',b'0100',b'0100' ;to loop the same colors over
    Paint b'0001',b'1000',b'0001' ;color choices are:
    Paint b'0001',b'0001',b'1000' ;0001=red, 0101=yel, 0100=green
    Paint b'0001',b'1001',b'1000' ;1100=aqua, 1000=blue, 1001=magenta
    Paint b'0001',b'1001',b'1001' ;1101=white, 0000=black
    Paint b'0001',b'0001',b'1001'
    Paint b'0101',b'0101',b'0001'
    Paint b'0101',b'0101',b'0100'
    Paint b'0101',b'0101',b'1100'
    Paint b'0101',b'0101',b'1000'
    Paint b'0101',b'0101',b'1001'
    Paint b'0101',b'1001',b'1100'
    Paint b'0101',b'0100',b'1100'
    Paint b'0101',b'1001',b'1001'
    Paint b'0101',b'1101',b'0001'
    Paint b'0101',b'1101',b'0100'
    Paint b'0101',b'1101',b'1000'
    Paint b'0100',b'1101',b'1000'
    Paint b'0100',b'1000',b'1000'
    Paint b'0100',b'0100',b'1000'
    Paint b'0100',b'1100',b'1000'
    Paint b'0100',b'1100',b'1100'
    Paint b'0100',b'1101',b'1100'
    Paint b'0100',b'1001',b'1001'
    Paint b'0100',b'0100',b'0101'

```

```

Paint    b'0100',b'0100',b'1100'
Paint    b'0100',b'0100',b'1001'
Paint    b'1000',b'1001',b'0001'
Paint    b'1000',b'1001',b'1001'
Paint    b'1000',b'1101',b'0001'
Paint    b'1000',b'1100',b'1100'
Paint    b'1000',b'1101',b'1001'
Paint    b'1001',b'1001',b'1101'
Paint    b'1001',b'0101',b'1101'
Paint    b'1001',b'1001',b'0100'
Paint    b'1001',b'1001',b'1100'
Paint    b'1001',b'1101',b'1100'
Paint    b'0001',b'0000',b'0000'
Paint    b'0101',b'0000',b'0000'
Paint    b'0100',b'0000',b'0000'
Paint    b'1100',b'0000',b'0000'
Paint    b'1000',b'0000',b'0000'
Paint    b'1001',b'0000',b'0000'
;
        return
;-----
;               Main Program Engine               |
;-----
Animate
        movlw b'00000001'
        movwf LLow
        movlw b'00000000'
        movwf LHigh
;-----
        movlw d'12'
        movwf FrameCount
FR
        movfw Frame_Speed
        movwf LoopCount
LC
        call    ColorPut1
        call    Colorset1
        call    Rotate_Bits
        call    Colorset2
        call    Rotate_Bits
        call    Colorset3
        call    Rotate_Bits
        call    Colorset4
        call    Rotate_Bits
        call    ColorPut2
        call    Colorset1
        call    Rotate_Bits
        call    Colorset2
        call    Rotate_Bits

```

```

call    Colorset3
call    Rotate_Bits
call    Colorset4
call    Rotate_Bits
call    ColorPut3
call    Colorset1
call    Rotate_Bits
call    Colorset2
call    Rotate_Bits
call    Colorset3
call    Rotate_Bits
call    Colorset4
call    Rotate_Bits
decfsz  LoopCount,F
goto    LC
call    Rotate_Bits
decfsz  FrameCount,F
goto    FR
return

```

```

;-----

```

```

Rotate_Bits
    clrc
    btfsc  LHigh,3
    setc
    rlf    LLow,F
    rlf    LHigh,W
    andlw  b'00001111'
    movwf  LHigh
    return

```

```

;-----

```

```

ColorPut1
    movfw  Color1
    movwf  C1
    movfw  Color2
    movwf  C2
    movfw  Color3
    movwf  C3
    return

```

```

;-----

```

```

ColorPut2
    movfw  Color2
    movwf  C1
    movfw  Color3
    movwf  C2
    movfw  Color1
    movwf  C3
    return

```

```

;-----

```

```

ColorPut3

```

```

movfw Color3
movwf C1
movfw Color1
movwf C2
movfw Color2
movwf C3
return

```

```

;-----
Colorset1

```

```

    movfw Loop_Speed
    movwf ColorCount

```

```
CC1
```

```

    movfw C1
    addwf LHigh,0
    movwf PORTA
    movfw LLow
    movwf PORTB
    movfw C1
    addwf LHigh,0
    movwf PORTA
    movfw LLow
    movwf PORTB
    movfw C1
    addwf LHigh,0
    movwf PORTA
    movfw LLow
    movwf PORTB
    movfw C1
    addwf LHigh,0
    movwf PORTA
    movfw LLow
    movwf PORTB
    decfsz ColorCount,F
    goto    CC1
    return

```

```

;-----
Colorset2

```

```

    movfw Loop_Speed
    movwf ColorCount

```

```
CC2
```

```

    movfw C2
    addwf LHigh,0
    movwf PORTA
    movfw LLow
    movwf PORTB
    movfw C1
    addwf LHigh,0
    movwf PORTA
    movfw LLow

```

```

movwf PORTB
movfw C1
addwf LHigh,0
movwf PORTA
movfw LLow
movwf PORTB
movfw C1
addwf LHigh,0
movwf PORTA
movfw LLow
movwf PORTB
decfsz ColorCount,F
goto CC2
return

```

Colorset3

```

movfw Loop_Speed
movwf ColorCount

```

CC3

```

movfw C2
addwf LHigh,0
movwf PORTA
movfw LLow
movwf PORTB
movfw C2
addwf LHigh,0
movwf PORTA
movfw LLow
movwf PORTB
movfw C1
addwf LHigh,0
movwf PORTA
movfw LLow
movwf PORTB
movfw C1
addwf LHigh,0
movwf PORTA
movfw LLow
movwf PORTB
decfsz ColorCount,F
goto CC3
return

```

Colorset4

```

movfw Loop_Speed
movwf ColorCount

```

CC4

```

movfw C2
addwf LHigh,0

```

```
movwf PORTA
movfw LLow
movwf PORTB
movfw C2
addwf LHigh,0
movwf PORTA
movfw LLow
movwf PORTB
movfw C2
addwf LHigh,0
movwf PORTA
movfw LLow
movwf PORTB
movfw C1
addwf LHigh,0
movwf PORTA
movfw LLow
movwf PORTB
decfsz ColorCount,F
goto CC4
return
```

```
;-----
end
```