Structures – Practice Problems

Q.1 Declare a structure that represents the following hierarchical information:

(a) Student
(b) Roll Number
(c) Name (Typedef)
    (i) First name
    (ii) Middle Name
    (iii) Last Name
(d) Gender
(e) Date of Birth (Typedef)
    (i) Day
    (ii) Month
    (iii) Year
(f) Marks (typedef)
    (i) English
    (ii) Mathematics
    (iii) Computer Science

Q.2 Using the above structure, write a program to display the details of the student whose name is entered by the user. Display the name of the students who have secured less than 40% of the aggregate. In addition, print each student's average marks.

Q.3 Write a program to define a structure for a hotel that has members— name, address, grade, number of rooms, and room charges. Write a function to print the names of hotels in a particular grade. Also write a function to print names of hotels that have room charges less than the specified value.

Q.4 Declare a structure time that has three fields—hr, min, sec. Create two variables start_time and end_time. Input their values from the user. Then while start_time does not reach the end_time, display GOOD DAY on the screen.

Q.5 Declare a structure fraction that has two fields— numerator and denominator. Create two variables and compare them using function. Return 0 if the two fractions are equal, –1 if the first fraction is less than the second and 1 otherwise. You may convert a fraction into a floating point number for your convenience.

Q.6 Define a structure date containing three integers— day, month, and year. Write a program using functions to read data, to validate the date entered by the user and then print the date on the screen. For example, if you enter 29/2/2010 then that is an invalid date as 2010 is not a leap year. Similarly 31/6/2007 is invalid as June does not have 31 days.

Q.7 Write a program to add and subtract 10hrs 20mins 50sec and 5hrs 30min 40sec.