Assignment 1

1. Create two classes DM and DB which store the value of distances. DM stores distances in metres and centimeters and DB in feet and inches. Write a program that can read values for the class objects and add one object of DM with another object of DB. Use a function to carry out the addition operation. The object that stores the results may be a DM object or DB object, depending on the units in which the results are required. The display should be in the format of feet and inches or metres and centimeters depending on the object on display.
2. Find errors, if any, in the following C++ statements.
    a. long float x;
    b. char *cp = vp; // vp is a void pointer
    c. int code = three; // three is an enumerator
    d. int sp = new; // allocate memory with new
    e. enum (green, yellow, red);
    f. int const sp = total;
    g. const int array_size;
    h. for (i=1; int i<10; i++) cout << i << “/n”;
    i. int & number = 100;
    j. float *p = new int 1101;
    k. int public = 1000;
    l. char name[33] = “USA”;
3. Assume that a bank maintains two kinds of accounts for customers, one called a savings account and the other as a current account. The savings account provides simple interest and withdrawal facilities but no cheque book facility. The current account provides a check book facility but no interest. Current account holders should also maintain a minimum balance and if the balance falls below this level, a service charge is imposed.

    Create a class account that stores customer name, account number and type of account. From this derive the classes cur_acct and sav_acct to make them more specific to their requirements. Include necessary member functions in order to achieve the following tasks:
    a. Accept deposits from a customer and update the balance.
    b. Display the balance.
    c. Compute and deposit interest.
    d. Permit withdrawal and update the balance.
    e. Check for the minimum balance, impose penalty, necessary and update the balance.
    f. Do not use any constructors. Use member functions to initialize the class members.
4. An educational institution wishes to maintain a database of its employees. The database is divided into a number of classes whose hierarchical relationships are shown in the following figure. The figure also shows the minimum information required for each class.

Specify all classes and define functions to create the database and retrieve individual information as and when required. The database created does not include educational information of the staff. It has been decided to add this information to teachers and officers (and not for typists) which will help management in decision making with regard to training, promotions etc. Add another data class called education that holds two pieces of educational information namely highest qualification in general education and highest professional qualification. This class should be inherited by the class's teacher and officer.