**7 ASSIGNMENT QUESTIONS**

**SEMESTER 1**

Semester 1 – Assignment 1

Chapters 7, 12, 13, and 14 are covered in this assignment. Total marks: 100

PART A (To be submitted)

**Question 1 (33 marks)**

Create an application to handle a simple library. Considering the required functionality that is required, and OOP design principles (avoiding anti-patterns), create the appropriate classes necessary to achieve the following:

* The user should be able to add books to a list of books in the library. Each book should have an author, title, and cost.
* The user should be able to add clients to a list of clients of the library. Each client should have a name and a joining date.
* The user should be able to issue books to clients. There should be combo boxes that provide the user with an alphabetically sorted list of clients and an alphabetically sorted list of books to choose from (and these should be updated automatically when a book or client is added). You can assume that there are multiple copies of books, and there is no need to remove a book from the list once it has been issued to someone. You can also assume that there is no limit to the number of books that may be issued to a client.
* The application should maintain a list of issued books (storing just the client name and book title). Use a map container for this. Note that the application should allow a client to take out several books.
* The user should be able to return books. There should be combo boxes to display which clients (sorted alphabetically) have taken out books, and which books (also sorted alphabetically) have been issued to the chosen client. These combo boxes should be updated automatically as books are issued and returned. Note that if a client has taken out more than one book, his or her name should

appear only once in the combo box list.

* The user should be able to view a list of all books issued.