**Lab Sheet1**

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**Refreshing C++**

1. Create a class called safearray, whose only member data is an array of 100 int values, check to ensure that all array accesses are within bounds. The main () program should test the class by filling the safe array with values and then displaying them all to assure the user that everything is working as it should. Augment the safearray class so that the user can specify both the upper and lower bound of the array (indexes running from 100 to 200, for example). Have the overloaded subscript operator check the index each time the array is accessed to ensure that it is not out of bounds. You’ll need to add a two argument constructor that specifies the upper and lower bounds. For example, if the client selects a range from 100 to 175, you could map this into the range from arr[0] to arr[75].
2. Demonstrate multiple inheritances by writing a program based on the diagram given below.

Employee

Team Lead

Manager

Programmer

HR manager

Project Manager

1. Design a function template to perform Matrix operations: addition, subtraction and multiplication. Data type of the matrices is specified by the user during execution.
2. Write a C++ program to maintain an elementary student database “stud.dat”. A student is associated with the following fields: (i) studentname (String) (ii) DateOfBirth (String) (iii) Qualification (String) (iv) MarkofSubject[5] (float) (v) total (float) (vi) Average (float) Member function: getdetails(): Enter the fields (i) to (iv) from the user and enters into stud.dat. modify(): modifies the marks and evaluates Total and Average and updates into stud.dat display(): displays the details of all students having an average score above the user specified limit from the file**. Validate** your program for all the entries. Test your program with at least 5 entries.

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