HAL: The Innocent Calculator, that someday evolves to rule humanity
ESE 116 Spring 2008, Homework 1

Due 10:45am Tuesday 2/12/2008 (Late date is always 24 hrs later)

If you downloaded the code before Friday 4:00, please ignore any references to global variables made in the code comments. These features were removed before the HW was published.

Files:

- hal.c (to be completed / submitted)
- hal.h (needed for hal.c to compile)
- sample_output.txt (sample output of a working program)

Purposes of this assignment:

To practice:

- Working with C functions, function calls, and return values
- Working with C integers and characters
- Using the printf function
- Using if and switch statements
- Using the necessary tools to write Skynet someday

Important Notes:

- Homework assignments should be done alone. Help is available via the bulletin board and office hours.
- Please be respectful of the TAs' time and refrain from emailing them individually. The TA's take turns answering questions on the bulletin board. Please ask questions on the bulletin board or bring them to office hours.
- At the top of the Content page, read the posted Homework Submission and Policy Information
- At the top of the Content page, see the link to use for submitting homework.
- We highly recommend that you **test your program on Eniac before turning it in**. There can sometimes be differences between your home setup and the Eniac cluster that can cause errors in your code while grading.
- There are special preprocessor directives in your code, **#ifndef** and **#endif**, that surround the functions that we have provided. These are necessary for grading purposes, please do not modify them.

Overview:

In this first assignment, you will contribute to the development of HAL, the innocent calculator that

someday evolves to rule humanity. Your contribution to the project will exercise your skills in basic C function construction, C integers and characters, the use of if statements, function return values, and case/select statements.

The file **hal.c** contains two functions that you will have to complete, get_user_input() and calc_result():

- The **get_user_input()** function will prompt a user for the operands and operators necessary to run a calculation
  - The documentation above the get_user_input() function in the hal.c file contains detailed instructions on the input format we expect. Also, in order for the program to loop properly, the function must return correct values. Please fill out the function as specified.
  - You will not be dealing with terminal input directly, we have wrapped the terminal input into the functions get_integer_from_terminal() and get_character_from_terminal() which we have provided for you.
- The **calc_result()** function takes two operands and an operator, and calculates the result accordingly
  - Again, documentation for the expected output of calc_result() is included in the hal.c file.
  - You are required to use a switch statement to complete this function.

To compile your code to a binary executable called 'hal', type in the following at the command line, assuming your hal.c and hal.h files are in your current working directory:

```
gcc -Wall hal.c -o hal
```

The '-Wall' flag will print out all warnings that the compilation generates. It is highly recommended that you eliminate warnings in your coding, as warnings can often lead to undefined behavior in your programs.

After executing the code above, the following line can be used to execute your program:

```
./hal
```

We have also included some sample output from a working version of the program to demonstrate how your program should operate once completed.
To kill the foreground process in the terminal, hit (CTRL+C). This might come in handy if you need to kill a program you are testing.
