Name:_____   Roll no:_____

OBJECT ORIENTED ANALYSIS AND DESIGN LAB
FINAL EXAM, FALL 2015

Date: 28th Nov. 2015   **Marks:100**   **Time: 180 minutes**

Important Notes: (Must Read)

1. Understanding the question paper is also part of the exam, so do not ask any clarification.
2. Make sure to switch off your mobile phones before the exam starts.
3. Talking/Discussion is not allowed. It's not a good time for networking.
4. It is your responsibility to protect your code and save it from being copied. If you don't protect it all matching codes are considered copy/cheating cases. **No leniency on plagiarism.**
5. Use of internet is not allowed except for submission on Slate
6. Divide and use your time wisely. Do not waste time in looking at the screen of the persons sitting next to you; they may also not know the solution.
7. Now Hurry Up! Time is running out, Start solving the paper … (Good Luck)

Question # 1: [Marks: 50]

You are required to implement a **Simple Web-Based Email Client** (like Gmail). This system allows the user to communicate with the other users of this system through messages. Each user has a mailbox that the user can access by logging in to the client. A mailbox organizes email messages in folders such as Inbox and Sent Items. User can compose an email message by supplying necessary information (recipients, content, etc.). Sent messages are stored in Sent Items folder in user's mailbox. User can open a message, that will be in the sent item of the sender and inbox of the receiver..

For your system you can assume that following are the already registered users of your system. (Load this data into your system when the your program starts)

Name	Username	password	Email address
Muhammad Ali	m.ali	password123	m.ali1@mymail.com
Hamza Ahmed	hamzahmed	hamza899	hamza.ahmed6@mymail.com
Farooq Khan	khan	farooooq	farooqkhan@mymail.com
Umair Bilal	b.umair	bilalkhan	bilal.umair12@mymail.com
Hashim Umar	hashim7umar	oblivion	hashim7umar@mymail.com

You are required to submit a complete C++ program (you must have your class definitions in a .h file and you have to implement classes in .cpp files) and you must submit complete class diagram as well (you can skip getter/setter in this part). Properly draw and state all of the relationships and cardinalities in between classes.

Question # 2: [Marks: 50]

Extend the previous problem. The email client interacts with a Mail Server via a set of protocols. Messages are sent to the server via a different set of protocols and are downloaded from the server using another set of protocols. At one time, only

one protocol from each category could be used. Examples of message sending protocols are SMTP and SNMP, whereas of message receiving protocols are POP3 and IMAP. Make provisions for a server administrator such that he is able to configure the server and choose whichever protocol - not necessarily the ones mentioned - for both sending and receiving messages.   Make   use   of   strategy   pattern   here. While designing the system, you can assume that user and message are already written. Your server should be able to receive and send messages from and to different users. Each server has a host name and a possible configuration for both types of protocols.

You are required to submit a complete C++ program and you must have your class definitions in a .h file and you have to implement classes in .cpp files.

Submission path : \\sandata\Xeon\Fall 2015\OOAD Lab Sec A\Submissions\Final\SectionA
                    \\sandata\Xeon\Fall 2015\OOAD Lab Sec A\Submissions\Final\SectionB
you must submit a compressed file with your roll no. (e.g. L127654.rar) on xeon. no other format will be accepted.