OOP Heuristic Evaluation Report – Group 10

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1 INTRODUCTION

By collaborating with another OOPP group a heuristic usability evaluation was conducted with the goal of evaluating the usability of our application with possible improvements. The prototype consists of Mockups with explanations of transitions between different scenes and feature use. Experts will evaluate the implemented software and mockup prototypes.

2 METHODS

2.1 Experts

The evaluation recruited 4 experts, the demographic of the experts range from the ages 18-19, all having training on the aspects of performing a heuristic evaluation with a basic technical outlook on object-oriented programming. The benefit of this technical outlook is that experts are able to understand where some issues are occurring and provide appropriate improvements. Thus, they were able to find various usability issues that we have not considered.

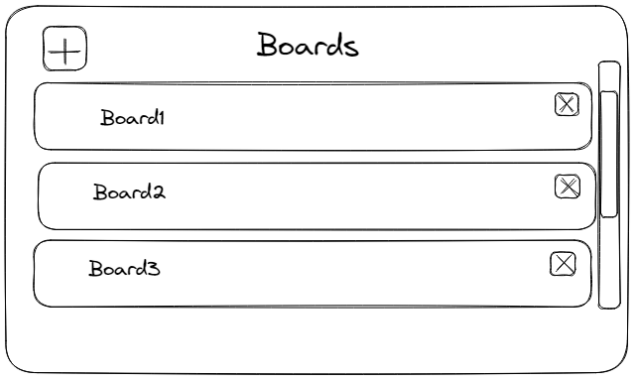

Figure 1: List of boards

When opening the application a list of boards is present if boards were already created. If not, you can add a board by pressing the "+" button, this goes to figure 2. Clicking on a board will show a figure 3.

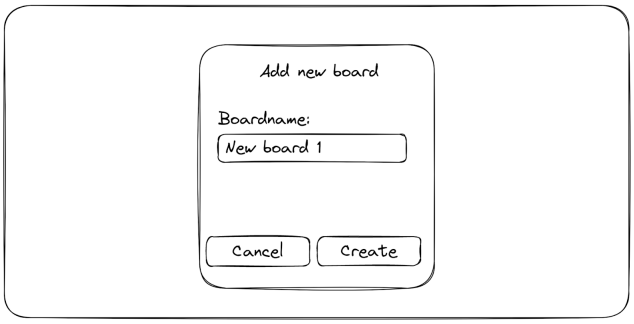

Figure 2: Add new board

In figure 2 it is possible to create a new board and name it. This will add the name to the list in figure 1 and show the figure 1 again. Clicking the cancel button will show the figure 1 without any addition.

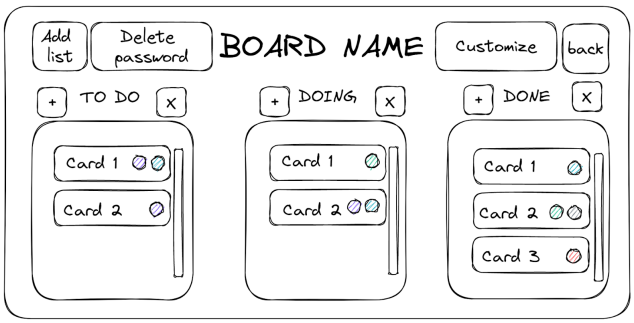

Figure 3: Board overview

When creating the board, it will lead to this scene in figure 3. It is possible to add a list using the "Add List" button, or pressing the back button to go back to figure 1. When you click on the "Add List" button it transitions to figure 4. When clicking on the "+" button next to a list name it shows figure 5 where you can name your new card. Double-clicking on a list title goes to figure 11.

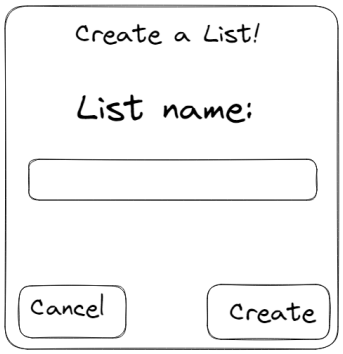

Figure 4: Create list

In figure 4, clicking on the cancel button goes back to figure 3, and clicking the create button goes to figure 3 with a new list name.

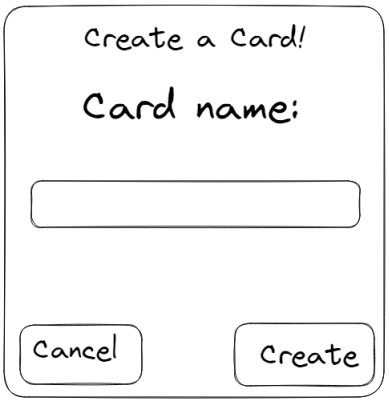

Figure 5: Create a new card

Filling the name and pressing the create button switches back to figure 3 with a card in the designated list. By double-clicking on the created card in figure 3, a new scene in figure 6 will be shown to edit the card.

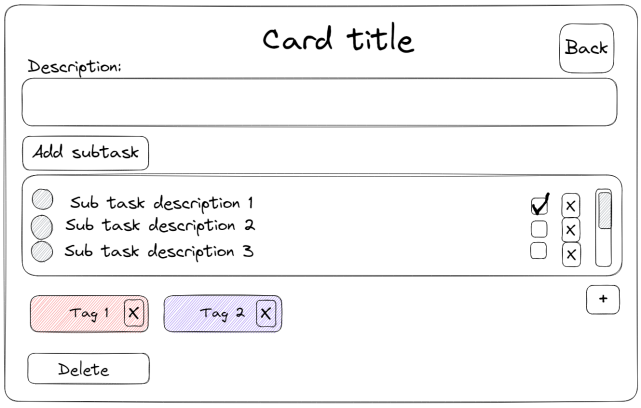

Figure 6: Edit/view card

Double-clicking on the card title switches to figure 7 and clicking on the "Add subtask" button switches to figure 9 where a subtask can be added. Besides this, clicking on the "+" sign next to the tags will switch to figure 8 where a tag can be added, and clicking on a tag switches to figure 10 where the tag can be edited.

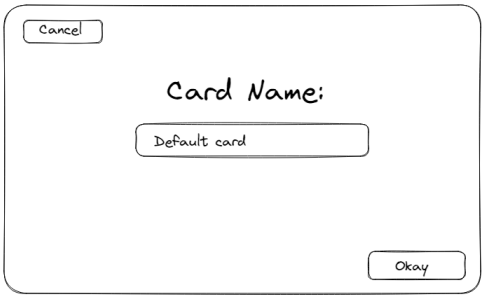

Figure 7: Edit card name

The card can be renamed and pressing "Okay" goes back to figure 3 with the new card name. Pressing the "Cancel" button will go back to figure 3 with the original name.

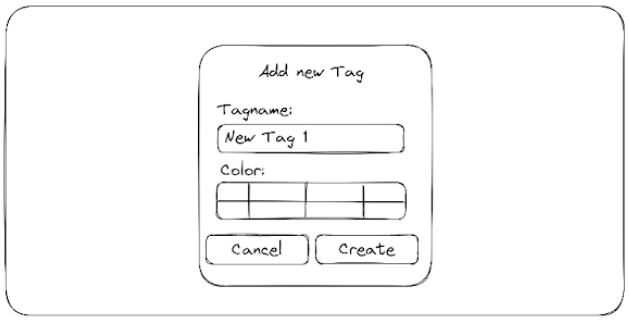

Figure 8: Create a new tag

A tag name can be entered and color can be chosen in this scene. Pressing the "Create" button adds a tag to the card in figure 6 and "Cancel" button goes back to figure 6 without adding anything.

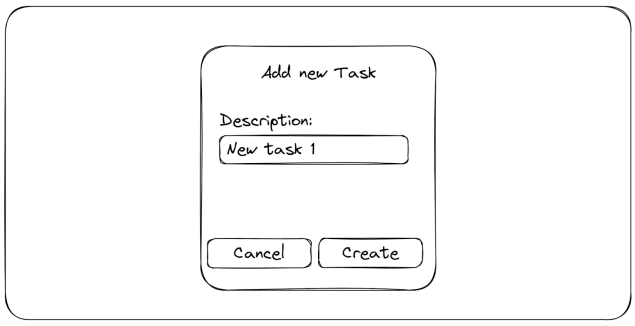

Figure 9: Create a new task

A description can be entered, "Cancel" button will go back to figure 6 without adding anything. The "Create" button will go to figure 6 with a new subtask.

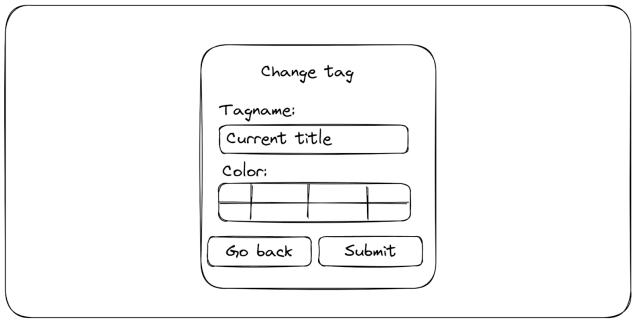

Figure 10: Edit/view tag

Renaming the tag and submitting goes to figure 6 and "Cancel" button will switch to figure 6 without renaming.

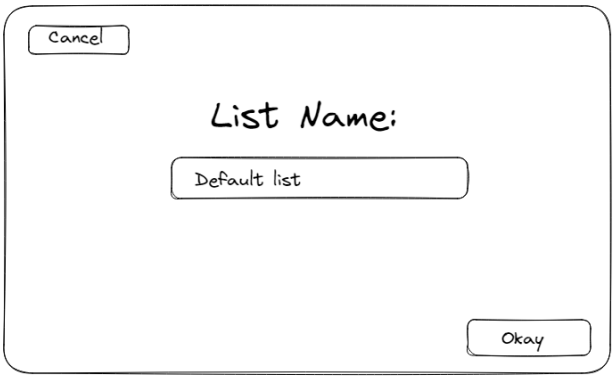

Figure 11: Edit list name

Pressing "Okay" renames the list going back to figure 3, pressing "Cancel" goes to figure 3. Pressing the "Delete" button removes the list and goes to figure 3.

2.2 Procedure

The 4 experts had been gathered in a room where an observer from our team was present, in case they needed guidance. The observer's role is to note the expert's use of the app compared to the initial intentions.

Each expert was provided with part of the developed application, and mockups referenced features not implemented yet as well as a list of goals. Experts were free to choose which goals to evaluate with an emphasis on going through the application multiple times. Experts wrote the usability issue and its corresponding heuristic, only having communication with the observer if needed.

The goals are divided into 2 parts: the application functionality and mockup designs which are not yet implemented. The goals presented to the experts did not contain instructions on how they should be achieved.

2.3 Goals

The experts have to evaluate the application 3 times, each time focusing on a different goal. This allows more freedom of choice for the experts and can detect issues that occur which are not dependent. Each goal contains an intended step-by-step instruction which is not shown to the experts for comparison and reference sake.

Mockups are referenced in these steps with their respective number, while arrows show transition between mockups.

Application goals:

Create a new card in the default list

Click on the "+" button on the top right of the default list and enter a card name. Then click the "Create" button.

Create a new list

Click on the "Add List" button and enter a name, and by pressing the "Create" button a list is made.

Delete the card

Double-click on a card, and press the "Delete" button to delete a card.

Add two cards to a list and change their order

Create two cards in an empty list by following the first goal. Holding a card and hovering it over the other changes the order of the card.

Edit a card name

Double-click on the card, rename the text field, and finally press enter to change the card name.

Edit a list name

Click on the "Edit" button on top of the list, change the text in the field, and then click enter to change the list name.

Delete a list

Click on the "Edit" button above the list and press the delete button to remove it.

Move a card from one list to another

Click and hold the card, hover it onto another list, and finally release it to move the card.

Mock-up goals:

Create a new board

If not yet in the board lists scene, first click on the 'back' button in the board overview on the top right (3) → (1) , click on the plus button on the top left (1), enter a board name in the text field (2) and press enter or click on the create button (2) → (1)

Add a new tag to a card

Double click on a card (3) → (6) and press the 'plus' button on the bottom right (6) → (8) and enter a tag name in the text field (8). Select one of the given colors by clicking on said color with the mouse (8) and click on the create button on the bottom right (8) → (6)

Delete a tag

Double click on the card you want to delete the tag from (3)→(6) and click on the cross inside the tag (6)

Change a tag name

Double click on the card that contains the tag (3) → (6) and double click on the tag (6) → (10). Change the text inside the text field (10) and press the submit button on the bottom right (10).

Remove a board

If you are not yet in the board lists scene, first click on the 'back' button in the board overview on the top right (3) → (1). Then click on the cross next to the board name you want to delete (1).

Add a sub task to a card and tick it off

Double click on a card (3) → (6) and click the add sub-task button in the top left. (6) → (9). Enter a name for the sub-task in the text field (9) and click on the create button or press enter (9) →(6). Finally, press on the square next to the name of the newly created sub-task (6).

Remove a sub task

Double click on a card (3) → (6) and click on the cross next to the checkbox of the right sub-task (6).

3 RESULTS

3.1 Processed results

In table 1 and table 2 we see the raw data of the feedback that we received for each element and the corresponding heuristic. From this raw result the processing is done, based on two main criteria: the frequency and severity of the issue.

For example, the criticism on the window size (related to User control and Freedom heuristic problem) had been mentioned by 3 experts, therefore it is of frequency 3. The next criterion, severity, is ranked on a scale from 1 to 5, with 1 being the least severe and 5 being the most severe. Evaluating the severity of an usability issue takes into consideration five factors: User Impact, Frequency, Persistence, Visibility, and Consequences.

Heuristic	Element	Feedback
Match between the system and the real world	Add button	Not informative enough
	Delete button	Not informative enough
	Removing board	Button not working
	Editing list name	Not intuitive
User control and Freedom	Choose server	Not implemented
	List of joined boards	Not implemented
Consistency and Standards	Window size	Every screen resized to default size
	Empty list name	Can be empty, which crashes application
	Drag & Drop	Not consistently working
	Empty card name	Can be empty, which crashes application
Error prevention	No confirmation	Not prompted for approval
	Error Message	Change error message color to red
Flexibility and Efficient use	Delete list	Not intuitive
Aestatic and Minimal design	Board overview	No customized background color
Help and Documentation	Edit list help	Not clear/ not implemented
	Guidance	Not implemented

Table 1: Feedback per Heuristic

Taking the previous example of the window size, it is seen that this can certainly hinder a user's ability to complete a certain goal therefore affecting user impact. It is also seen that this issue frequently occurs as it is mentioned by three different experts. The issue is persistent as it occurs more than once when trying to complete several tasks. However, while the issue may be confusing and result in a slower completion time, it does not ultimately prevent the user from achieving their goal. Therefore the consequences are not as severe. Based on the factors mentioned above the severity of the usability issue is rated as a 4, as it meets many of the criteria present.

Element	Frequency	Severity	Impact
Add button	3	4	12
Delete Button	3	4	12
Window size	3	4	12
Empty list name	4	3	12
Drag & Drop	4	3	12
Empty card name	4	3	12
List of joined Boards	2	4	8
Removing board	2	3	6
Edit list Name	2	3	6
Choose server	2	3	6
Board overview	2	3	6
Delete list	1	2	2
No confirmation	1	1	1
Error message	1	1	1
Edit list help	1	1	1
Guidance	1	1	1

Table 2: Feedback per Element, sorted on impact

The final processing is the impact of the issue which is calculated by multiplying its frequency and severity. Using the window size for example, which has a frequency score of 3 , a severity score of 4, resulting in an impact score of 12. By following this processing for each of the feedback given by the user the processed table is acquired. It uses prioritization analysis as improvements to the application are based on the final impact score of each usability issue.

4 CONCLUSIONS AND IMPROVEMENTS

4.1 Conclusion

From the processed table 2 the issues with the greatest impact of 12, relate to the user interface. The reviewers noticed that the User Interface was not intuitive. This section is organized by highlighting 4 main usability issues with an impact score of 12 and then their respective improvements/changes after each conclusion.

One example from table 1 with regard to the "Match between the system and the real world" are the Add button and Delete button. As can be seen in table 2, both elements received an impact of 12, and thus are of high importance. In figure 12 we can see the old layout.

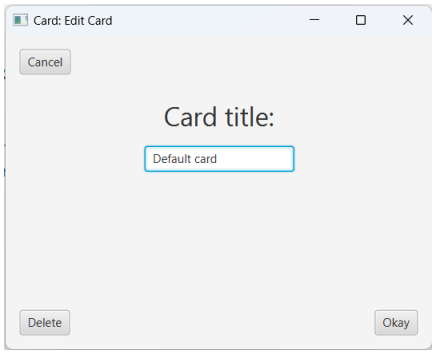

Figure 12: Window that enables users to edit card information

In the process of editing a card, a delete button is provided to remove the current card. However, experts interpreted this feature as deleting the card title instead of the entire card. Similarly, misunderstandings occurred with the Add button, which is represented by a '+' symbol, as illustrated in Figure 13.

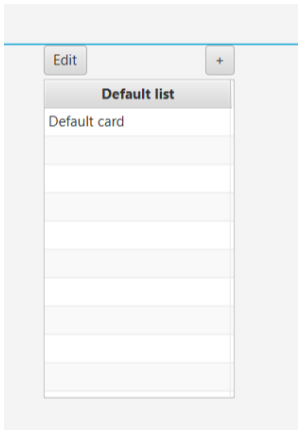

Figure 13: Window of a list where a card can be added

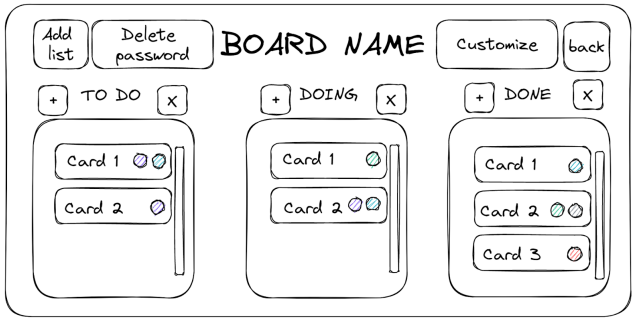

Figure 14: previous implementation

The experts mistakenly believed that the "Add button", represented by a '+' symbol, was intended for creating a new list rather than a new card. To address this heuristic issue, the suggested improvements involve repositioning the buttons in the UI and using descriptive text instead. The aim is to minimize misinterpretations of the element's features.

Based on the feedback received, Figure 14 was redesigned to appear as shown in Figure 15.

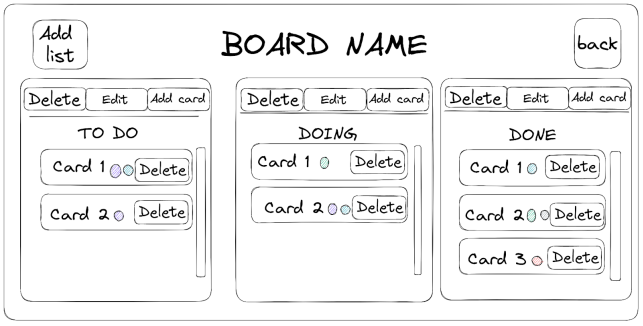

Figure 15: Redesigned list overview

By comparing figure 12 and 14 to figure 15 it becomes evident that using descriptive text for the "Add button" and "Delete button" eliminates misinterpretations. This is achieved by placing an "Add card" and "Delete button" inside the list, rather than displaying them only when the card is clicked. This ultimately resolves the heuristic issue "Match between system and real world" on both the respective elements. Greatly reducing the impact score from table 1 which was 12. This is because the system is responding to the real-world application that it is meant to perform instead of being misunderstood.

From table 1 and table 2, the heuristic of: consistency and standards, on the element editing list name and empty card name both have an impact of 12, as the names can be set to empty. Resulting in a clear violation of the user's ability to use the application, as both elements are inconsistent with its intention.

To resolve this issue, a check is created. Informing users that an empty name is not allowed, as can be seen in mockup 16.

Figure 16: Label informing the user that an empty Card-name field is not allowed

This is an improvement because a check creates consistency in preventing errors in the application. Without this improvement, empty cards or lists would be created therefore hindering the application seen in figure 17.

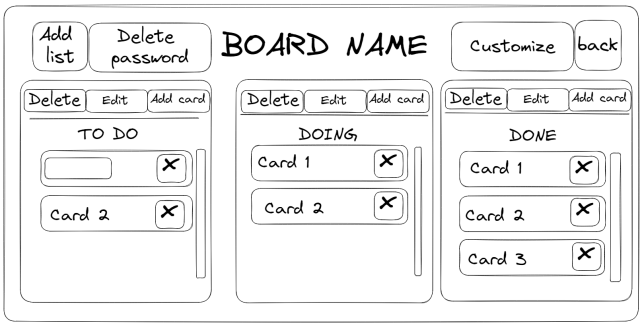

Figure 17: Card with empty name created

The improvement reduces the severity and impact of the issue completely from 12 to 0. Correlating this issue to the heuristic of Consistency and standard, it is seen that creating this check for both adding a list/card and editing a list/card creates consistency in the application. As the check was previously only implemented when adding a card.

Prioritizing the improvements we see that they are all based on their respective heuristic, and organized based on the impact of each issue and the element. The improvements above span 4 different usability issues across different heuristics, however, these in particular are prioritized and chosen because their impact score is the highest being 12.