```
;     FILENAME:    card_reader.asm
;     TITLE:       Card Reader/Transmitter
;     HARDWARE:    PICDEM-2 board
;     FREQUENCY:   8MHz
;
;*************************************************************
; This program transmits, via RS232, data received from a magnetic
; strip card reader.  The reader can scan track 1 or track 2 on
; the card.  7 bit data is read from track 1 and 5 bit data is
; read from track 2 serially for each character.  Additional
; circuitry converts the data to parallel and places it on
; Port A.  A low going pulse is applied to Port B bit 0 when the
; paralell data is ready to be transmitted.  An interrupt is
; generated by the transition on Port B b0.  The controller
; loads the transmit buffer, TXREG, with the data from Port A.
; That data word is immediately transmitted at the selected
; baud rate.  This is repeated until all  read data is transmitted.
; Port C bit 0 is used as a status bit which is set while data is being
; transmitted and then cleared. It should be toggling while data
; is transmitted.
;
; Port B bit 0 is used to generate the interrupt.
; Port c bits 6 and7 are used for TX and RX for the
; RS232 communication.
;
; Set terminal program to 9600 baud, 1 stop bit, no parity

      list p=18f2420    ; set processor type
      list n=0          ; supress page breaks in list file
      include <P18f2420.INC>

;*************************************************************
; Reset and Interrupt Vectors

      org   00000h      ; Reset Vector
      goto  Start

      org   00008h      ; Interrupt vector
      goto  IntVector

;*************************************************************
; Program begins here

      org   00020h      ; Beginning of program EPROM
Start

      movlw       b'00001111' ; Assign all of PORTA as digital i/o
      movwf       ADCON1      ; Vref= Vss to Vdd, not AN2 and AN3
      movlw       b'01110010' ; SET SYSTEM CLOCK TO 8 MHZ
      movwf       OSCCON
      setf        TRISA       ; Config PORTA as inputs
      setf        TRISB       ; Config PORTB as inputs
      bsf         TRISC,6     ; Make RC6 an input; EUSART will change
                              ; it as needed
      bsf         TRISC,7     ; Make RC7 an input; EUSART will change
                              ; it as needed
      bcf         TRISC,0     ; Use as transmit status monitor output;
                              ; toggles during transmission
      movlw       33h         ; 33h for 9600 baud @8MHz; 19h for 19200
                              ; baud @8Mhz
```

```
      movwf       SPBRG

      bsf         TXSTA,TXEN  ; Enable transmit
      bsf         TXSTA,BRGH  ; Select high baud rate
      bsf         RCSTA,SPEN  ; Enable Serial Port
      bcf         INTCON2,INTEDG0   ; Interrupt on falling edge
      bsf         INTCON,INT0IE     ; Enable INT0 interrupt on RB0

      bsf         INTCON,PEIE       ; Enable peripheral interrupts
      bsf         INTCON,GIE        ; Enable global interrupts

;*********************************************************
; Main loop

Main
      goto  Main  ; loop
;*********************************************************
; Interrupt Service Routine

IntVector
      bcf         INTCON,INT0IF     ; Clear flag
      bsf         LATC,0            ; set PortC,0 high to
                                    ; indicate start transmit
      movff       PORTA, TXREG      ; Move data word byte into
                                    ; TXREG for transmit
TXStat
      btfss       TXSTA,TRMT        ; Is TSR empty yet?
      goto        TXStat            ; no, wait
      goto        ISREnd            ; yes, finish
ISREnd
      bcf         LATC,0            ; Clear PortC,0; end of transmit
      retfie

      end
```