

A Group Management and Room Booking Application for Students

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# 1. Introduction

Although the University of Victoria stresses group participation in many courses, there is a notable lack of group management resources specifically for academic purposes. Students are therefore left using a variety of tools to complete group projects, such as Facebook for chat, and Google Drive for sharing group documents. There was also no way for groups to easily coordinate meeting spaces, and students would be left wandering around campus looking for available space for studying or working on their assignments. Such a situation fostered the need for some way for groups to contact each other easily and find rooms to cooperate on their group work, and that need has been answered by a new app: Room Raider. To ensure such an app would be well received, prototypes were made and users found to test these prototypes.

# 2. Objectives

The purpose of the evaluation carried out on the prototype for Room Raider was to obtain data regarding the app’s current efficiency, working functionality, and user comfort performing important or typical tasks. The main objectives to achieve those purposes were:

* Identify and mitigate inefficiencies in the app itself.
* Identify and correct misleading, unintuitive or incorrect parts of the app’s interface.
* Discover possibilities to enhance the user’s experience with the app.

# 3. Method

The prototype evaluation aimed to produce data by varying several parameters. The participating test users used a shallow prototype, allowing for varied functionality but not testing deeper tasks such as group chat, importing or adding to contact lists, and searching for available rooms based on a number of constraints.

## 3.1 Participants

Each developer found one participant to undertake testing of the prototype. Five participants were selected from current students and alumni. To ensure a variety of backgrounds, they were from the Faculties of Education, Arts, Engineering, and Biology. Three were female and two were male, and their ages ranged from twenty to thirty years. All participants possessed a smartphone and / or a computer, and were considered fairly fluent with them.

## 3.2 Tasks

All participants were given the same eight tasks to perform, each of which tested Room Raider’s performance in a different area. The tasks were as follows:

1. Register as a new user, with a username and password provided by developers, then logging out.
2. Log in to the system, again using a provided username and password.
3. From the main page, create a study group named “Study Group #256”.
4. From the main page, add users to the group “Some Group I Own”.
5. From the main page, simulate chat in the group “CSC 225”.
6. From the main page, search the URL Logs of “CSC 225” for the link shared by Jim on December 1st, 2015.
7. From the main page, book a study session for group “CSC 225” in ECS 116 from 7:00 PM to 9:20 PM.
8. From the main page, delete the group called “Some Other Group”.

The data was collected by filling out form 7.2 in the Appendix.

## 3.3 Procedure

Users were asked to sign a consent form (7.1 in the Appendix), then provided with the prototype already installed on either a computer or smartphone, and were asked to complete the tasks in order while the developer recorded their observations and the elapsed time for each task. Test users were given no practice time, as the intent was to discover whether first-time users would be able to complete each task. Typically, users completed all tasks within ten minutes, after which the developer asked a number of questions to obtain more qualitative data.

## 3.4 Measures

There were both qualitative and quantitative measures obtained from the evaluations. Quantitative measures included the time to complete each task, the number of times users became frustrated with the app, and the number of times they made a mistake and had to use the “back” button to return to the previous screen. Qualitative data was obtained by asking each user the follow-up questions on the bottom of the evaluation form (Appendix, 7.2)

## 3.5 Setting and Equipment

The developers and participants located themselves in a private room, to reduce distractions and outside influences. Apart from the device used to test the prototype and the recording paraphernalia(pen and paper, or computer) for the evaluator, no other equipment was needed.

# 4. Results

## 4.1 Quantitative

The following table represents the quantitative data which was gathered in the evaluation. Each row represents the given portion of quantitative data from one user.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | 1. Register | 2. Login | 3. Create Group | 4. Add Users | 5. Chat | 6. URL Search | 7. Book Room | 8. Delete Group |
| Time(s) | 30 | 6 | 23 | 42 | 9 | 19 | 28 | 15 |
|  | 25 | 5 | 10 | 22 | 5 | 13 | 18 | 25 |
|  | 30 | 6 | 24 | 17 | 9 | 17 | 60 | 33 |
|  | 46 | 7 | 12 | 13 | 7 | 35 | 55 | 30 |
|  | 20 | 3 | 11 | 98 | 9 | 8 | 17 | 6 |
| Average | 30.2 | 5.4 | 16.0 | 38.4 | 7.8 | 18.4 | 35.6 | 21.8 |
| Back Button | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 |
|  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
|  | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
|  | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
|  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Average | 0 | 0 | 0 | 0.4 | 0 | 0.2 | 0.2 | 0 |
| Total | 0 | 0 | 0 | 2 | 0 | 1 | 1 | 0 |
| Distress | 1 | 0 | 0 | 2 | 0 | 0 | 0 | 0 |
|  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
|  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
|  | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 0 |
|  | 2 | 0 | 0 | 12 | 0 | 1 | 0 | 0 |
| Average | 0.8 | 0 | 0 | 2.8 | 0 | 0.4 | 0.2 | 0 |
| Total | 4 | 0 | 0 | 14 | 0 | 2 | 1 | 0 |

## 

## 4.2 Qualitative

The overall feedback from participants in the evaluation was largely positive, with four of the five testers saying they enjoyed using Room Raider. Users liked the simple, easy-to-use interface and dark background. Aside from the hard coded nature of the shallow prototype, the following issues were identified by several participants:

* A lack of expected functionality, such as scrolling.
* No record of group member activity / inactivity
* Depressing or confusing colour scheme

## 4.3 Statistics

From the table of quantitative results, the following average times for each task were drawn:

* Registering, 30.2
* Logging in, 5.4s
* Creating a group, 16.0s
* Adding users to a group, 38.4s
* Simulating chat, 7.8s
* Searching for a URL in the logs,18.4s
* Booking a room, 35.6s
* Deleting a group, 21.8s

Among the five users, the following totals for number of distresses and number of back button uses were drawn:

* Registering, 0 back buttons, 2 distresses
* Logging in, 0 back buttons, 0 distresses
* Creating a group, 0 back buttons, 0 distresses
* Adding users to a group, 2 back buttons, 14 distresses
* Simulating chat, 0 back buttons, 0 distresses
* Searching for a URL, 1 back button, 2 distresses
* Booking a room, 1 back button, 1 distress
* Deleting a group, 0 back buttons, 0 distresses

# 5. Discussion

For the most part, the app behaved as expected. It was understood that the rigid nature of the prototype would restrict the behaviour of the application, and that user’s would likely feel confined as a result. This likely led to several of the frustrations felt by the participants. As expected, there was a correlation between the feelings of frustration and the need to use the back button.

## 5.1 Suggested Improvements

The difficulties experienced by users could mostly be remediated by a full development of the app, allowing real chat, group member invites and other functionalities which were hard-coded in the prototype. The depth of the room booking functionality in the app’s interface meant that the user must execute more intermediate actions to get to the room booking page, which was expected. A single participant had extraordinary difficulty with adding members to a group, which may be a fault of either the testing environment (not supplying a reason or explanation for the task) or the prototype. The group management page was somewhat ambiguous and the “send invitations” button could be replaced by an “add users” button to reduce this ambiguity. The logout button was also somewhat unintuitive, as it featured a stylized running man, with no text to indicate that it would log a user out. User activity or inactivity was also pointed out as a useful functionality for further development versions of Room Raider. The colour scheme also requires a remapping to ensure button and background colours conform to an expected appearance.

## 5.2 Assumptions and Limitations

A number of assumptions made by the development team became obvious after testing. Firstly, it was assumed that users would be familiar and comfortable with smartphones, personal computers, and commonly used software. Secondly, as future users would consist of university students, all participants would have some familiarity with the current room booking system in place at the University of Victoria.

One limitation of this study was the small sample size of the participants. This led to a limitation of the relevance of the test results. With a larger sample size, a clear picture of usability, efficiency and functionality would be constructed. Another limitation was the lack of depth of the prototype. Although the prototype contained all the functions predicted in the final version of the app, the rigidity of the system confused or distracted some participating users. This led to an incomplete view of the app’s usability.

## 5.3 Meeting Objectives

The prototype met the objectives laid out in the beginning of the study. The small number of issues identified did not detract significantly from the ability of users to quickly use the intended functionality of Room Raider. The interface, aside from the colour scheme and logout button, was intuitive and participants were generally content with the aesthetics. The open ended questions on the evaluation form (7.2) provided several suggestions for improving the application.

# 6. Conclusion

As the prototype meets the needs of the students, further testing on the current prototype could be forgone, and the development of the next prototype is underway in order to implement the suggestions and changes that were noted in this study. The future of Room Raiderlooks bright indeed, as all the participants eagerly await the final release of the app.

# 7. Appendices

## 7.1 Consent Form

**Consent Form**

**For Participation in the Study Entitled:**

**“Designing and Evaluating a Study Group Application”**

You are being invited to participate in a study entitled *Designing and Evaluating a Study Group Application*that is being conducted byHop-Scotch Mafia. You may contact Konrad Schultz by email at schultzk@uvic.ca if you have further questions.

The purpose of this research project is to design and evaluate the user interface of a simple group forming application. You will be interviewed about your previous experiences with study groups and the tools you used to communicate.

You will be asked to answer a series of questions about your experience with group study, How often you work in groups, the applications you like, and new features you would like to have. Your participation should require about 10 minutes of your time. The results will be reported in a project report for SENG 310 in the Faculty of Engineering at the University of Victoria.

Your participation is completely voluntary and you can withdraw from the study at any time, without explanation. You have the right to refuse to answer **any** questions for any reason.

Any data collected in the study will remain confidential; interview results and questionnaires will be kept in a locked filing cabinet in a locked office. Only the principal

and co-investigators (Jim Galloway and Jakob Roberts) will have access to the data. Your name will not be attached to any published results, and your anonymity will be protected by using code numbers to identify results obtained from individual subjects.

Whether you participate or choose not to participate will have no bearing on your

grade / employment status / academic standing / job / services received.

**Signature of participant: Researcher:**

**Date: Phone:**

***A copy of this consent will be left with you, and a copy will be taken by the researcher.***

## 7.2 Evaluation Result Form

Name of Participant: \_\_\_\_\_\_\_\_\_\_\_\_\_ Age: \_\_\_\_\_ M / F Start time:

Name of Researcher: \_\_\_\_\_\_\_\_\_\_\_\_\_ End time:

**STAGE ONE: Tasks to complete**

*Each task should be performed starting from the specified start screen. All input is simulated.*

1. Register a username and password with the system, then log out.

*Time to complete: \_\_\_\_*

*Number of times back button was used (in error):*

*Number of times the participant expresses distress:*

*Success Failure*

2. Log in to the system.

*Time to complete: \_\_\_\_*

*Number of times back button was used (in error):*

*Number of times the participant expresses distress:*

*Success Failure*

3. From the main page, create a group (Study group #256).

*Time to complete: \_\_\_\_*

*Number of times back button was used (in error):*

*Number of times the participant expresses distress:*

*Success Failure*

4. Once the group has been created, add users to “**Some group I own**”.

*Time to complete: \_\_\_\_*

*Number of times back button was used (in error):*

*Number of times the participant expresses distress:*

*Success Failure*

5. From the main page, simulate chat with users in **CSC 225.**

*Time to complete: \_\_\_\_*

*Number of times back button was used (in error):*

*Number of times the participant expresses distress:*

*Success Failure*

6. From the main page, search for the URL sent by **Jim** on **December 1st, 2015.**

*Time to complete: \_\_\_\_*

*Number of times back button was used (in error):*

*Number of times the participant expresses distress:*

*Success Failure*

7. From the main page, book a study room for **February 29th, 2015** from **7:00 to 9:20** in **ECS 116.**

*Time to complete: \_\_\_\_*

*Number of times back button was used (in error):*

*Number of times the participant expresses distress:*

*Success Failure*

8. From the main page, delete “**some other group**”.

*Time to complete: \_\_\_\_*

*Number of times back button was used (in error):*

*Number of times the participant expresses distress:*

*Success Failure*

**STAGE TWO: Follow up questions**

**(don’t forget to get them to sign the consent form)**

1. “On a scale of one to ten, how would you rate Room Raider on its usability?”

1 2 3 4 5 6 7 8 9 10

2. “Did you enjoy using Room Raider? Why/why not?”

3. “What did you like about Room Raider’s UI? What didn’t you like?”

4. “Were there any problems that you encountered while performing a task? What were they?

What task were you performing at the time?”