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' I2CREAD and I2WRITE Commands
'
' Write to the first 16 locations of an external serial EEPROM
' Read first 16 locations back and send to serial out repeatedly
' Note: for EEPROMS with byte-sized address
'       : SCK connected via 2K pulled high
'       : SDI connected via 2K pulled high
'       : A0:A2 connected to ground
'       : WP connected to ground

' =====
' DEVICE PROGRAMMING OPTIONS
' =====

@ DEVICE PIC16F88, WDT_ON
@ DEVICE PIC16F88, HS_OSC
@ DEVICE PIC16F88, BOD_ON
@ DEVICE PIC16F88, PROTECT_OFF
@ DEVICE PIC16F88, MCLR_ON
@ DEVICE PIC16F88, CCPMX_OFF

DEFINE LOADER_USED 1           ' Here we are using Tiny Bootloader to load program
' =====
' SET USART PARAMS
' =====

DEFINE HSER_RCSTA 90h           ' Set receive register to receiver enabled
DEFINE HSER_TXSTA 20h           ' Set transmit register to transmitter enabled
DEFINE HSER_BAUD 4800           ' Set baud rate
DEFINE HSER_SPBRG 64           ' Set SPBRG directly (normally set by HSER_BAUD)

' =====
' SET I2C PARAMS
' =====
DEFINE I2C_SLOW 1 'Use for >8MHz OSC with standard speed devices
DEFINE I2C_SDA PORTB,1 'Data pin for I2C (12-bit core only)
DEFINE I2C_SCL PORTB,4 'Clock pin for I2C (12-bit core only)
SSPSTAT.7=0
SSPSTAT.6=0
SSPCON.5=1
SSPCON.4=1
SSPCON.3=1
SSPCON.2=0
SSPCON.1=1
SSPCON.0=1

' =====
' SET OSCILLATOR
' =====
DEFINE OSC 20

' =====
' CONFIGURE COMPARATOR MODULE
' =====
CMCON = 7                       ' TURN ANALOG COMPARATOR MODE OFF
'ANSEL = 0                       ' TURN ANALOG TO DIGITAL TO DIGITAL

' =====
' PROGRAM VARS
' =====
SO      CON      0              ' Define serial output pin
CPIN    VAR      PORTB.4        ' I2C clock pin
DPIN    VAR      PORTB.1        ' I2C data pin
CTRL    VAR      BYTE
B0      VAR      WORD
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B1      VAR      BYTE
B2      VAR      BYTE

' =====
'  START
' =====

HSEROUT["Write to I2C.",13,10,"Press space to continue",13,10]
HSERIN [WAIT(" ")]
CTRL = %101000000                                ' Control Byte for Write
FOR B0 = 0 TO 15                                    ' Loop 16 times
    I2CWRITE DPIN,CPIN,CTRL,B0,[B0]                ' Write each location's address to
itself
    PAUSE 10                                         ' Delay 10ms after each write
    HSEROUT [#B0," "]
NEXT B0

PAUSE 1000

HSEROUT[13,10,"Read from I2C.",13,10,"Press space to continue",13,10]
HSERIN [WAIT(" ")]

CTRL = %101000001                                ' Control Byte for read
FOR B0 = 0 TO 15 STEP 1
    I2CREAD DPIN,CPIN,CTRL,B0,[B1]                 ' Read data location
    HSEROUT [#B1," "]                             ' Send data to Serial Port
NEXT B0

HSEROUT[13,10,"I2C Write and Read Test Completed."]

STOP
END
```