CS 2250 **Data Structures and Problem Solving**
Assignment # 2 Due Date: March 01, 2007

Structures and Unions

Create a directory `$USER.2` in your home. Keep all programs and datafiles for this assignment in this directory. Do each of the assigned programs in a separate directory within this directory. After you are done with the assignment, remove the executables, and execute the following commands on admiral:

```
% cd
% ~sanjiv/bin/handin cs2250 2
```

Submit all the code, any header files, and `Makefile`s on a hard copy as well in class.

For these programs, you can create your own data files. Design your data files well and in a README file, discuss your reasons to split a data file into multiple files based on their fields, or why you kept all the fields in the same file. Remember, if you have more than one entry on the same key, the essential properties are better off in the second file. For example, if I keep a list of all my students, the class they are enrolled in, and their phone number, I am better off keeping two files such that one file contains the student name and the classes he/she is in while the second file contains the student name and the phone number. In this way, if the phone number of a student changes, I have to change only one entry, minimizing the chances of losing data integrity.

1. Write a menu-driven, interactive program that tracks inventory for a grocery store. The program uses a structure whose members represent the following: the current month, an item's name, unique identification code, actual quantity in stock for the current month, desired quantity in stock for the current month, cost, price, supplier, shelf life, average monthly volume, and sales total in dollars for the current month. The store carries at least 20 items. The program prompts the user to make one of five choices:

   ```
   0.  Exit
   1.  Item Sale
   2.  Daily Report
   3.  Weekly Check
   4.  Monthly Update
   ```

   If the user picks `1`, the program prompts for an item's unique identification number and the quantity sold. The program then updates the associated structure members (e.g., the program decrements the actual quantity in stock and increments monthly sales total). If the user picks `2`, the program generates a report that prints each item's unique identification number, name, and current sales total. If the user picks `3`, the program determines whether any item is in low supply and issues a warning message for every such item. An item is in low supply if its actual quantity in stock falls below its desired quantity in stock. If the user picks `4`, the program prompts for the current month (a character string), the actual quantity in stock, and the desired quantity in stock. The program then updates the appropriate structure variables (e.g., it sets monthly sales total to zero). Finally, if the user picks 0, the program terminates.

2. A company keeps a list of its suppliers, with a record for each supplier that gives the supplier's name, unique code, and address. It keeps a separate list of parts that it purchases, with a record for each part that gives the part's name, unique code, size, weight, and color, as well as a list of at most three suppliers that supply the part. Write a program that enables the purchasing agent to enter a part's unique code and then to receive a list of the suppliers who supply the part.