OOP Project Report – Group 78

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1 INTRODUCTION

UI is inarguably a very important part of any application, being the element with which any user will interact. Therefore, for an application to be considered easy to use, or even intuitive, one must make sure its UI respects some criteria, from now referred to as "Heuristics". This paper will examine the task-list application "Talio" through the feedback of experts and implementation of given feedback by its team of developers, with purpose to improve upon its UI elements. The evaluated prototype will be that of Group 78, "The Sheep Blasters", and the following represent both initial pictures and descriptions of the evaluated application:
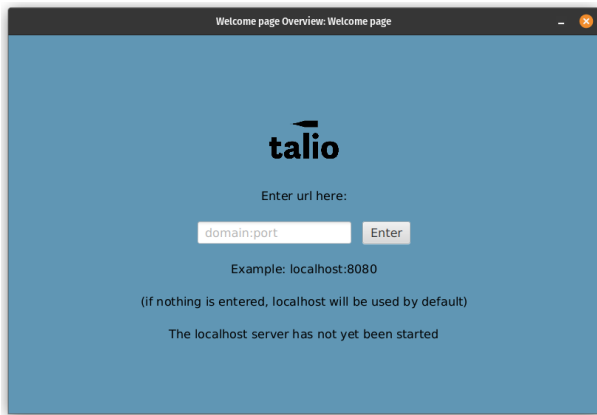

Figure 1: Welcome Screen

The image above represents the welcome screen, where a user can also enter the IP address of the server they want to connect to. The font used is DM Sans, and the main color choice is blue. The design itself uses rounded-corner boxes for both buttons and pages. The font is either black or gray and varies in size.

The image in Figure 1 represents the welcome screen, where a user can enter the URL of the server they want to connect to. The font used is Roboto, and the main color choice is blue. The design itself uses rounded-corner boxes for both buttons and pages. The font is either black or gray and varies in size. As it can be seen in the picture above, the application will let the user know when the URL is invalid.
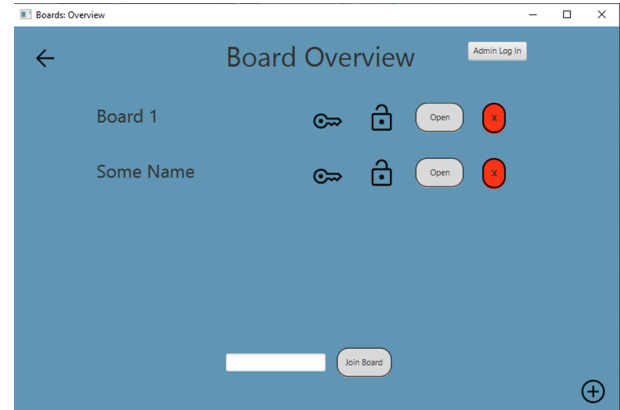

Figure 2: Board Overview

Figure 2 displays the Board Overview screen, where users can view all their joined or created boards. The "Back" button on the top left leads users back to the Welcome screen. The "Admin Log In" button on the top-right leads users to the Admin Log In screen. Each board has a "Copy key" button for sharing and a "Lock" icon indicating if it's password-protected. The "Open" button takes users to the board's screen, and the "Delete" button (red "X" icon) removes the board. The text field at the bottom is for entering invite keys to join boards, and the "Join Board" button adds them. Finally, the "Add Board" button at the bottom-right creates a new board.
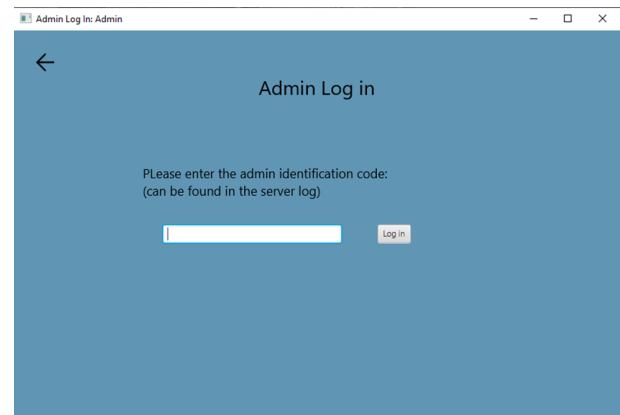

Figure 3: Admin Login Overview

In Figure 3 the "Admin Log In" is presented. Only server admins have access to the code in the server's log, which is a randomly generated 10-character string. By entering it in the provided text field, and pressing the "Log In" button, the user will be prompted with either the "Welcome, admin!" message, or simply returned to the "Board Overview" screen.
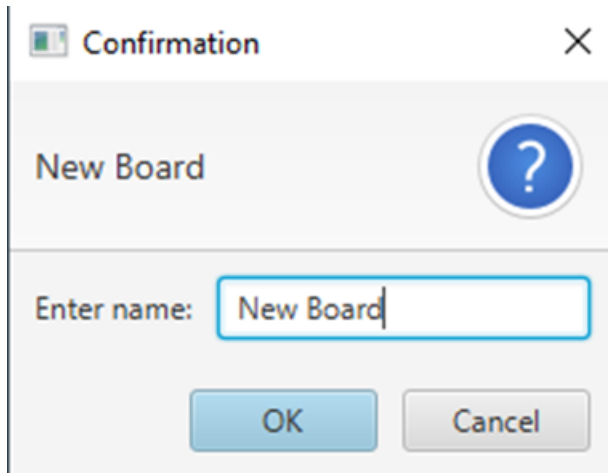
Figure 4: Creating a new board

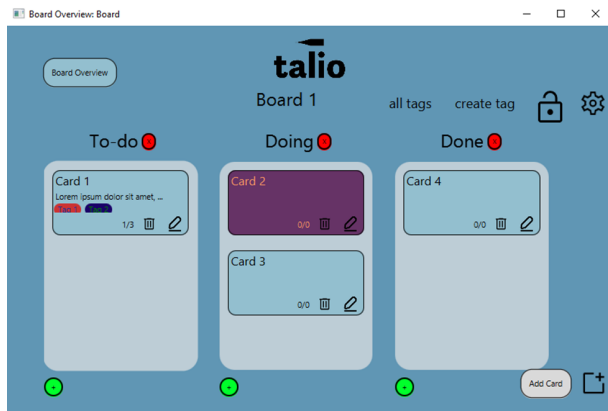Figure 4 shows a prompt that pops up when a user creates a new board.

Figure 5: Board View

In Figure 5, the board screen is displayed. It includes the Talio logo, a Board Overview button (leads to Board Overview Screen), All Tags button (leads to the Tag Overview screen), Create Tag button (leads to the Tag Creation screen), Lock button (opens a popup window which asks to input a password, locking the board), and Settings button (leads to the Color Management screen). The board title (currently "Board 1") is located right under the application's logo. The screen also displays three Collections, each holding Cards with visible title, description, "Edit" button (leads to the Edit Card Screen), and delete button. Added tags on the bottom of "Card 1" and a card with a different color preset, namely "Card 2" can also be observed. On the bottom of the page, there is an "Add Card" button (depicted with a "plus" sign in a circle, which leads to the Add Card Screen), and to its right is the "Add Collection" button (depicted through a square with a "plus" sign on the top-right). The mentioned screens are shown below, in order of appearance:

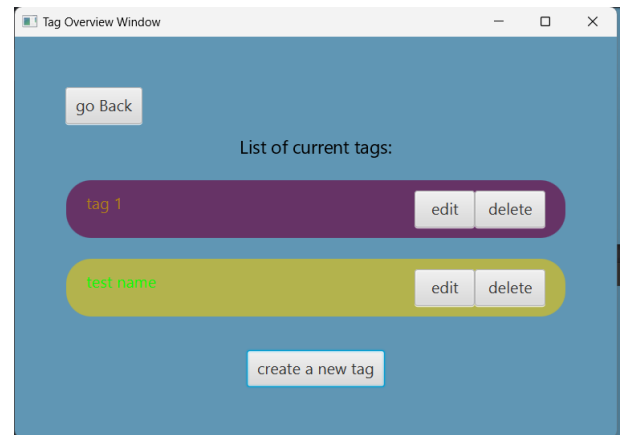Board Overview, Tag Overview, Tag Creation, Edit Card, Color Management, and Add Card.

Figure 6: Tag Overview

The image shown in Figure 6 shows the "Tag Overview" screen. On the top left, we have the "Back" button, properly labeled. Then, we can see the list of current tags. For each tag, we can edit or delete it by pressing the buttons. We can enter the "Tag Creation" screen by clicking on the "Create a new tag" button.
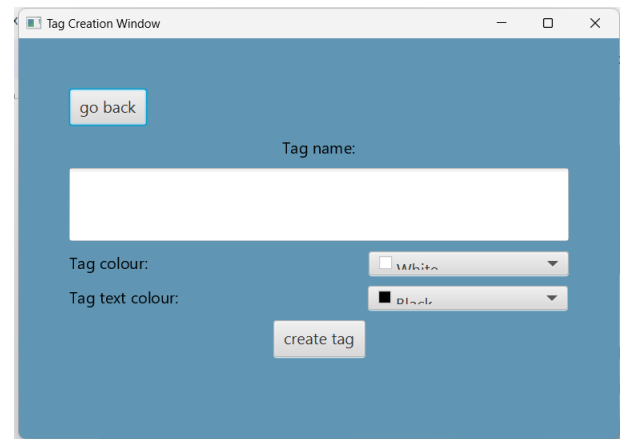

Figure 7: Tag Creation Overview

Figure 7 illustrates the tag creation screen. The "Back" button will lead back to the Board screen. In the text field, users can enter the name of the current tag. They can select the tag's colors from the drop-down menus, which also incorporate color wheels. They can click on the "Create tag" button to create their tag, which will prompt them with the message "Successfully added a new tag!", if the "Tag name" field has been filled out, or "Please enter some text for the tag's name!".
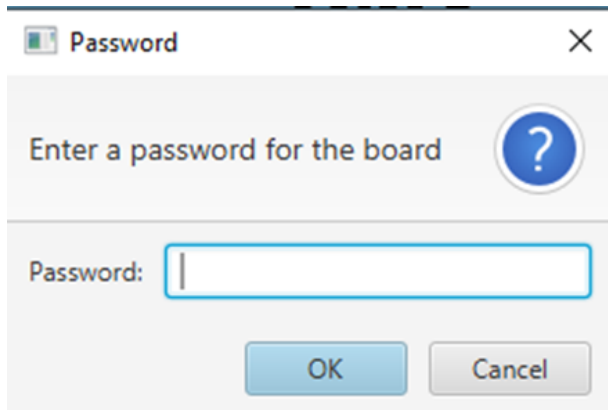
Figure 8: Password Popup Window

Figure 8 shows the Password popup window, which allows a user to lock their board through password-protection. Under the text field is the "Ok" button, which is used after the password is entered. It returns the user to the Board Screen, and changes the open lock icon to a closed lock.
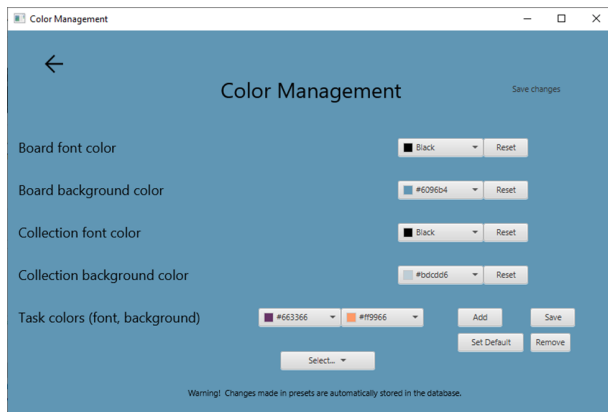

Figure 9: Color Management Overview

The "Color Management" screen is shown in Figure 9, and it offers users the option to change the colors of their board, collections, - options that apply only if the user clicks on the "Save changes" button on the top of the screen - and tasks. They can also be reset to the default colors, which are currently displayed. The tasks have color presets, which can be added (by choosing colors and clicking the "Add" button), edited (by selecting a color preset, changing its colors, and clicking the "Save" button), setting a color preset as default (by selecting a color preset and clicking the "Set Default" button), or removing them by clicking the respective button. Moreover, the remove option will alert users that the current default color preset nnot be removed.
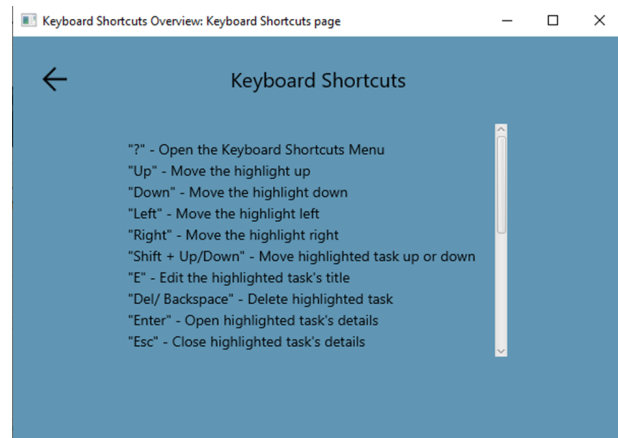
Figure 10: Keyboard Shortcuts Overview

This is the "Keyboard Shortcuts" screen, in Figure 10. All the shortcuts are shown here, and users can scroll lower to see all shortcuts. They can also go back to the previous screen using the "Back" button in the top-right corner of the screen.
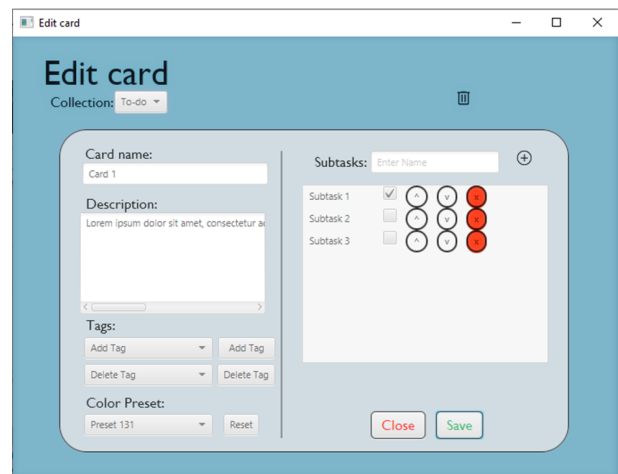
Figure 11: Edit Card Overview

Finally, in Figure 11 is the Edit Card Screen. The screen allows for the changing of a Card's name, its description, its tags, its color preset, or its subtasks. It then features two buttons on the bottom, a "Close" button, which cancels all changes made to the card, and a "Save" button, which keeps all changes. Both buttons return the user back to the Board Screen. A user can check (as completed), reorder, add and delete subtasks.

2 METHODS

Experts:

We have recruited four experts. Although their level of expertise was that of university students, their feedback was well-developed and highly valuable to the application's future development and improvement.

Procedure:

To evaluate our product, the experts looked over the application. Our team, Group 78, instructed them to look over our application. To do so, we decided to have an online meeting. The experts used a step-by-step **individual approach** (meaning each expert followed these steps in isolation) to evaluate the application and were also given a form in which their answers were recorded. The approach they were instructed to use was the following:

- They first had to look over each screen and try each button.
- Take notes on any process they found unclear, any error they encountered, and any design choice they deemed unfit.
- Make their way back from all screens to the "Welcome" screen.
- Explore all the application's functionality, in backlog order.
- Try to purposefully cause errors, by for example, leaving text fields blank, going against the app's instructions, or giving bad input.
- Write down their overall opinion on the design choices for each screen.
- After exploring all screens and taking the required notes, they were instructed to freely explore the application and make any additional notes on screens they found most faulty.
- Repeat these steps at **least three more times**.

The heuristics they used were Nielsen's usability heuristics, more exactly:

1. Visibility of system status.
2. Match between system and the real world.
3. User control and freedom.
4. Consistency and standards.
5. Error prevention.
6. Recognition rather than recall.
7. Flexibility and efficiency of use.
8. Aesthetic and minimalist design.
9. Help users recognize, diagnose, and recover from errors.
10. Help and documentation.

If the experts were ever to encounter problems, they would be helped by the members of Group 78, through hints towards the positioning of buttons or meaning behind icons or messages.

Measures:

As for what data to store, we measured the impact that certain aspects of the application's UI have on the experts through our form. These were made up of open questions, asking for feedback on each screen. All their answers were recorded by the form and kept in Group 78's Google Drive. Their answers were analyzed and attributed to heuristics by Group 78.

3 RESULTS

The results of the questions were varied, many offered valuable feedback, while others strengthened the idea that the application's UI was well-thought from the start. To report on all the findings, all heuristics will be once again listed, with the problems the experts found related to each placed underneath, reformulated in a clearer fashion by Group 78, making the terminology fit their application.

These were their answers related to the heuristics, answered in the order of appearance (of the heuristics):

1. Visibility of system status.
   - When hovering over buttons, users should see an explanation of what that specific button does.
   - Board locks for all users when locking it, but only for other users when the password is changed.
   - When creating a color preset, the font and background colors are reversed.

2. Match between system and the real world.
   - What is a collection? What is a card? What is a board? Terms are never explained.
   - What does the 0/0 on a Card represent?

3. User control and freedom.
   - The "URL" is not a term known by most common users
   - There should be an extra way of showing keyboard shortcuts since the only way now is through a keyboard shortcut.

4. Consistency and standards.
   - "Back" buttons are represented in too many ways and thus are inconsistent (arrows, "go back" labels, various other labels).
   - The "Add Collection" button icon is unclear and could be replaced by a button with text (i.e., the "Add Card" button). Users not only do not know what a collection is, but the button apparently represents nothing.
   - Cannot figure out how to scroll through more than 3 collections since no scroll bar appears. It is possible, but all experts were confused when it came to this.
   - After trying to edit a tag, the "Create tag" button remains stuck with the "Update Tag" text on it.

5. Error prevention.
   - Before deleting anything, an alert should pop up asking whether the user is sure they want to proceed. This is a very efficient failsafe against misclicks.

6. Recognition rather than recall.
   - Application should start with a default board so that users see how they could better interact with the application and better understand the terminology.
   - Going through the "All Tags" menu to the "Create Tag" menu and then attempting to go back takes the user to the Board screen instead of the "All Tags" menu.

7. Flexibility and efficiency of use.
   - Cannot edit a board's title when in the board, which seems counterintuitive, since the title can be edited by double-clicking on it in the Board Overview screen.

– Keyboard shortcuts offer great flexibility in the application, but they are also hard to figure out and difficult to access.

8. Aesthetic and minimalist design.

– Button placement in the BoardView appears premature, and should be more balanced.
– The logo in the BoardView is too large and obstructs the view from anything else, taking all the expert's attention away from the board's actual title.
– The "Board Overview" button could be replaced by a "Back" button altogether, to make things clearer.
– When creating a tag, the color names are not visible.
– Collection title is not centered and the longer the name of a collection is, the longer the collection itself will be, taking up extra space on the screen.

9. Help users recognize, diagnose, and recover from errors.

– App helps users recognize and recover from most errors. However, it does not alert users when they enter, for example, a wrong admin key.

10. Help and documentation.

– The Keyboard Shortcuts screen is not easily reachable. It cannot be reached without knowing the keyboard shortcut

Overall, these were the problems identified by the experts and their allocated Prioritizing Severity Matrix:

Problem	Frequency	Severity
Inconsistent "Back" buttons	5	2
Add Collection Button not recognizable	5	5
Keyboard shortcuts difficult to access	4	3
URL is a foreign term to some users	3	2
Subtask progress is not clear when there are no subtasks	4	1
Create tag vs update tag button conflict	5	2
Unable to edit board name from inside the board	1	1
No warning messages when deleting anything	5	3
No error message when the wrong key for the admin was entered	3	2
Text of the tag color in the tag creation screen is not visible	5	1

Therefore, we can observe that most problems originate from lack of consistency between buttons. However, there are other aspects of the application that the experts found confusing. For example, they found that asking for an URL on the starting screen is unclear. They also found that the Keyboard Shortcuts screen is almost impossible to access, since a keyboard shortcut needs to be used. Three out of four experts also reported problems when it came to creating a new collection.

4 CONCLUSION AND IMPROVEMENTS

The main conclusion that Group 78 was able to draw from the experts' observations is that their button placement or some icons are inappropriate for their given functionality, leading to confusion among the users. Moreover, as the experts have noted, the application needs more documentation when it comes to finding the Keyboard Shortcuts screen. As to take into account the experts' opinions on the matter, Group 78 have decided to take immediate measures to ensure proper functionality and usability of their application's UI.
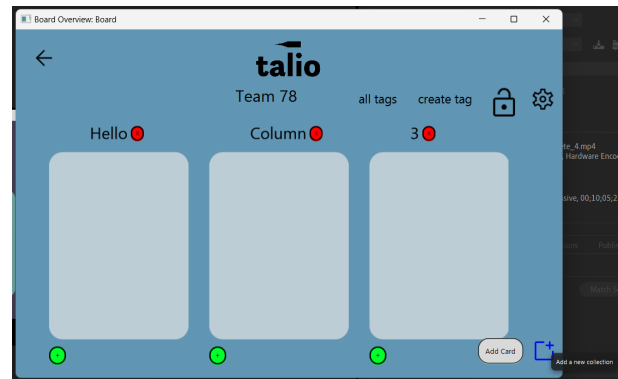

Figure 12: added on hover explanations

Figure 12 shows the on-hover explanation added to the "Add Collection" button, now stating "Add a new collection". The same has been done for other buttons as well, such as the "Lock" button and the "Settings" button. We can also see that the "Back" button has been replaced by an arrow, which is more consistent, rather than the previous "Board Overview" button, relating to the "Recognition rather than recall" and "Aesthetic and minimalist design" heuristics. Also, according to the "Consistency and standards" heuristic, the board name can be changed from the Board View. A guide telling users how to access the Keyboard Shortcuts menu has been added rather than a button, the application stating the keys needed to open the menu in the client log, relating to both the feedback from the experts and the "Visibility of system status" heuristic.

Finally, as for future plans, we will be fixing the issue with the color names in the "Tag Creation" screen not showing and the inconsistency between the "Create tag" and "Update tag" buttons, since they were deemed less important when it came to the "Consistency and standards heuristic".