Helwan University

Programming Language I
(Spring 2016)

Sheet 5: Struct, and Files

1. Write a program to read names and phone numbers into a structure array. Request a name and print the person's phone number. Use any type of search to look up the name.
2. Declare a structure which contains the following information:
   - The name of employee.
   - The salary in pound.
   - The age.
   - Number of years in the company.

   Read the information for 5 users, and then Display the average, Max, Min of salary for the five employees.
3. Write a function that, given two date structures, d1 and d2, returns -1 if d1 comes before d2, 0 if d1 is the same as d2, and 1 if d1 comes after d2.
4. A time in 24-hour clock format is represented by two numbers; for example, 16 45 means the time 16:45: that is, 4:45 p.m.
   a. Using a structure to represent a time, write a function that, given two time structures, t1 and t2, returns the number of minutes from t1 to t2. For example, if the two given times are 16 45 and 23 25, your function should return 400.
   b. Modify the function so that it works as follows: if t2 is less than t1, take it to mean a time for the next day. For example, given the times 20:30 and 6:15, take this to mean 8.30 p.m. to 6.15 a.m. of the next day. Your function should return 585.
5. A length, specified in meters and centimeters, is represented by two integers. For example, the length 3m 75cm is represented by 3 75. Using a structure to represent a length, write functions to compare, add, and subtract two lengths.
6. A file contains the names and distances jumped by athletes in a long-jump competition. Using a structure to hold a name and distance (which is itself a structure as in Exercise 5), write a program to read the data and print a list of names and distance jumped in order of merit (best jumper first).
7. A data file contains registration information for six courses – CS20A, CS21A, CS29A, CS30A, CS35A, and CS36A. Each line of data consists of a seven-digit student registration number followed by six (ordered) values, each of which is 0 or 1. A value of 1 indicates that the student is registered for the corresponding course; 0 means the student is not. Thus, 1 0 1 0 1 1 means that the student is registered for CS20A, CS29A, CS35A, and CS36A, but not for CS21A and CS30A. You may assume that there are no more than 100 students and a registration number 0 ends the data. Write a program to read the data and produce a class list for each course. Each list consists of the registration numbers of those students taking the course.