UNCC, Department of Electrical and Computer Engineering
ECGR4101/5101/6090, Fall 2004, Homework #5, Due: 10/4/04, at the beginning of class (20 points)

You will need to refer to the M16C/20/60 Software Manual, the M16C26 Hardware Manual and M16C C Language Programming Manual to complete this assignment. They are available online through the Documentation contained in the SKP16C26 directories link on the course home page.

0. How long did this homework take you?

1. What is the symbol for the register for I/O Port 10 bit 0, as defined in the Hardware Manual?

2. What is the symbol for the register for I/O Port 10, as defined in the Hardware Manual, and what is the address of that register?

3. What is the symbol for the data direction register for I/O Port 1 bit 7, as defined in the Hardware Manual?

4. What is the symbol for the data direction register for I/O Port 1, as defined in the Hardware Manual, and what is the address of that register?

5. Write the lines of C code needed to configure port 6 so the even-numbered bits are inputs and the odd-numbered bits are outputs (no pull-up resistors are needed). Use the symbols defined in sfr262.h, which are slightly different from the ones in the Hardware Manual. Start with:
    `#include "sfr262.h"`

6. Write pseudocode to describe how capitalize all the lower-case vowels (not including y) in a string S and convert spaces to dashes. Do not use any function calls.

7. Write a C function to implement the pseudocode of the previous question. Assume:
    `char S[80]; /* the string */`

8. Clean up the following C function (for converting temperature to Celsius from Fahrenheit) to meet coding guidelines of lecture 9. Assume that valid values of i range from -40 to 250. If this value is not valid, return the value TEMP_ERROR.
    ```
    int fc(int i) {
         int r;
         r = (i-32)*5.0/9.0;
         return r;
         }
    ```
    a. Change(s) needed to meet 1.1:
    b. Change(s) needed to meet 1.2:
    c. Change(s) needed to meet 8.1:
    d. Change(s) needed to meet 5.1: