C - MORE ABOUT INCLUDE FILES

Sometimes it is desirable to place a function or perhaps a variable declaration(s) in an include file where it may be accessed for use by other programs as they are developed. This is easily accomplished by creating a source file in the usual way.

In this example, I created a function which necessitated having a variable declared ahead of the program in which it is used. The program contains a function which is general-purpose in nature. I can either remember to declare the variable ahead of the program or put it in an include file and remember to include it in any future program which uses the function.

In this case, the include file is simply:

```
char msg[9];                          //declare string array
```

The file name is :

```
      CNs22dincl.c
```

The #include pre-processor directive is placed at the beginning of the file containing the function:

```
#include <CNs22dincl.c>             //declare string array


////LCD test            ala CNs20   CNs22d                9/1/09
//send character string to first/left half of 1x16 LCD
//string array declared in include file (compiler encounters it ahead of
//   display function)
#include <16F84A.h>
#fuses XT,NOWDT,PUT,NOPROTECT       //standard crystal XT, watchdog timer
                                    //    disabled, power-up timer on,
                                    //    code protection off
#use delay (clock=4mhz)
#define E PIN_A1
#define RS PIN_A2

#include <CNs22dincl.c>             //declare string array

pulse()
   {
   output_high(E);                  //pulse E line
   delay_cycles(1);                 //delay while high
   output_low(E);                   //pulse E line
   delay_cycles(125);               //delay
   return;
   }
```

```
initlcd()
   {
   output_low(E);                    //E line low
   output_low(RS);                   //RS line low, set up for control
   delay_cycles(125);                //delay 125 microseconds
   output_b (0x38);                  //0011 1000, 8-bit, 5x7
   pulse();                          //pulse and delay
   output_b (0x0c);                  //0000 1100, display on, cursor off
   pulse();                          //pulse and delay
   output_b (0x01);                  //0000 0001, clear display
   pulse();                          //pulse and delay
   delay_ms(5);                      //delay 5 milliseconds after initialize
   return;
   }

display(BYTE posit, char msg[9])
   {
   int pmsg = 0;                     //declare index to string

   output_low(E);                    //E line low
   output_low(RS);                   //RS line low, set up for control
   delay_cycles(125);                //delay 125 microseconds
   output_b(posit);                  //control word = address first half
   pulse();                          //pulse and delay

   output_low(E);                    //E line low
   output_high(RS);                  //RS line high, set up for data
   delay_cycles(125);                //delay 125 microseconds
   while (msg[pmsg] != 0)            //stop when null detected
      {
      output_b(msg[pmsg]);
      pulse();
      pmsg++;
      }
   return;
   }

main()
{
   set_tris_a (0x00);                //port A outputs
   set_tris_b (0x00);                //port B outputs
   output_a (0x00);                  //clear port A
   output_b (0x00);                  //clear port B
   delay_ms(5);                      //allow lcd time to initialize itself
   initlcd();                        //call initialize LCD function
   strcpy (msg, "first 8 ");         //load string array
   display(0x80, msg);               //call function to send 8 characters to
                                     //   first half of display
   while (TRUE);                     //circle, always
}
```

The include file CNs22dincl.c contains:

```
char msg[9];                          //declare string array
```