

OOP Project Report – Group 69

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1 INTRODUCTION

This paper consists of an evaluation of the prototype of the Talio application for Object Oriented Programming Project (OOPP). The objective of this evaluation is to reflect on usability problems encountered by five reviewers and from these create solutions which will improve the overall usability of the application.

The prototype was developed by the authors of this paper using the online tool Moqups. It shows the general appearance of the User Interface using geometric shapes, images and text.

1. Choose a server frame

When the user opens the application for the first time, or when the user presses the settings icon, they see this screen:

When clicking the 'Connect' button you go to the home page

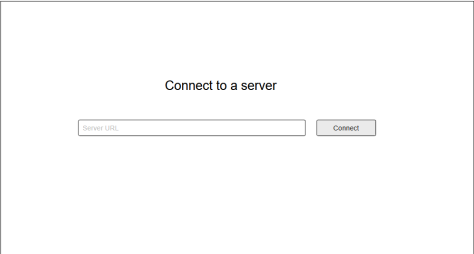
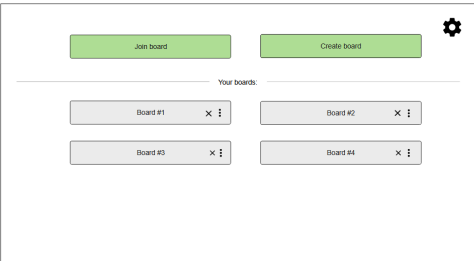


Figure 1: The server frame

2.Home frame

When the user has already picked a server, this becomes their home screen:



When the cogwheel button is clicked, scene #1 is opened

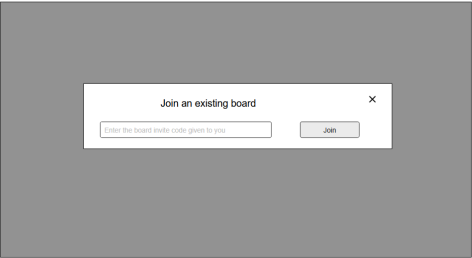
The join board and create board buttons lead to scenes number 3 and 4 respectively

When you press the cross of a board, you remove that board from your boards (through a confirmation popup). The board is not deleted though. When you press the three dots icon of a board, popup #7 is opened. If there are too many boards, there will be a scrollbar.

Figure 2: The home frame

3.Board join frame

When the user has pressed the "Join board" button in the home screen, they see this screen, which is a popup:

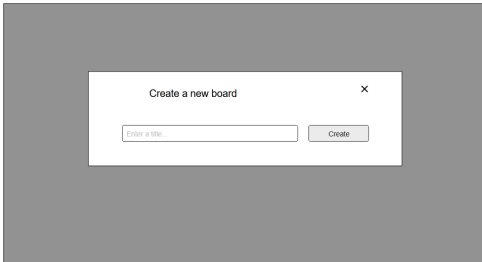


When the 'Join' button is clicked, scene #5 is opened and the board is added to your boards

Figure 3: The join board frame

4.Board create frame

When the "Create a board" button is pressed on the home page the pop-up is opened

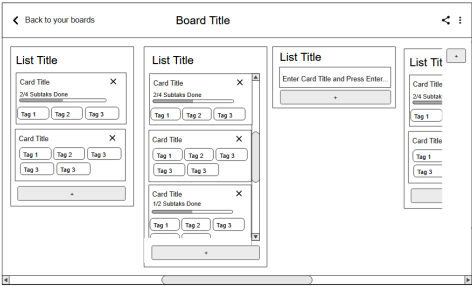


When the 'create' button is clicked, scene #5 is opened

Figure 4: The create board frame

5.Board view frame

When the user has opened a board, they see this screen:



The button on the right of the lists adds a new, empty list to the rightmost position and the user has to enter a title for the list right in the response.
The button below all cards in a list is used for adding new cards. The newly added card is added between the last card and the button.
A vertical scroll bar in a list is generated once the cards inside fit the list.
Cards can be deleted from the overview and when they are clicked on pop-up #6 opens

Figure 5: The view board frame

6.Card Pop-up

Opens when user clicks on a card:

The dropdown menu titled "Select a tag" allows user to add a tag from the pre-existing tags on the board.
The fields "Select color" and "New tag..." are used to add a completely new tag to both card and board.
When a tag is pressed, pop-up #9 is opened.
When the cross button of a tag is pressed, that tag is removed from the card

Figure 6: The card popup frame

7.Board setting

Opens when user clicks on a the "more" option either on the board frame or on the home frame:

When a tag is pressed pop-up number #9 is opened and you can edit and/or delete a tag.
When the cross button of a tag is pressed, the tag is deleted (removed from every card that has it and from the board)

Figure 7: The board settings frame

2 METHODS

The members of Group 43 were given a mock version of our user interface. The mocks were pictures of the designs of virtually all of the screens in our application. Above each mock was a title of what that screen is supposed to do. The mocks were also numbered and there were descriptions below each of them. The descriptions of each mock described how the user interface would function if it was to be implemented, mentioning what each button does, i.e. what screen it redirects to, or how it changes the state of the application.

8.Share board frame

When the user has pressed the share icon in a board, the board's code is displayed to be copied and shared. Possibly, if the user joined using the code that gives write permission, both codes are displayed. Otherwise, if the user joined using the read only code, only this code is shown.

Figure 8: The share board frame

9.Tag settings

Opens when user clicks on a the "more" option either on the tags (either from the board or the card settings):

Here the user can pick a color or change the tag's name and then save changes.
The X button closes the pop-up.

Figure 9: The tag settings frame

The evaluators were to evaluate the designs that we had come up with. They were to do so individually and with no supervision from us. They were instructed to go through each screen at least twice and to try to follow to flow between the different screens. They were to report on any problems that they encountered pertaining to any of 10 heuristics. They were to identify each individual problem and write down each problem according to a template, that includes what the problem is, which heuristic it corresponds to, what difficulties the user might experience due to the problem, what the context for each problem is, and what the likely cause of each problem is. They were to each send the evaluation of the problems that they encountered, so we can compile and analyze them, their frequency, and their severity.

In the end, five people from Group 43 submitted their evaluations. This number of evaluators is right in line with suggested best practices for Heuristic Evaluation Reports. The evaluations were all about a page or two long, they included anywhere between 10-25 problems. The evaluations did all include the heuristic that each problem corresponded to.

3 RESULTS

The team of evaluators reported diverse problems some of which appeared more often in the different reports whereas some of which

appeared only in a single evaluator's submission. Our team categorizes the problems of such with higher or lower impact based on the significance of the problem. The problems are grouped based on the heuristic they belong to.

3.1 Visibility of system status

A serious problem reported in an evaluation is that the 'change server connection' button in the home page uses an icon that is misleading. The icon that we are currently using is a cogwheel one whereas there are more suitable options. Furthermore, a severe problem that has been spotted by an evaluator is the lack of indication whether the connection is stable. Moreover, an reviewer reported that the user is not able to edit a sub-task of a card once it has been added - only deletion is possible. Last but not least, an evaluator reported that the user cannot distinguish whether the board they have joined is read-only or read and write which is an issue of high importance because it prevents the user from having all of the necessary information to use the system. All of the aforementioned problems besides not showing status regarding the connection, were not frequently reported but our team is of the opinion that all of them are of high importance and adjustments should be made based on every reported issue.

3.2 Match between the system and the real world

Two of the evaluators reported that the color-picker tool is not optimal for the regular user. They recommended using hex codes instead of RGB values for the colors and also stated that "color scheme" is not a particularly user-friendly term. Another severe problem that was reported was the lack of explanation for the read-only and the write-only codes since some users may not know what those terms mean. Furthermore, a serious problem that was spotted by an evaluator was that the "add list" button is not intuitive enough. Finally, one evaluator recommended that we indicate that the user will also join the board after creating it on our board-creation screen.

3.3 User control and freedom

A severe problem reported in 4 out of the 5 evaluations is the lack of a way to reverse changes done by the user. Currently, there are also no warnings displayed when a delete button is pressed. Several reports mentioned that keyboard shortcuts for reversing these changes could be added. Another often reported problem is the password system. Server connection is mentioned in multiple reports, highlighting the lack of a clear disconnect button for the server. In 2 reports it is pointed out that there is no way to set, change, or remove passwords from a board, which we consider to be a serious problem. The evaluators have reported multiple issues with the board view frame. The most severe of these and also the most frequently reported issue is the lack of a delete button for lists.

3.4 Consistency and Standards

The problems that were reported the most are related to the size of some pop-ups and the placement of some components. The third and fourth provided mock-ups will have the same dimensions in

the final product, this was an inconsistency in the provided designs. It was also pointed out that we do not have a button in the board settings referencing to the color wheel. In the final product when clicking the square with the color a pop-up containing a color picker will be opened. It was also mentioned that we should change the "X" with something more intuitive but we believe that this is more accurate to represent this button's functionality.

3.5 Error prevention

Most of the problems for this heuristic relate to the absence of data validation. For the server address (cf. Figure 1), it is possible that it does not correspond to any URL, and the user can be unfamiliar with how the URL is structured. Errors are therefore likely to happen here. Likewise for the board code (Figure 3), since it consists of a long hexadecimal string, typing it will surely lead to errors and the only viable alternative is copying and pasting. Another possible error that could be prevented is accidental deletion of lists and cards. If that happens and there is no confirmation dialogue (or alike), the user could permanently and non-reversibly delete a component which he did not want to. Additionally, validation needs to be done for empty fields of a card (Figure 6), and in a similar manner for tags (Figure 9), lists and boards (Figure 4).

3.6 Recognition rather than recall

The most frequently reported issue was that the past server connections are not cached and it would have been easier if the user is presented by either a default or the most recent server connection address. Furthermore, a common reported problem was that the user is not able to see whether the cards have descriptions and if they do - what are those descriptions. Finally, a evaluator reported that 6, 9 are too detailed and appear too complicated for the user. We, the team members, believe that this makes the system really inconvenient to use and we should definitely make adjustments in order to resolve this issue. In conclusion, the reported problems connected to this heuristic are not a large number but changing our system in order to fix them should be prioritized.

3.7 Flexibility and efficiency of use

The most severe problem, reported in all of the five evaluations, was by far the lack of keyboard shortcuts and/or hotkeys. Most of those evaluations mentioned that we should have keyboard shortcuts to access a help page by pressing the "?" button, we should enable opening menus or activating create or join actions by pressing the enter key. It was also reported that we should implement a page that explains each shortcut that is available in the application. Another frequently reported problem was the difficulty and inefficiency of editing boards, lists, and cards. Firstly, the user should be able to input all of the information of the card while creating it, rather than having to create it using only a title and then having to edit the rest of the information. Furthermore, most of the evaluators recommend having a double-click to edit a title feature for the boards, the lists, and the cards. Finally, one evaluator recommended double-clicking tags to open their edit pop-up. An evaluator noticed the severe problem which is the lack of an admin control page. It was recommended to add a home page that allows the user to choose either the user or the admin view.

3.8 Aesthetic and minimalist design

Most common problem mentioned is the lack of colors in our design. The most severe is the lack of color for tags, but the overall lack of any color design for the windows should also be considered. One evaluator pointed out that the card should not display the names of the tags because the card should only display an overview of the information. Displaying the names of all tags would be repetitive. In one report, the evaluator pointed out that the information displayed in the sub-task progress bar and the ratio of completed sub-tasks displayed the same information. In addition, the sub-task completion bar takes up too much space and does not give a lot of insight in the progress when there are many sub-tasks to complete.

3.9 Help users recognize, diagnose, and recover from errors

The problem that occurred in all of the evaluations was to lack of a "Help" page that should guide the users through the shortcuts and the different functionalities of the buttons. In order to fix this it was agreed in the team that we will have a button that will open the help page. Another topic that was mentioned was the absence of the error messages when the user did something wrong, this will be added in the final product and will appear whenever the user does something that he is not supposed to.

3.10 Help and documentation

The most severe issue is the absence of a help page, as covered in section 3.9. Moreover, when errors happen, they should be displayed in a helpful way to help troubleshooting.

4 CONCLUSIONS AND IMPROVEMENTS

After taking into considerations all reviews about the visibility of the system status we came to the conclusions that the button's icon for changing the server on the homepage should be changed. Another icon or a different type of indication should be inserted that should inform whether the server connection is stable. We should add a functionality to the sub-tasks of the cards so they can be editable. Finally, we can add an icon or a label indication whether the board is read-only or read-write.

After considering the problems described by the evaluators regarding the match between the real world and the system, we came to the conclusion that we should use hex values instead of RGB ones in the color-picking tool. We couldn't find a more suitable term than "color scheme", so we will not be changing that. We are also going to be adding help buttons next to the read-only and write-only codes, explaining what each of these codes does. Another change that we are going to implement is recoloring the "add list" button in the board overview, as well as showing a tool tip when the user hovers over it in order to make it more intuitive. We will also change the label on screen number 4 to "Create and join a new board".

To allow users to reverse deletions or other changes, a keyboard shortcut should be added. Before deleting lists and other objects containing a lot of information, a warning pop-up should be added, asking user whether they want to delete the object. The password system should be added, allowing the user to change, add and

remove passwords for the boards. A delete button for lists should be added and a visible server disconnect button should be added

After reviewing the evaluations received we have decided that figure 3 and figure 4 will have the same sizes. We will keep the "X" icon in figure 2 because when clicking it the board will not be deleted from the system, it will simply be removed from the respective user's homepage and will need to be re-added later. Also we have decide to make it possible to access the color wheel for both the board and list costumization.

For error prevention, the application should ask for the Server IP and port separately, because leaving the URL for the user is not appropriate for the general user. This will also avoid errors with the formatting of the data. The board code could in theory be changed to a name (or short code) with a password. This will make it easier to memorise the board information and more intuitive for the general user. The accidental deletion of a component can be avoided (or at least minimised) by always having confirmation dialogues for this sort of operation. The validation of data fields can be done and information popups can be shown if the data is invalid.

TO make the system more convenient to use we came to the conclusion that we should set a by default value for the server address in the 'connect to a server scene' and we will also change the structure of the pop-up for the card and tag details so they do not have such a complicated layout. Finally, we will add an icon that indicates that when a card has a description.

Regarding the flexibility and efficiency of use, we will be adding all of the keyboard shortcuts that are mentioned in the backlog. We will be implementing help screens, as well as a screen containing information regarding the hotkeys. We will change the card creation form to include more fields (such as description). Double-clicking for editing titles is already implemented for some components, so we are going to implement it for the ones for which it isn't. We are going to have an option for the user to open an admin panel.

To make the design more visually pleasing, colors should be added to tags and to the design overall. Repetitive information such as tag names and the sub-task completion progress bar or ratio should be removed or reformatted.

Regarding the absence of a "help" page we have decided to add it once probably in figure 2. This page will guide the user through the different button functionalities and and keyboard shortcuts. We will also add error messages when the user does something not allowed.