CS 632 Topics in Distributed Systems
Assignment 1

Q1 (A): Use RPC to write a program which outputs corresponding day from given date. The client program will take input date from the user in the format specified below. It should use three different remote functions: (1) Number of days to be added to account for the Leap years (2) Number of days elapsed from 1st January year 1 (3) Computation of day. These three functions would be available on three different servers.   **(20 Marks)**

Example:
Input: 9/8/2014
Output: Saturday.

Q1 (B): Write another remote function**,** which can be used by the client program to output number of Thursdays between given two dates (Inclusive). Generalize your program to output number of any specified day given as input, i.e., number of Sundays or number of Saturdays, etc. **(10 Marks)**

Example:
Input: 9/8/2014 23/8/2014
Output: 2.

Notes:

1. You have to code the solution for both given problems using **RPC.**

2. Input format should be DD/MM/YYYY.

3. $1<=MM<=12$, $1<=DD<=31$, $1900<=YY<=10^{16}$.

4. For Q1 (B), $Y1<=Y2<= (Y1+1000)$.

This part of the assignment helps you to learn socket programming

Q2 It's a library management system without any Database (i.e. book names should be in some data structure).

a. Search for a book in the data structure**(5 marks)**

b. If the book is not issued then give option for issue else give an option is reserve/ renew book**(5 marks)**

c. Give another option to add book to Data structure**(5 marks)**

d. Extra marks : If multiple request can be handled in parallel i.e. if a book say X is not present initially but two requests comes parallel one to add book to data structure and another searching for the book handle request one after the other, search should result with proper output.**(5 marks)**

Notes:

1. Data structure should be implemented efficiently

Q3. As discussed in the class by sir regarding **"class room booking problem"** use JAVA RMI for this problem. You concentrate on the following points for your solution: **(35 Marks)**

1. There should be access permissions for those who can book class room.

2. Consider your implementing on our campus and scenarios that you have faced till now design and implement the problem accordingly.

3. You're expected to focus on GUI also for this part of assignment.

4. The problem is similar to maintaining engagement diary with additional constraint that there is a meeting room which is available or booked on times over the day.

5. The booking can be for slots of half an hour. So, some one can book meeting room (class room) for multiple slots of half hours.

6. There are 17 lecture halls in the institute, 4 class rooms in our building. There may be a number of class rooms in other dept elsewhere in the institute.

7. You need to take care that more class rooms may be made available in future or class rooms can become unavailable due to renovation.

8. Please use your imagination to work out a solution.

9. Also note that we need to keep only about 90 days of past data.

Notes:

Possibly avoid use of database. However, if you feel that certain functionalities can be provide better and for clean programming you are free to use some database. Use JAVA RMI.

Common Notes:

1. Plagiarism is severely punishable.

2. You have to demonstrate and explain your code as per schedule which will be informed to you by email and notification on website.

3. Deadline for submission is **18th August, 11.59 PM.**