Zoho Programming Test - Level 3   **Duration - 3hrs**

- The program will be evaluated based on
  - Data structures used to store the data
  - Correctness of logic
  - Modular code - Write functions for different tasks
  - Clean code which is understandable to everyone
  - Avoid use of in-built functions

Simple Mailing System

Write a simple mailing application, that performs the following :

1. User creation

    The program must accept input to add users. A user can have a user name, email and password. User names and email must be unique. Display the list of users available in the system.

2. User Groups creation

    The program must accept input to add groups. A group can have a group name, group email id, password, description and group members. A User can belong to more than one Group. A User can be added or removed from the Group anytime. Group names and email must be unique. Display the list of available groups in the system.

3. Compose Mail

    Accept input to send a mail. The input can contain the "From", "To", "Mail Subject" and "Content". The "To address" can be a user's email id or a group's email id.

4. Viewing Inbox

    Display the list of emails that belong to a user in the received order. Recently received mails appear at the top.

5. Viewing Sent Mails

    Display the list of emails that are sent by a user. Recently sent mails appear at the top.

6. Delete mails from Inbox or Sent folder

    Accept inputs to delete a mail from a user's "Inbox" or "Sent mails" folder.

7. Recall Mail

    A User can Recall the mails sent by him. When a mail is recalled, the mail gets deleted from the Inbox of the received users. The mail however remains in the user's Sent mail folder. When viewing the Sent mails, show the "Recalled" status.

8. Inbox Sharing

    A User can share his Inbox folder with other users. When users view their Inbox, list the contents of the shared Inbox folder also. A User can revoke the sharing anytime, and when revoked, the shared folder no longer gets visible to the earlier shared users.

Note

a. Do proper validation of inputs and print error messages appropriately, during all operations
b. For example, if a invalid "To" address is provided during mail sending, print a valid error message
c. Sample Input/Output are provided for reference only and does not cover all operations mentioned above.

Sample Input/Output

User Creation :
1) Create User
2) Create Group
3) Group Assignment
4) Compose Mail
5) Inbox
6) Sent Mail
7) Delete Mail
8) Recall
9) Share Inbox
10) Exit
Select any option : 1
    Enter User Name : U1
    Enter Email ID : user1@abc.com
    Enter Password : 12345678
    User Created

Group Creation :
1) Create User
2) Create Group
3) Group Assignment

4) Compose Mail
5) Inbox
6) Sent Mail
7) Delete Mail
8) Recall
9) Share Inbox
10) Exit

Select any option : 2
    Enter Group Name : G1
    Enter Group Mail ID : group1@abc.com
    Enter Group Mail Password : 12345678
    Enter Group Description : Lorem Ipsum
    Group Created

Group Assignment :
1) Create User
2) Create Group
3) Group Assignment
4) Compose Mail
5) Inbox
6) Sent Mail
7) Delete Mail
8) Recall
9) Share Inbox
10) Exit
Select any option : 3
    Enter Group Name : G1
8) Recall
9) Share Inbox
10) Exit

Select any option : 2
    Enter Group Name : G1
    Enter Group Mail ID : group1@abc.com
    Enter Group Mail Password : 12345678
    Enter Group Description : Lorem Ipsum
    Group Created

Group Assignment :
1) Create User
2) Create Group
3) Group Assignment
4) Compose Mail
5) Inbox
6) Sent Mail
7) Delete Mail
8) Recall
9) Share Inbox
10) Exit
Select any option : 3
    Enter Group Name : G1
8) Recall
9) Share Inbox
10) Exit

Select any option : 2
    Enter Group Name : G1
    Enter Group Mail ID : group1@abc.com
    Enter Group Mail Password : 12345678
    Enter Group Description : Lorem Ipsum
    Group Created

Group Assignment :
1) Create User
2) Create Group
3) Group Assignment
4) Compose Mail
5) Inbox
6) Sent Mail
7) Delete Mail
8) Recall
9) Share Inbox
10) Exit
Select any option : 3
    Enter Group Name : G1
8) Recall
9) Share Inbox
10) Exit

Select any option : 2
    Enter Group Name : G1
    Enter Group Mail ID : group1@abc.com
    Enter Group Mail Password : 12345678
    Enter Group Description : Lorem Ipsum
    Group Created

Group Assignment :
1) Create User
2) Create Group
3) Group Assignment
4) Compose Mail
5) Inbox
6) Sent Mail
7) Delete Mail
8) Recall
9) Share Inbox
10) Exit
Select any option : 3
            Enter Group Name : G1
8) Recall
9) Share Inbox
10) Exit

Select any option : 2
    Enter Group Name : G1
    Enter Group Mail ID : group1@abc.com
    Enter Group Mail Password : 12345678
    Enter Group Description : Lorem Ipsum
    Group Created

Group Assignment :
1) Create User
2) Create Group
3) Group Assignment
4) Compose Mail
5) Inbox
6) Sent Mail
7) Delete Mail
8) Recall
9) Share Inbox
10) Exit
Select any option : 3
            Enter Group Name : G1
8) Recall
9) Share Inbox
10) Exit

Select any option : 2
    Enter Group Name : G1
    Enter Group Mail ID : group1@abc.com
    Enter Group Mail Password : 12345678
    Enter Group Description : Lorem Ipsum
    Group Created

Group Assignment :
1) Create User
2) Create Group
3) Group Assignment
4) Compose Mail
5) Inbox
6) Sent Mail
7) Delete Mail
8) Recall
9) Share Inbox
10) Exit
Select any option : 3
            Enter Group Name : G1
8) Recall
9) Share Inbox
10) Exit

Select any option : 2
    Enter Group Name : G1
    Enter Group Mail ID : group1@abc.com
    Enter Group Mail Password : 12345678
    Enter Group Description : Lorem Ipsum
    Group Created

Group Assignment :
1) Create User
2) Create Group
3) Group Assignment
4) Compose Mail
5) Inbox
6) Sent Mail
7) Delete Mail
8) Recall

9) Share Inbox
10) Exit
Select any option : 3
    Enter Group Name : G1
8) Recall
9) Share Inbox
10) Exit

Select any option : 2
    Enter Group Name : G1
    Enter Group Mail ID : group1@abc.com
    Enter Group Mail Password : 12345678
    Enter Group Description : Lorem Ipsum
    Group Created

Group Assignment :
1) Create User
2) Create Group
3) Group Assignment
4) Compose Mail
5) Inbox
6) Sent Mail
7) Delete Mail
8) Recall
9) Share Inbox
10) Exit
Select any option : 3
    Enter Group Name : G1
8) Recall
9) Share Inbox
10) Exit

Select any option : 2
    Enter Group Name : G1
    Enter Group Mail ID : group1@abc.com
    Enter Group Mail Password : 12345678
    Enter Group Description : Lorem Ipsum
    Group Created

Group Assignment :
1) Create User
2) Create Group
3) Group Assignment
8) Recall
9) Share Inbox
10) Exit

Select any option : 2
    Enter Group Name : G1
    Enter Group Mail ID : group1@abc.com
    Enter Group Mail Password : 12345678
    Enter Group Description : Lorem Ipsum
    Group Created

Group Assignment :
1) Create User
2) Create Group
3) Group Assignment
4) Compose Mail
5) Inbox
6) Sent Mail
7) Delete Mail
8) Recall
9) Share Inbox
10) Exit
Select any option : 3
    Enter Group Name : G1