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' dc_enc (PIC16F84 microcontroller)

' Design Example
' Position and Speed Control of a dc Servo Motor.

' Slave program to send encoder data, upon request, to the a PIC16F88
' microcontroller running dc_motor.bas


' Define I/O pin names and constants
enc_start Var PORTA.0   ' signal line used to start encoder data transmission
enc_serial Var PORTA.1  ' serial line used to get encoder data from the 16F84
enc_sel Var PORTA.2     ' encoder data byte select (0:high 1:low)
enc_oe Var PORTA.3      ' encoder output enable latch signal (active low)
led Var PORTA.4         ' diagnostic LED (open drain output: 1:OC, 0:ground
enc_mode Con 2          ' 9600 baud mode for serial connection to encoder IC
blink_pause Con 200     ' 1/5 second (200 ms) pause between LED blinks

' Turn off the diagnostic LED
High led

' Wait to ensure the PIC16F88 is initialized
PAUSE 500

' Initialize I/O signals
High enc_oe             ' disable encoder output
Low enc_sel             ' select the encoder counter high byte initially
                        '   (to prevent transparent latch on low byte)

' Blink the LED to indicate proper operation
Gosub blink : Gosub blink : Gosub blink

' Send dummy byte (66) to ensure proper communication
SEROUT enc_serial, enc_mode, [66]


' Main loop
start:
    ' Wait for the start signal from the PIC16F88 to go high
    While (enc_start == 0) : Wend

    ' Enable the encoder output (latch the counter values)
    Low enc_oe

    ' Send out the high byte of the counter
    SEROUT enc_serial, enc_mode, [PORTB]

    ' Wait for the start signal from the PIC16F88 to go low
    While (enc_start == 1) : Wend

    ' Send out the low byte of the counter
    High enc_sel
    SEROUT enc_serial, enc_mode, [PORTB]

    ' Disable the encoder output
    High enc_oe
    Low enc_sel
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goto start  ' wait for next request

End         ' end of main program (not reached)


' Subroutine to blink the speed control indicator LED
blink:
      Low led
      Pause blink_pause
      High led
      Pause blink_pause
Return
```