

ACCESS CONTROL IN A SOCIAL NETWORKING ENVIRONMENT

CS297 REPORT

Submitted to  
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## 1. INTRODUCTION

This project explores access control techniques for dynamically created groups. The starting point will be the Yioop, a PHP-based search engine. The ability to create social groups will be added to Yioop. Then, we will explore different policies for automatically adding access levels and comparing them with the policies of existing social networks to gain an insight into how access control is provided.

Over the course of this semester, three main deliverables helped me understand the working of Yioop search engine. We discuss the preliminary work that has been done to add the “Manage Groups” feature to Yioop. The report includes the experiments conducted on existing social networking websites and it compares the Group features to help better understand how access control is provided for dynamically created groups so that, a simple and a user friendly “Manage Groups” feature can be implemented in Yioop.

During this semester, a ‘Manage Groups’ feature is added to Yioop and the feature to group the users has been implemented, which is a part of the project. This report provides details about the implementations of the Manage Groups feature and also explains the deliverables in detail. In the next semester I will improve the accessibility of using Groups in Yioop by adding additional functionalities.

## 2. DELIVERABLES

### 2.1 Deliverable-1:

The main goal of this deliverable is to study the proposal, design, implementations, and the results from B. Ur and R. McGrath's paper "Grouping Friends for Access Control in Online Social Network." Currently creating groups is one of the most popular features in many web applications and social networking sites. Ur and McGrath studied the nature of grouping friends to improve social networking access control. My study of the paper "Grouping Friends for Access Control in Online Social Network." gave me an insight into the design and implementation techniques of the Manage Groups feature in Yioop. The paper implemented a graphical interface that allows users to create groups and choose privacy preferences for these groups. The paper mainly focuses on the nature of grouping friends on Facebook, as the quantity and variety of the information shared on Facebook is unmatched.

A major issue facing current social networking sites is that it causes all friends in the network to be equal and due to this, distant friends might be seeing more information than the user desires and perhaps close friends are seeing less information than the user wants them to see. Grouping friends is a potential solution, to this problem as users who create groups can choose who can see what information. In "Grouping Friends for Access Control in Online Social Networks." B. Ur and R. McGrath hypothesized that "the users ability to control

the privacy preferences can be improved by grouping friends and choosing the access controls based on these groups.” (B. Ur and R. McGrath, n.d.).

This paper implements two main graphical interfaces to demonstrate the idea of grouping friends: An interface to create and define groups and another interface to set the privacy preferences. Figure 1 shows both the interfaces.

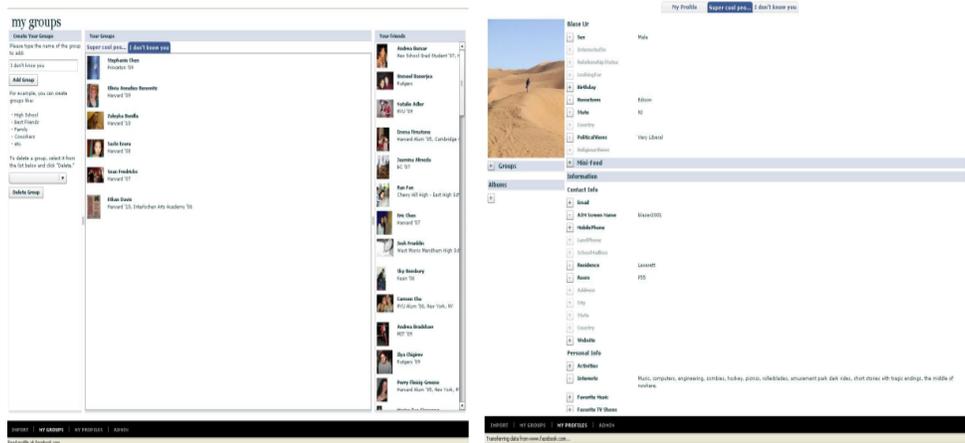


Figure 1: An interface to create a group and an interface to set the privacy preferences.

To create a group, users must first enter a group name on the top left hand side of the create group window and then drag-and-drop their friends from the right side of the screen into the group list; they can also drag friends back to the friends list to remove them from a group. An opt-in procedure exists to set the privacy preferences. To select the field, users must click on the plus sign beside the field, and to remove the field from their profile, they have to click on the minus sign beside the field.

The drag-and-drop interfaces that Ur and McGrath described are simple and intuitive to use. They can be used as both a tool for more access control as well as a tool for extra features in a social networking site.

2.2 Deliverable-2:

The main goal of this deliverable is to conduct experiments on different social networking websites that explore access control to different groups and also different users within a group. The deliverable also compares the accessibility of using a group’s feature between different web applications and social networking sites. The Group’s feature as implemented by Skype, Facebook, Google, and Yahoo were compared. Table 1, illustrates the comparison of accessibility of the Groups feature between each web application.

Table 1: Comparison of accessibility of the Groups feature in different web applications.

Web applications	Option to create a group	Number of clicks to go to create a group option	Group Privacy options	Can transfer Admin Property	Group web & email Address	Display picture for the group	Group Chat	Number of clicks to delete a group	User Friendly	Different modes of group
Skype	No	2	No	No	No	No	Yes	1	Simple, Nothing much to do	No
Facebook	Yes	1	Yes	Yes	Yes	Yes	Yes	1	Easy to use, more popular, it almost includes all the features.	Yes
Google Groups	Yes	1	Yes	No	Yes	Yes	No	1-2	More number of submissions to create a group (Less popular)	Yes
Yahoo Groups	Yes	1	Yes	No	Yes	Yes	No	1-2	More number of submissions to create a group (Less popular)	Yes

I created groups in each of these web applications and tested the accessibility of creating these groups. To analyze how easy it is to create a group,

I took several activities into consideration. I checked the availability of a create group option on the home page of the web application, the number of clicks required to create a group and the number of clicks required to delete a group. I also analyzed the group privacy settings and I analyzed how hard is it to change group privacy settings once a group is created. I experimented with the group chat facility and the transfer of the admin property within a group. I then compared the accessibility of these activities together. Figure 2 shows a window used to create a group in Facebook and another window that allows users to change the Group settings.

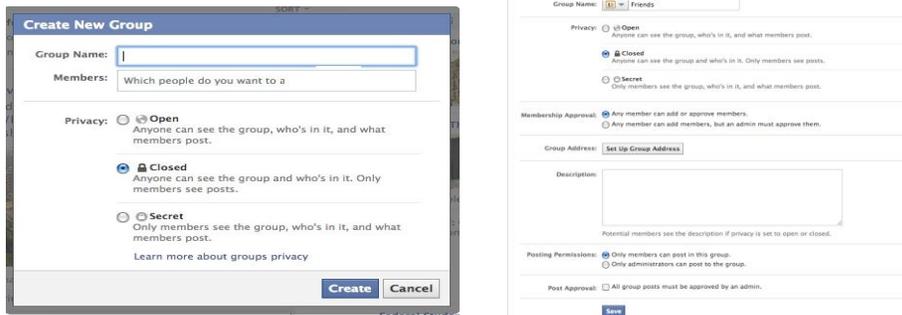


Figure 2: Activity windows to create a group and to edit the group privacy settings.

Out of all the web applications, the Group feature on Facebook site is the most accessible to a user because the interface includes almost all the activities that a user likes to have and it also shows a detailed categorization scheme in which all the recent updates are displayed on the top of the page followed by less important updates. After conducting the experiments, I felt that implementing

activities like changing the group privacy options and transferring the admin property to a different user within a group might be interesting and challenging to accomplish. These activities play a very important role when a feature like grouping friends is being implemented.

### 2.3 Deliverable-3:

The main goal of this deliverable is to add a Manage Groups feature in Yioop and implement the feature to group the users. The Manage Groups feature will add the ability to create social groups to Yioop. The Manage Groups feature includes several activities:

- Add Group
- Delete Group
- View Groups

The Add Group option allows users to create a new group by providing a group name. The Delete Group option displays a list of existing groups and allows users to select the group he or she wants to delete. The View Groups option allows users to view every member of a group. A person who creates a group is designated as the default user. The default user can add or delete users from an existing group. After implementing the above activities, the Manage Groups feature in Yioop will appear like in the figure 3.

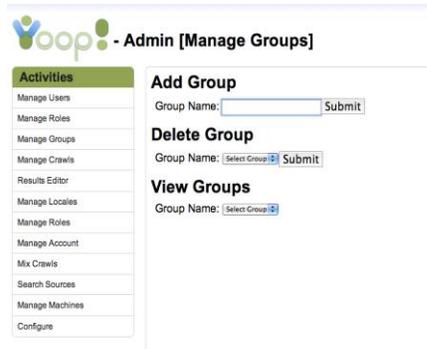


Figure 3: Manage Groups feature in Yioop.

A User can create a group by entering the group name into the text box under the Add Group field and clicking the submit button. Upon successful creation of a group, a Group Name Added message appears on the top of the page. Figure 4 shows how to create the new group 'Christmas.'

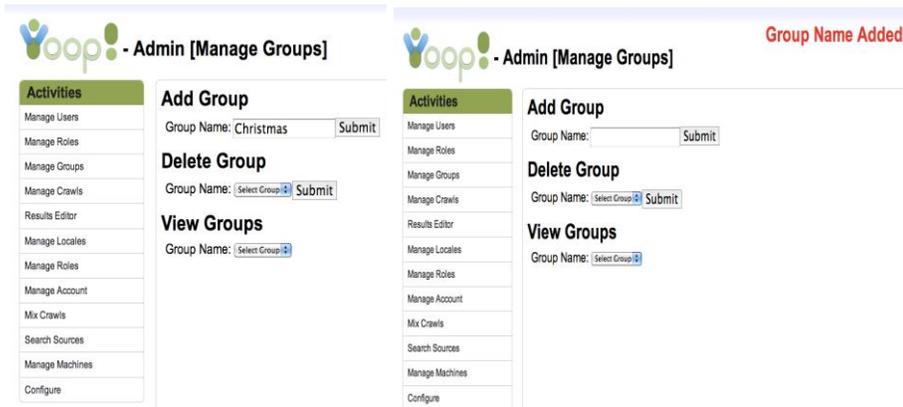


Figure 4: Creating a Group in Yioop.

Once a user creates a group, the group is displayed in a list of existing groups in the Delete Group option. The User can select the name of the group that he or she wants to delete and then delete the group. Figure 5 shows how to delete the Christmas group.

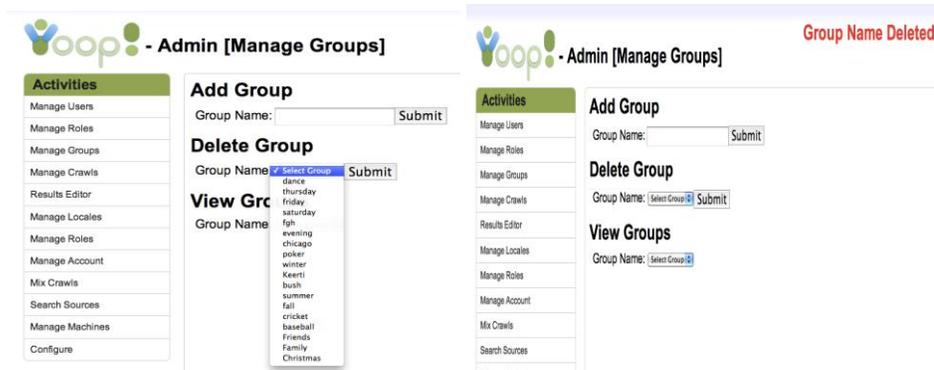


Figure 5: Deleting an existing group in Yioop.

The View Groups feature will be explained in detail in the next deliverable.

#### 2.4 Deliverable-4:

The main goal of this deliverable is to implement the View Groups feature completely. The View Groups feature also allows admins to manage groups with permissions. When a user is logged into Yioop, the View Groups option allows users to view the groups that the user belongs to. They can add and delete users and roles to and from a group. The View Groups feature includes activities:

- Add User
- Add Role

Once the user selects a particular group from the list of the existing groups he belongs to, all the users who are already in the group are displayed. The Add User activity allows the users to add or a new user to a particular group.

The Add Role activity allows users to add a role to a particular group. Figure 6 shows the View Groups feature when a user selects an existing group.

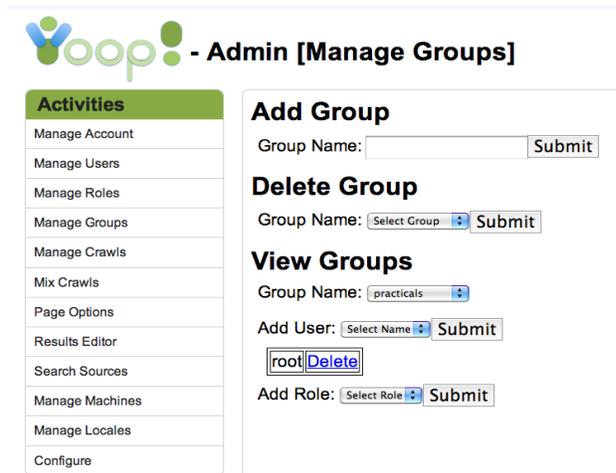


Figure 6: View Groups feature in Yioop

When the Admin is logged into Yioop, all the group names will be displayed under the View Groups option. When the user is an admin, he has access to manage all the groups: He can create a new group and delete any of the existing group even the group that is created by a regular user, and he can also add and delete a role to and from all the groups. By assigning a role to a group, the group will be able to access all the activities that are assigned to that particular role. A user who created a group is the admin for the group. He can add or delete users to and from a group.

When a regular user is logged into Yioop, he can view only the groups that he has created and joined. He can delete only those groups, which are created by him. He can also remove himself from a group to which he was added.

For example, let us consider that the Admin is logged into Yioop and he created a new group named "Report." When the admin selects Report group

under view groups field, he will be able to view his name under Add User field with a delete option. Because he is the admin of the group he can add and delete other users from the group. Figure 7 shows a window with the View Groups feature in Yioop when the user is logged in as the Admin and another window after adding a user named 'Java' to the Report group.

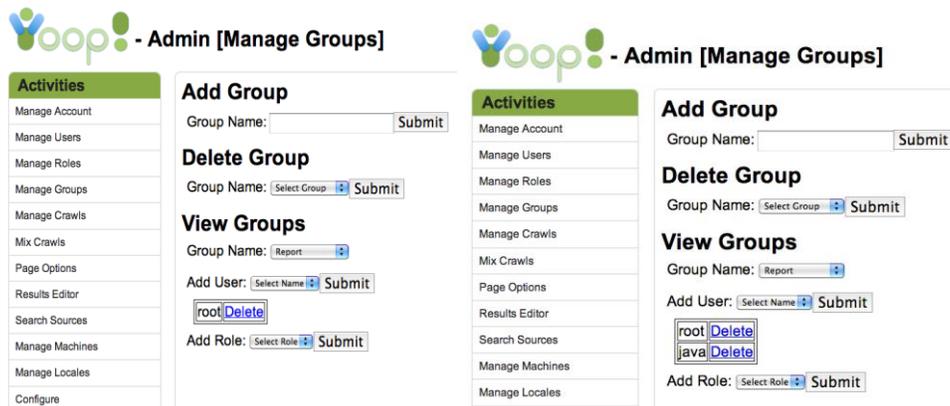


Figure 7: View Groups feature when the user is logged in as admin

Here, the root users who is the admin can add other users to the Report group and also delete the existing users from the group because he is the admin for the group. When Java user who is the regular user, is logged into Yioop, he can view Report group under View Groups field because he belongs to the Report group. He has permission to delete himself from the group but not the root user as the root user is the admin for the group. Figure 8 shows a window where a regular user Java is logged into Yioop.

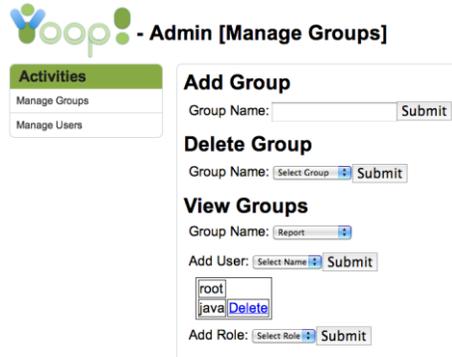


Figure 8: View Groups feature when a regular user Java is logged into Yioop.

### 3.0 CONCLUSION

This semester, I studied the basic functions of Yioop and implemented part of a Manage Groups feature in Yioop. Experimenting with the 'Group' features on existing social networking sites helped me understand how access control is provided to dynamically created groups. The research paper "Grouping Friends for Access Control in Online Social Network" provided valuable information about the nature of grouping friends to improve social networking access control. The design and implementations demonstrated in the paper are relevant to the main topic of the study. The user interface design and the backend design that this research paper proposed are simple and effective. The results of the experiments that I have conducted gave me an insight into the implementation techniques of the Manage Groups feature.

In the next semester, I will improve the Manage Groups feature by adding the functionalities like, having groups the ability to access the crawl

mixes; building pages and blogs for every group; adding an option to mark a group public or not, and trying to compare the access control methods of the existing social networking sites with the access control methods in Yioop. The complete

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