

SWEN9002 Project 2 Report

1. Name

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2. Introduction

This project builds on the first registration system project, and I use the code from project1 and lab3 to realize some of the functions. Also, after the register, user can create a group, invite a registered user to the group that he set up, delete one of their groups, accept an invitation to join a group, delete themselves from a group if you are only a member. Furthermore, after these operations, they can join in a chat within these groups with members in the group, including post and receive chat messages in this group chat.

3. Related Work

In this group chat project, I have six html in the front page. Confirm, index, reminder, and login pages are already existed in project1. Chat.html is the page for chatting and represents the members' information in a special group. ConfimInvite.html is used for confirming the invitation when the user has accepted the invitation and click the URL in the inviting email, then they will enter this page and I will know they have accepted the invitation.

I realize this project as a web application like project1, because web chatting room is still popular in China, it just like a place that friends can chat together online.

The most import thing to solve in this project is how to design the database structures to handle this many to many relationship because every group can contain many users (members) and every user can be a member of many groups.

4. How to handle many-to-many relation and data structure

In terms of many to many databases, I break this relation to two one-to-many relations, which means build two databases in couchDB.

The id of first database is the username which is exactly the same like project1 database. As a result, there are some other keys in the first database like token to confirm invitation, "accesstoken" to confirm if you have login, password of the user. I also add the new key "groupnameusername", which is the combination of group and owner name. At first, I want to split this value, however, because a group name can correspond to two different owners when they create a group with the same name, you must make these two values together to make it unique. So I make all the information of group name and owner name together with "-" and "/", when I want to search some information from them, I only have to split them by "-" and "/", and add them into a string arraylist.

The id of the second database is the group name with the owner name because if you only use groupname it's not enough, what if the same group name with different owner name. Because id is the unique feature that can identify a piece of information, you have to make sure the uniqueness. Also I add "members" and "owners" into this database. The owner is also a member, but I will output the ownername also into the key of "members", if you do this in the database, it's different for you to search information. "members" only record the member's name and combine them with "-", when I need to represent member name lists, I add the owner name with the list.

I also create last database to record the chat message which also record the name of the talking person and the group he belongs to as well as the ownername.

5. How to realize functions with servlets

To create or delete a group, you have to record the username to know who create this group or who want to delete the group, I take the information from the session. In the process of login, you have to record related information in the session. Then you need to add new group information under the username which means to add new

information in the first database, also you have to create a new group with ownername in the second database. After affirm that you are the owner, you can delete the database that you created, similarly you have to operate both in the first and second database. These will be realized by “group” and “deletegroup” servlet.

To delete a user from a group or delete themselves from a group that they are a member of, you have to make sure that the owner cannot be deleted from the group. At first, you need to find whether the username that you want to delete is a member or an owner. If he is an owner, he can delete anyone from the group except himself; also you have to update information in two databases. More exactly, when try to delete the related information of “groupnameusername” from the database, firstly you need to record the old information, secondly you have to delete the name from the old information, and lastly you have to add the updated information to the database, this will be realized by “deletemember” servlet.

In terms of inviting new members and accept the invitation, firstly, you have to make sure these username that invited should be registered before. After affirming that the user that try to invite others is an owner of this group and the invited name is not already in the members list, then an invitation email will be sent, this will be realized by “invitesendemail” servlet. When click the URL from the email, the “ConfirmInvite” servlet will add related information into two databases separately.

When you click the chat button in the login page, it will record the username, groupname , ownername in the URL of the chat page, so when you go into the chat page you will know which group you have in. It will realize by enterpage3 servlet.

In terms of post and receive chat messages in the group chat, I just reuse the online chatting application that we have done before. In the “chat” servlet, although I add the entire chat messages into the database named “chat”, I only add the exactly what related to current user chat message to the html page.

The “page2print” and “page3print” servlets are used to print related information on the login page and chat page. In page2 which is login.html, need to print the current username and all groups that he joined as well as the owner name, all this information can get from the first database. Similarly, in page3 which is chat.html, need to print the current username and which group he is joined.

6. Architecture

The presentation layer is Web interfaces run on the server and use browser scripts and applets to mitigate responsiveness. This project has six HTML, which are Confirm.html, index.html, login.html, reminder.html, chat.html and ConfirmInvite.html, they all belong to the presentation layer.

All the servlets will receive data from web pages and transfer Json or Json list back to web page, they belong to domain logic.

Data Source is normally on the server, if it runs on client it's hard to realize the data consistent, so in this project, the data stored in couchDB belongs to the data source.

7. Bibliography

Garrett, Jesse James (18 February 2005). "Ajax: A New Approach to Web Applications". Adaptive Path. Retrieved 19 March 2012.

Magnus Holm (May 15, 2011), "Json: The JavaScript subset that isn't", The timeless repository, retrieved 2013-01-11.