Heuristic Usability Evaluation Report

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1 INTRODUCTION

The objective of this evaluation is to give a concrete and independent view on the heuristic usability of OOPP Group 48's design for the Talio application. Evaluation will be performed by a different group, and the results of said evaluation will be included in this report. The evaluation results will be used in order to consolidate the application.

We are only considering a prototype, as the product is not finished yet. The application has been designed similar to a SPA webapp (Single Page Application). By minimizing sudden scene change, the application not only prevents straining on the users eyes, but also makes for a smooth user experience. CRUD operations are covered by popups, allowing the user to still see what they were working on in the background while filling in relevant fields, not to break their train of thought. These were some of the most important reasons for settling on our design. On the left hand side of the start page of the application is a board listing, which represents the user's workspace. In the top left part there is a text input field where the user can provide another server for the application to connect to (see Figure 1). Below it, there are three buttons: Create Board - used to create a new board (see Figure 5), Join Board - used to join an existing board (see Figure 6) and Admin - used to gain administrator permissions, which allow doing maintenance (see Figure 7).

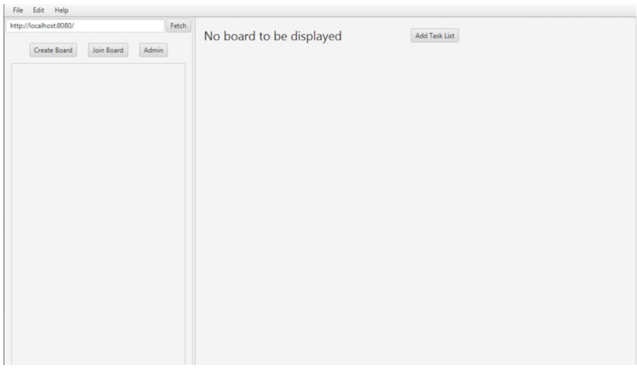
In the workspace, each board is represented by its name and id, and four action buttons for that respective board. Task lists on a board are represented by a horizontally scrollable list, with tasks within their task list container in vertical scrollable lists (see 3).

The boards can be accessed from the workspace. There are four buttons: View - which displays the board on the viewport to the right, Remove - which removes the board from the workspace, Edit - which opens the Edit Board popup that allows editing the board (see 8) and Delete - which opens the Delete Board Popup that allows the user to permanently delete a board (see Figure 9).

Lists can be added from the top right button (see 3), after the View button of a board has been pressed. Each list has three buttons: two in line with the name: Edit - which opens the Edit List popup and allows for editing the list(see 11) and Delete - which opens the Delete List popup and allows deleting the list (see 12), and another at the bottom - Add Task - for adding tasks to the list (see Figure 13). After adding a task, the list will look like Figure 3.

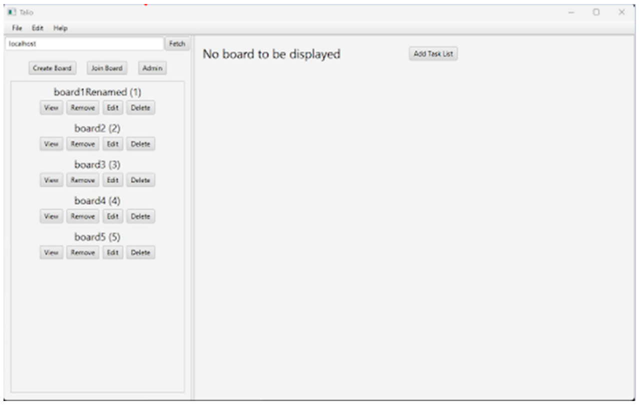
Each task has two buttons: Edit - which is opens the Edit Task popup used to edit the task details (see Figure 14 and Delete - which opens the Task Delete popup and allows the user to delete the task (see Figure 15). Tasks can be dragged within lists to different locations or to any spot in a different list.

A prototype of the full application has been created in Figma and is available *here*. It features all possible series of buttons and it clearly shows which popups are opened and the result after completing the operation.



No board to be displayed

Figure 1: This is the start page of the application.



No board to be displayed

Figure 2: This is the workspace after creating/joining multiple boards.

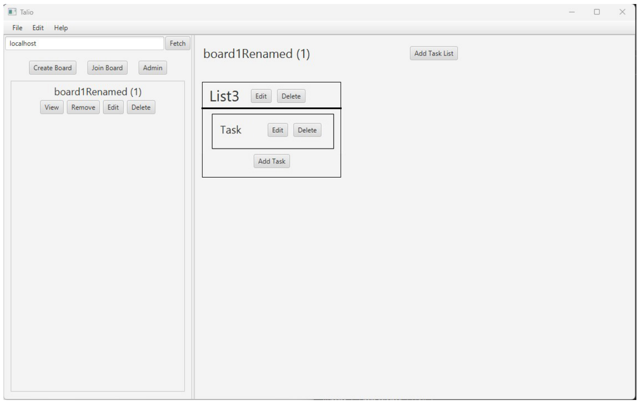


Figure 3: View board result.

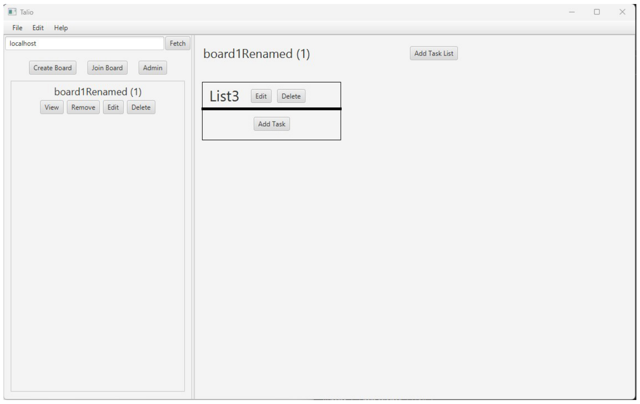


Figure 4: This is an empty list.

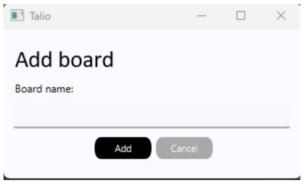
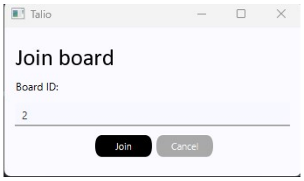


Figure 5: Create Board popup.



Board ID: 2

Figure 6: Join Board popup.

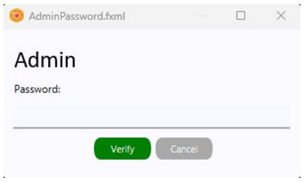
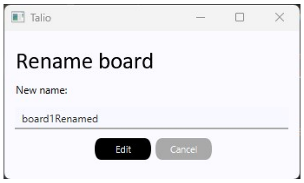
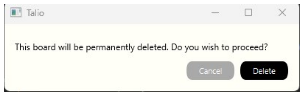


Figure 7: Admin popup.



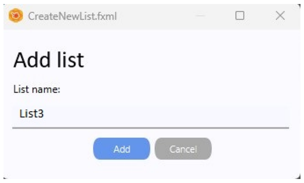
New name: board1Renamed

Figure 8: Edit Board popup.



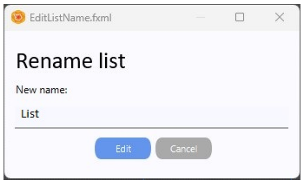
This board will be permanently deleted. Do you wish to proceed?

Figure 9: Delete Board popup.



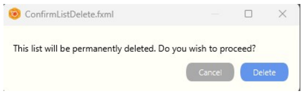
List name: List3

Figure 10: Create List popup.



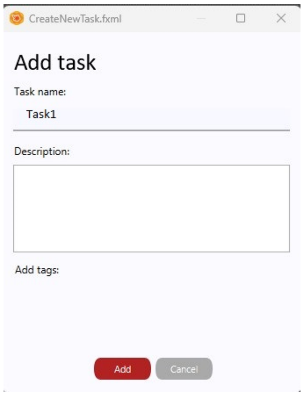
New name: List

Figure 11: Edit List popup.



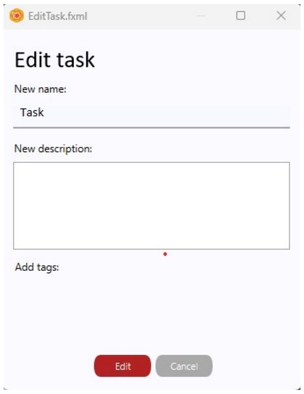
This list will be permanently deleted. Do you wish to proceed?

Figure 12: Delete List popup.



Task name: Task1

Figure 13: Create Task popup.


EditTask.fxml

Edit task

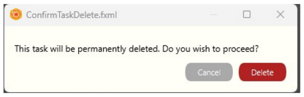
New name:

Task

New description:

Add tags:

Figure 14: Edit Task popup.


ConfirmTaskDelete.fxml

This task will be permanently deleted. Do you wish to proceed?

Figure 15: Delete Task popup.

2 METHODS

2.1 Experts

We recruited five experts from a different OOPP group (group 60), as Nielsen suggests recruiting "three to five evaluators since one does not gain that much additional information by using larger numbers"[1] . They are computer science students, with no experience giving feedback on heuristic usability, but with a lot of experience in using applications and a clear picture of what works best in their respective workflow. Because of this, we consider them to be adequate judges of usability.

2.2 Procedure

We are asking our experts to review our design and give feedback on the User Experience. This includes screen layout, application flow, and general style. The experts will be looking at a Figma design file which includes all screens of the application, including arrows that show how user actions flow between them. Any CRUD operations are also included in the design. The experts are expected to first have a look at the design file in order to get the general image of our application, and then discuss among them what things they like or dislike based on the overview. After taking note of the points brought up during this discussion, each of them should, individually, to follow all design paths from the prototype, evaluating them against the 10 usability heuristics, according to Nielsen[1]:

(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 then 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

Each expert should go over the paths in the prototype at least three times, in order to maximize the efficiency and spot as many problems as possible. During these runs, he/she should take notes of the problems found. After having done this, the experts will speak with each other, collect all the problems that they found and then have a final look at the prototype to spot any other issue.

2.3 Measures (Data Collection)

We are measuring the overall usability of our application. The evaluators should collectively gather all the problems they individually found and write all of them in a report. To effectively document the usability problems identified, the evaluators should present each of the issues according to the following format:

- Problem description - describe what the problem is
- Difficulties - outline the expected difficulties caused by the problem
- Causes - present what they think the cause of the problem is
- Severity - evaluate the problem using an “Impact - Frequency” scale and note the severity (low - medium - high)

We will gather their results in a Drive document that will be available for all out team members in order to address the issues.

3 RESULTS

As feedback from our experts, we received an unorganized list with a total of sixteen (16) distinct problems. We collectively reviewed the provided list, and attached a label to each of the problems, so they can be better categorized and analyzed. The labels are as follows:

"Invalid" - the feedback received implies a solution that goes against an item from the backlog and will therefore not be taken into account

"Oversight" - the remark is valid but it touches upon a mistake in the prototype which we have left in unintentionally, and which would have been fixed naturally, even without the received observation (these types of errors occurred due to the fact the prototype was made while we were still working on the GUI, so it was based on an unpolished version of the application)

"Redundant" - a feature not present in the prototype, but we would have implemented it even without the feedback

"Unnecessary" - a sound observation by the experts, but discarded on account of our consensus that it does not require to be implemented

"Valid" - valid remark that will be examined and implemented by our team

The only labels which were assigned to more than one problem were "Oversight" and "Valid", with the former being allocated to two problems, and the latter to eleven. All problems labeled anything other than "Valid" were discarded, and the remaining ones were further sorted by priority. The main sorting criteria, intuitively, was our consensus on how important the solution of each particular problem was for the the overall GUI. In other words, we aimed to identify which of these problems, when solved, would have the greatest positive impact on the user experience. For doing this, we used the matrix used during the lectures, and evaluated the impact and the frequency of the problem. The issues with the highest priority were then selected.

Just to clarify, we considered all feedback received, but the filtering process was specifically carried out for the purpose of this assessment.

The only discarded problem worth mentioning, labeled "Unnecessary", was that there is no confirm-action popup window when a user leaves a board. We found this needless because the action is easily reversible, but we did change the name of the button from "Remove" to "Leave", so the action feels more intuitive.

The final, refined, list of problems:

(1) Joining a board requires a specific board ID, which the user may not know or remember, and the ID is not visibly specified anywhere.
(2) The File, Edit and Help menu bars at the top of the screen serve no functionality, and can only confuse the user or mislead them.
(3) The list of available boards has no outline around each board, making them blend into one another. A user might have a hard time navigating this part of the application.
(4) The order of the buttons in popups is inconsistent throughout the application, and not in line with the accepted practice of action button first, cancel button second. This makes misclicks highly probable.
(5) The "Remove" and "Delete" buttons on the board menu are named too similarly. Accidentally deleting a board when the intention was simply to leave/remove it is likely.
(6) The Edit Task popup window has a section named "Edit Tags" instead of "Add Tags", which might confuse the user as they do not with to edit any tags, and instead simply add some to their task.
(7) The fetch button is not intuitively named, considering its function.
(8) Nothing limits the length of a list name. If a user wishes to input a long name, the text will go over the action buttons.
(9) Popup button names have inconsistent colors, which might arouse some suspicion in the user.
(10) The "Admin" button is ambiguously named, meaning the user might not, at first glance, understand its purpose.

4 CONCLUSIONS & IMPROVEMENTS

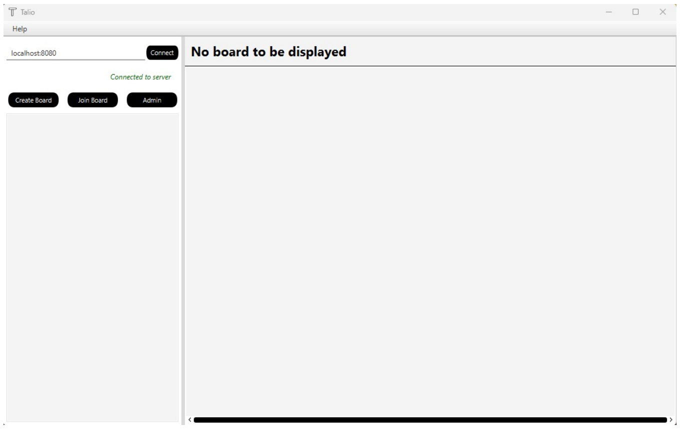
The evaluation conducted by the experts revealed several usability issues in the application that could potentially lead to a negative user experience. These issues were mostly caused by inconsistent design and naming conventions. As a result of the examination of our experts, the following changes were incorporated into our application:

(1) To fix the issue of users possibly not knowing that the number between the parentheses is the ID of the board, which is used to join a board, the app now displays "id:" before the ID. This means other users can share the ID with the user that wants to join. If no users are a member of the board, the user needs to ask the admin for the ID of the board.
(2) The menu bar at the top remains a part of the application, but we removed most of the buttons. Now the menu bar only contains the "Help" button which is used to display information about the shortcuts that can be used in the application. We decided to remove the buttons without any functionality in order to avoid confusion for the user and to keep the application as simple as possible. The changes were implemented in order to align with the "Aesthetic and minimalist design" [1] heuristic.
(3) To avoid the boards from blending in with each other in the workspace, we added a grey background to the button list so that the workspace has a more tabular appearance, and the distinction between different boards is clearer.
(4) We have reordered the buttons in the following way: first, to the left, is the action button (‘Ok‘, ‘Add‘ etc.) and to the right is the ‘Cancel‘ button. We decided to follow this design pattern as it is considered an industry standard, in accordance with the heuristic: "Consistency and standards" [1].
(5) In order to prevent confusion or accidentally deleting a board instead of leaving it, we have renamed the ‘Remove‘ button to ‘Leave‘. This conveys a better description of the button’s action. We have implemented this change even though the ‘Delete‘ button has a confirmation dialog indicating the board will be permanently deleted.
(6) We renamed the section to "Add Tags" and provided the functionality for doing so. Now there are no ambiguous fields or text messages in the Edit Task popup.
(7) The fetch button has been renamed to ‘Connect‘. This avoids the misconception of needing to click this button periodically to manually refresh the boards. This is already automatically handled by the application. The button now only conveys the intention of connecting to a different server. Additionally, we also improved the feedback given by the application about the server connectivity. Now, under the ‘Connect‘ button, there is a message which indicates if the application is connected to the server, if it is trying to connect to the server, or if the server is not found. This further decreases the ambiguity of the button and improves the user experience. We made these changes with the "Match between system and the real world" and the "Visibility of system status" [1] heuristics in mind.
(8) Users will still be able to provide long names for boards, lists and tasks, but we made sure that the text does not overlap with the buttons. Instead, when the name becomes longer than the available space, the part of the name that does not fit will be replaced with "...". This way we made sure that we do not limit the user in any way, allowing her/him to provide any name, no matter how long it is, and, at the same time, we prevented unwanted design bugs from occurring.
(9) All dialog boxes and popups now have consistent colors, respecting the "Consistency and standards"[1] heuristic. The application follows a general black-white-orange theme, and this is also reflected in the popups. All delete buttons

are consistently colored red, the cancel buttons feature a light grey color, and the action buttons are orange or black. Users are now able to quickly identify and understand the purpose of different buttons and actions based on their color. By using a consistent color scheme, the application also creates a sense of professionalism, which can enhance the user's perception of the product and brand.

(10) Although the "Admin" button may be ambiguous for some users at the first glance, clicking it does not have any consequences as it opens a popup which asks them to provide a password. We highly believe that this is in accordance with the "User control and freedom heuristic" [1], as it is easily revertible by clicking the Cancel button.

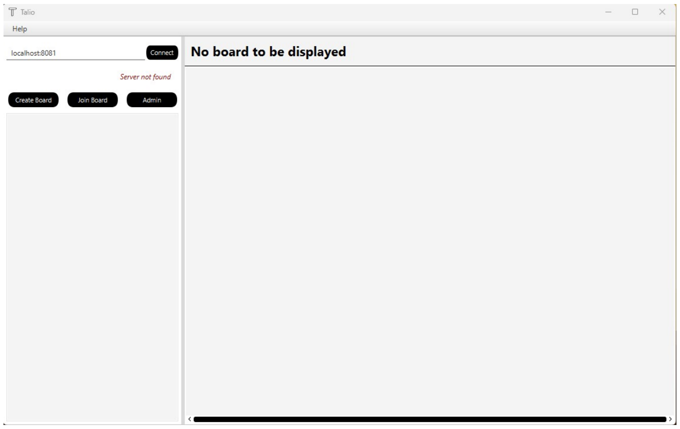
The changes have had a positive impact on the user experience. The application is now more consistent, it has a professional design and there are no major problems regarding ambiguity of the buttons. Overall, we believe that these improvements made our application more user-friendly. Additionally, we have added our application logo to all the windows, as you can see in the images illustrating the final state of the GUI design below.



Connected to server

No board to be displayed

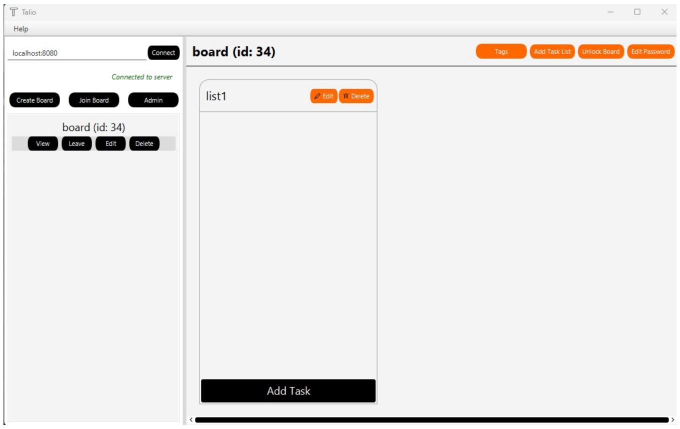
Figure 16: This is the start page of the application.



Server not found

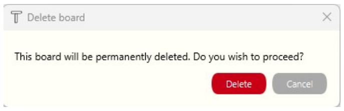
No board to be displayed

Figure 17: This shows the message displayed when the server is not found.



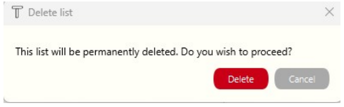
Connected to server

Figure 18: This is a board with an empty list.



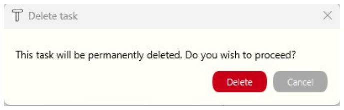
This board will be permanently deleted. Do you wish to proceed?

Figure 19: This is the delete board popup.



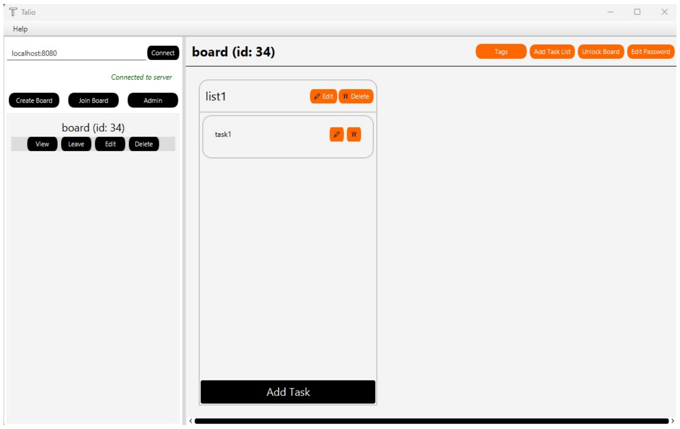
This list will be permanently deleted. Do you wish to proceed?

Figure 20: This is the delete list popup.



This task will be permanently deleted. Do you wish to proceed?

Figure 21: This is the delete task popup.



Connected to server

Figure 22: This is a board with a list that has a task.

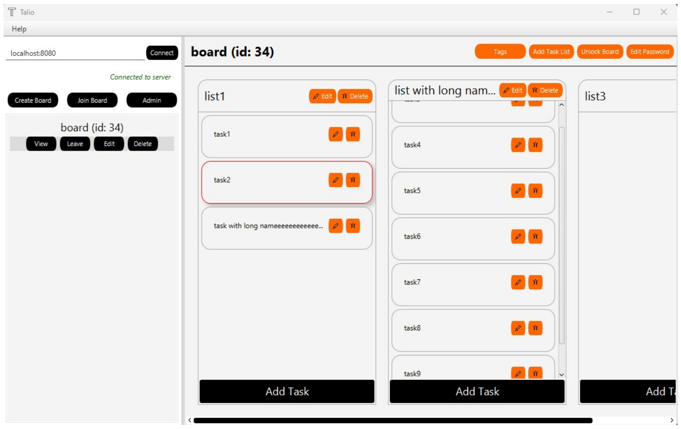


Figure 23: This is a board with multiple lists and tasks.

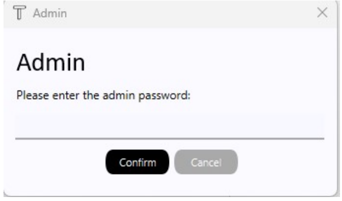


Figure 24: This is the admin popup.

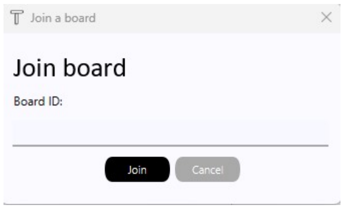
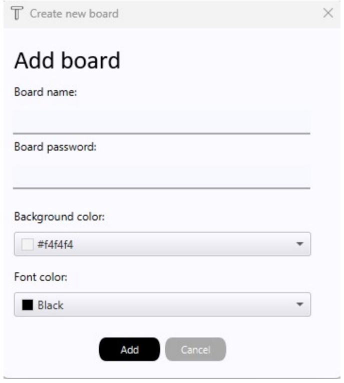


Figure 25: This is the join board popup.



Background color: #f4f4f4

Font color: Black

Figure 26: This is the add board popup.

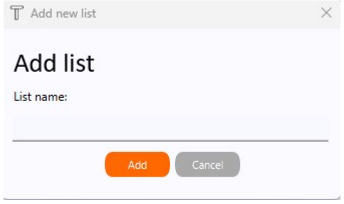
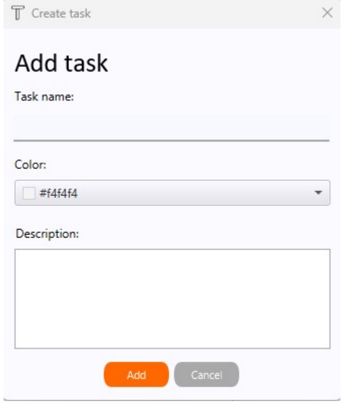
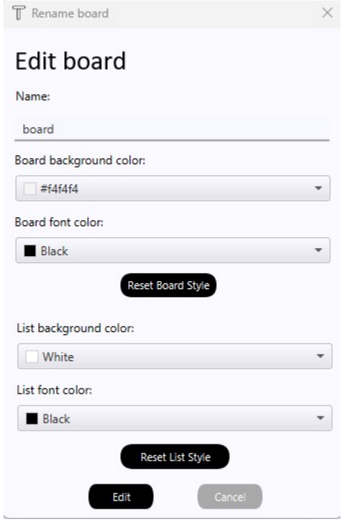


Figure 27: This is the add list popup.



Color: #f4f4f4

Figure 28: This is the add task popup.



Name: board

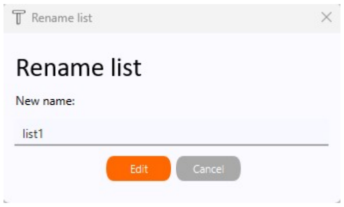
Board background color: #f4f4f4

Board font color: Black

List background color: White

List font color: Black

Figure 29: This is the edit board popup.

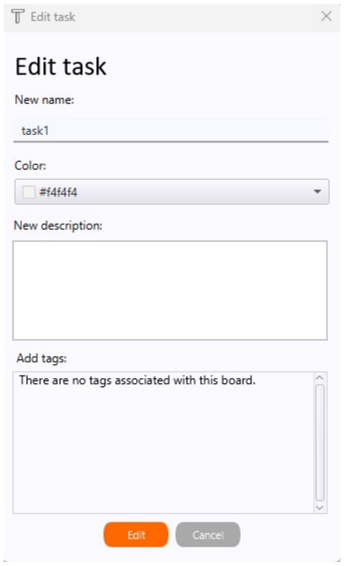


Rename list

New name:

list1

Figure 30: This is the edit list popup.



Edit task

New name:

task1

Color:

□ #f4f4f4

New description:

Add tags:

There are no tags associated with this board.

Figure 31: This is the edit task popup.

REFERENCES

[1] Jakob Nielsen. 1994. 10 Usability Heuristics for User Interface Design, In International Conference on Silly Walks. *Nielsen Norman Group*. https://www.nngroup.com/articles/ten-usability-heuristics/