Heuristic Usability Evaluation – Group 13

Alexander Nitters, Daniel Langov, Eve Smura
Karsten van der Deijl, Klara Hirmanova

1 INTRODUCTION

This is a heuristic usability evaluation of a to-do list application created by team 13. We are aiming to determine the overall viability of our current prototype and weed out any problems with our design's usability and functionality in order to be able to address and improve this. Our main goal in this evaluation is to identify issues that decrease the quality of the user experience of our application and improve upon them, so that the user interface is clear and intuitive. This report will lay out our findings and potential improvements found, as well as our methods used to acquire these conclusions. An overview of the prototype in question can be seen in Figure 1.

The prototype consists of an overview of multiple potential views that should exist within our application, that the user might encounter at different points in time while using the various operations available in the process of using the application. In between these views we have placed arrows that show the potential order of the transitions. The text boxes placed under the arrows describe how and under which conditions the application will initiate the transition between the views connected by the arrow. In addition to that, there are some comments, which are intended to provide further clarification on the various functionality as well as the intended workflow of the application.

2 METHODS

2.1 Experts:

For this heuristic usability evaluation, we have partnered with experts from another project group - group 40. These experts were aged between 18 and 21 years old and are first-year Bachelor's students of the Computer Science and Engineering program at TU Delft. The partner group was knowledgeable in Java and the various frameworks used in our project. Each of them has undergone some training in user interface design, as it has been part of the Web and Database Technology Course [1] as well as the Object Oriented Programming Project course [2], where they were taught the principles of Heuristic Evaluation and good user interface. The chosen experts were familiar with the product and the necessary requirements, which was very important to us, and an aspect we took into consideration when partnering with Group 40. Their awareness of the intended effect was incredibly helpful, as they knew exactly which views and features in particular were likely to contain flaws and design problems. It also meant they could effectively imagine the workflow of a user, as they were aware of the intended user audience and the purpose of the application.

2.2 Procedure:

We scheduled an in-person meeting with our partner group and exchanged prototypes the day before so that everyone had time to familiarize themselves with the applications and think ahead about what issues they notice in the user interface. As this meeting was scheduled before the actual applications were fully developed, the prototypes provided were in the form of Figma designs and PowerPoint slides. This method is supported by Nielsen 1990 [5] when the project is in the early usability engineering life-cycle [4]. Each group was divided into one observer, who helped evaluators navigate through the prototype and answered any questions, and five evaluators who evaluated the other team's prototype, as more is not recommended [4]. Before the start of the evaluation, we agreed on which heuristics (apart from the 10 main ones [3]) would be assessed and decided that category-specific heuristics would not be necessary, as our applications aren't as complex or unique. We picked an observer from our team (Daniel Langov), based on the fact that he was the creator of the design of our prototype, who presented our prototype to the opposing experts. He created the prototype as a combination of PowerPoint slides, which contained screenshots of the already existing user interface, and a Figma file which contained features that hadn't been implemented yet. Since our prototype was divided between the two parts, he was the one who navigated through it as a user and showed the experts how a user would interact with the app. The evaluation lasted between one and two hours and the evaluators inspected our prototypes in three rounds, writing each inspected suggestion down. We were presented with their findings after the meeting.

2.3 Measures:

During the evaluation meeting, the experts recorded their observations in a separate file. Their file included a color legend and suggestions (based on the color legend) based on the part of the application: Board, List, Card, Tags, or Miscellaneous, that they were referring to. Their evaluation also included a Tops section, which contained features they liked. The observer from our team also took notes of the suggestions the experts mentioned during the meeting. The evaluation of the experts and the observer has been reformatted to a table in which it is clearly visible what problem they had observed, what heuristic it is regarding, and their suggestion. We have also ordered the suggestions based on the priority severity matrix where we analyzed the problem's impact, priority, and difficulty.

3 RESULTS

Table 1: Heuristic Evaluation

Category	Problem Description	Heuristic	Suggestion	Difficulty
Board	There is no request for confirmation for deleting a board	3: User control and freedom	Add a pop-up with an 'are you sure' text	2
List	There is no request for confirmation when deleting a list	3: User control and freedom	Add a pop-up with an 'Are you sure?' text	2
Card	There is no request for confirmation when deleting a card	3: User control and freedom	Add a pop-up with an 'Are you sure?' text	2
Board	There is no undo or redo button	3: User control and freedom	Add an undo button when deleting a board	5
List	There is no undo or redo button	3: User control and freedom	Undo button when deleting a list	5
List	When there is a large number of cards in a list it is hard to clearly differentiate them	8: Aesthetic and minimalist design	Add a scroll bar into a list	3
Card	When cards get smaller and there are more elements it is hard to clearly understand what they contain	8: Aesthetic and minimalist design	Add scroll bars	3
Tags	When there is a lot of tasks it is hard to read them	8: Aesthetic and minimalist design	Consider using scroll bar	3
List	There is no way to assign a title to a list when creating it	7: Flexibility and efficiency of use	Consider a pop-up after you create a new list that asks for the title of the list	2
Board	It is not very clear that a board is an empty board	6: Recognition rather than recall	Change the name from "Untitled" to "Untitled Board"	1
Board	Make it more clear when a workspace does not have any board	7: Flexibility and efficiency of use	Add a text in the middle of a page that says "This is an empty workspace, create a board by hitting the '+' symbol in the top right corner". This text should disappear when a board is created.	1
List	When a title is too long you can't see the full text and instead there is just '...'	8: Aesthetic and minimalist design	Consider wrapping text when titles get longer	1
Card	There is no option to go back from the "edit card" view or to cancel the changes made	3: User control and freedom	Add a cancel button in the edit card scene	2
Card	There is no clear way to enter the task customization/modification	6: Recognition rather than recall	Add a button which leads to the task edit scene instead of only double-click	2

Category	Problem Description	Heuristic	Suggestion	Difficulty
Card	When you edit a card description the border of the input box is not complete	8: Aesthetic and minimalist design	Add the right edge	1
Card	Designs of card and edit card scene aren't same	4: Consistency and standards	Keep the design consistent	2
Card	There is no way to assign a title to a card when creating it	7: Flexibility and efficiency of use	Consider a pop-up after you create a new card that asks for the title of the card	2

In Table 1 you can see the resulting table with the expert's and the observers' evaluations merged together. We have tried to keep up with the document structure sent to us by the experts as much as possible however, we had to reorganize the suggestions to order them by priority. During the reorganizing stage, we have taken into account not only the problem description but also the difficulty and frequency, which we chose not to include in the table for readability purposes, but which were included in the document provided to us.

4 CONCLUSION AND IMPROVEMENTS

Across the application based on our own observations as well as the feedback from our experts we can conclude that the feel, for lack of a better word, of the user interface is rather pleasant and good as it stands. We can extrapolate this from the positive results regarding user-friendly language, consistent naming/UX, and ease of orientation for the user. Nonetheless, our design is far from perfect and we have identified some room for improvement, both across the entirety of the program as a whole, and the 3 main sub-components of the application. Across the program as a whole an important point that we will address is the lack of notification to the user when they are to perform potentially dangerous actions, such as confirmations for deletion. Another shortcoming that came out of this investigation was the lack of undo/redo functionality. This is an important feature many applications possess, as it allows users to undo potentially devastating errors that they could make. An additional result that was brought forth in our investigation was the lack of user input requests, for example the lack of a request for new titles. It should be made more clear to users that they have the ability to add a title when a new board, list, or card is created. We have however opted not to implement this due to the limited scope of our application and its requirements. In conclusion, while our current user interface design certainly has some good aspects that we will carry forward, we still have quite a lot of particular shortcomings to address and improve. Firstly, we will address the need for confirmations when deleting something, by showing the user a notification box pop-up when they attempt to delete a resource. This pop-up box will request for the user to confirm they would in fact like to go forward with the deletion. Next, we will add undo buttons to improve the user experience and allow for more flexibility. Another change that will be made to transition the prototype into a final design is hiding the username and password fields when the 'login as admin' toggle is not selected, since this may confuse users. In the board management user interface, we will also make improvements: namely We will add a display with the text; "This is an empty board, create a list by hitting the '+' symbol in the top right corner" on a board when it is empty, in order to indicate to the user that the board is empty, and how to change this. This will aid in the clarity of communication between the program and the user, allowing the user to more easily identify if they are in fact on the right page. Similarly to the board empty display, we will do the same thing to empty workspaces displaying; "This is an empty workspace, create a board by hitting the '+' symbol in the top right corner". Next, we will add a confirmation pop-up, similar to the the deletion pop-up, when the user attempts to disconnect or change boards. In the list management aspect of the user interface we will add a scroll bar (horizontal), since otherwise when the amount of lists gets larger than the width of the window they become inaccessible to the user. In the task/ card management area of the user interface, we will add a button on each card that clearly leads to the card editing window, since there was no obvious way to reach this before. There is also currently no way to backtrack from entering the card editing UI. We will add a button to cancel changes in order to allow the user to be able to return to the state that the card was in before they started editing. Overall the user interface is functional and intuitive, but it lacks some functionality that would improve the workflow of the application, and we hope the improvements listed above will help mitigate that issue.

REFERENCES

[1] TU Delft. [n.d.]. TU Delft Study Guide. https://studiegids.tudelft.nl/a101_displayCourse.do?course_id=61475. Accessed: 2023-06-04.

[2] TU Delft. [n.d.]. TU Delft Study Guide. https://studiegids.tudelft.nl/a101_displayCourse.do?course_id=61477. Accessed: 2023-06-04.

[3] Jakob Nielsen. [n.d.]. 10 usability heuristics for user interface design. https://www.nngroup.com/articles/ten-usability-heuristics/

[4] Jakob Nielsen. [n.d.]. How to Conduct a Heuristic Evaluation. https://www.nngroup.com/articles/how-to-conduct-a-heuristic-evaluation/

[5] Jakob Nielsen. 1990. Paper versus Computer Implementations as Mockup Scenarios for Heuristic Evaluation. In *Proceedings of the IFIP TC13 Third Interational Conference on Human-Computer Interaction (INTERACT '90)*. North-Holland Publishing Co., NLD, 315–320.

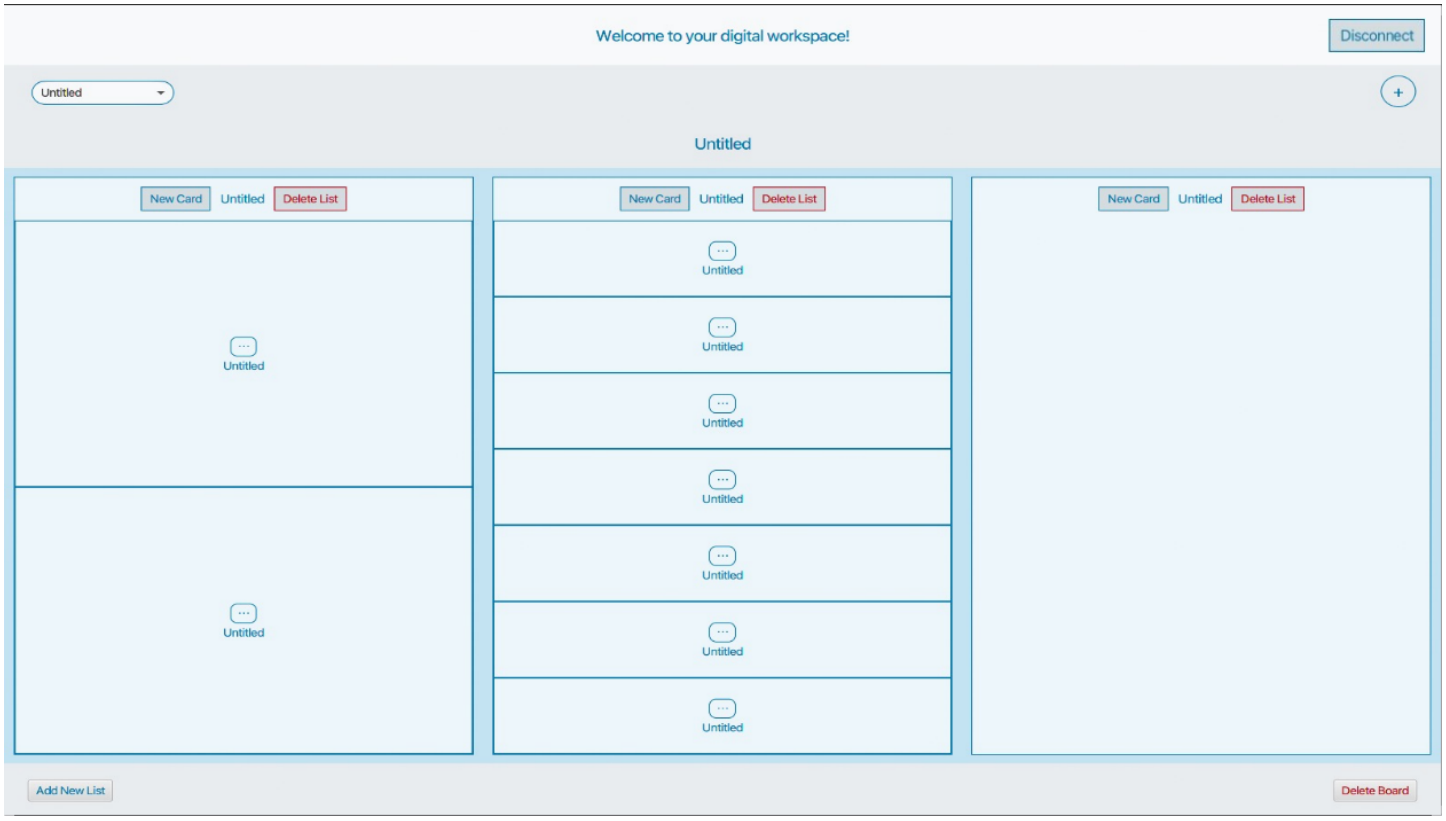

Figure 1a: Prototype for main page
Powerpoint prototype showing a full board with some lists and cards

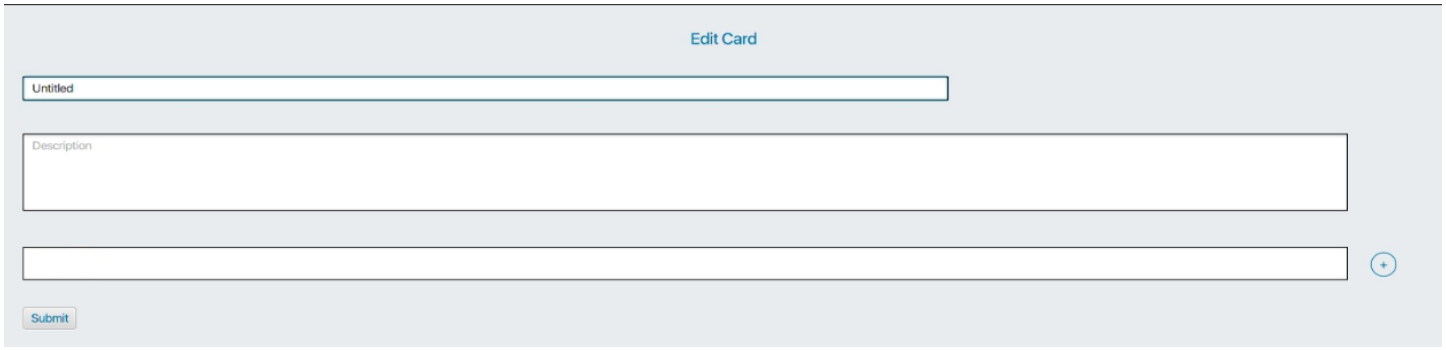

Figure 1b: Prototype for card editing
Powerpoint prototype showing the card edit page with all the corresponding fields

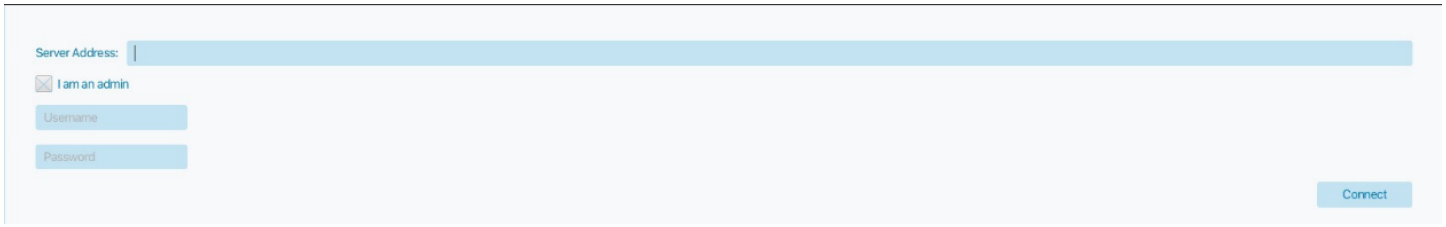

Figure 1c: Prototype for server connection
Powerpoint prototype showing the server connection screen

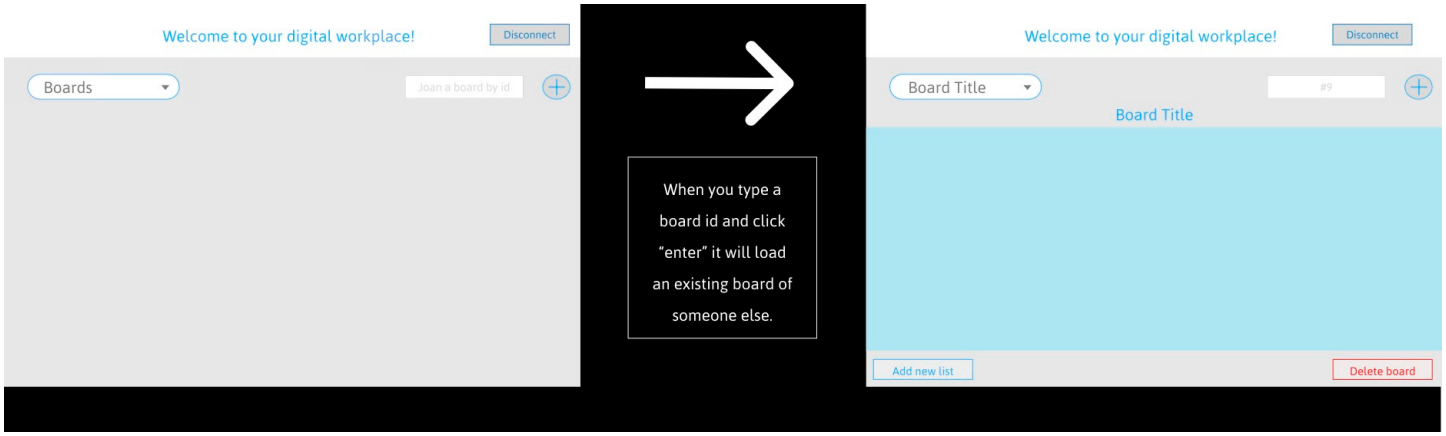

Figure 1d: Prototype for main page
Figma mockup showing the main page with the board creation procedure

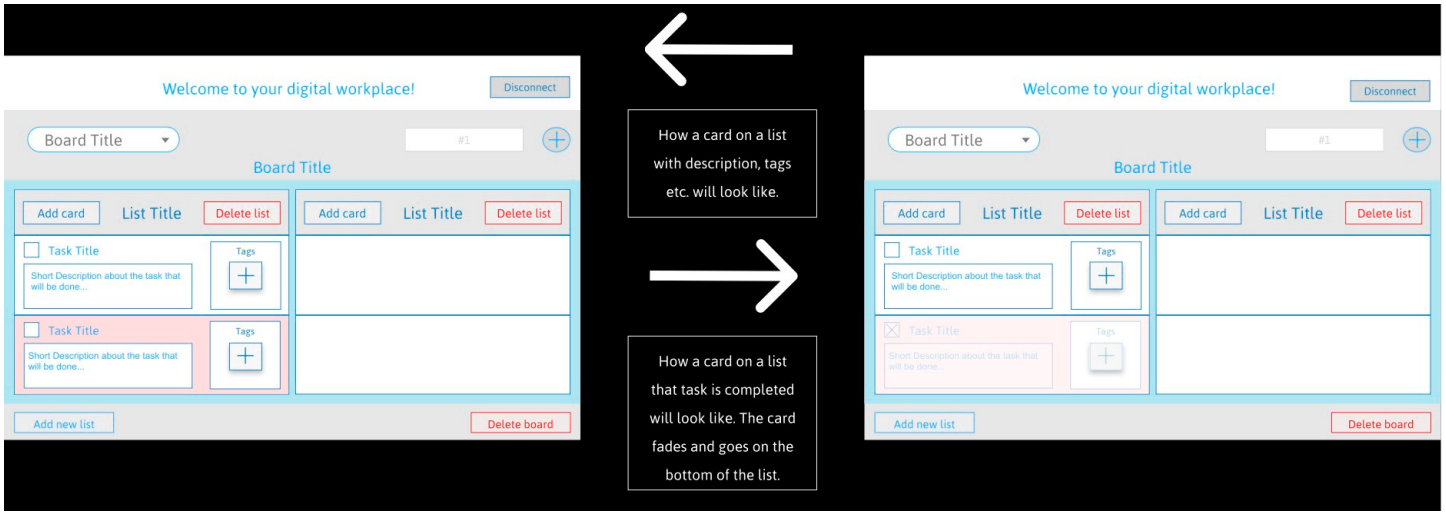

Figure 1e: Prototype for cards and lists
Figma mockup showing a full board with some lists and cards

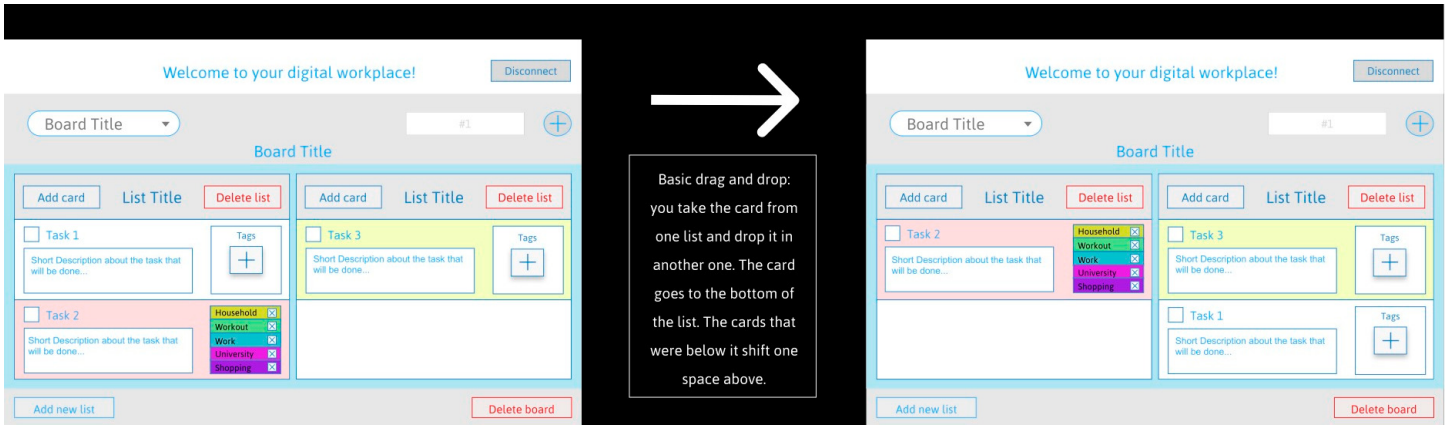

Figure 1f: Prototype for drag and drop
Figma mockup explaining how drag and drop should work

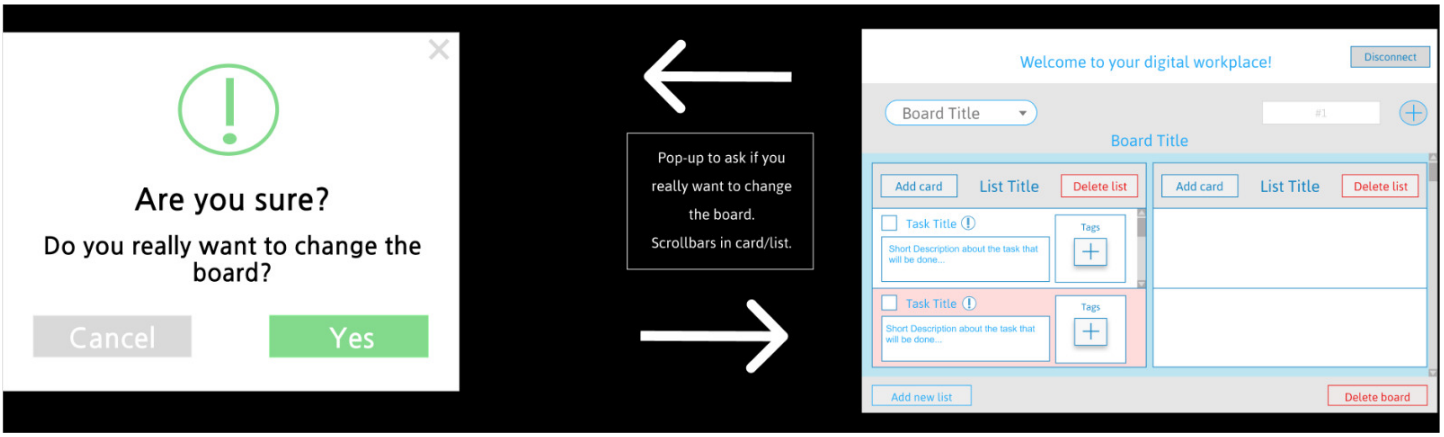

Figure 2a: Improvements to board
We added scrollbars to the lists, and popups when editing the board

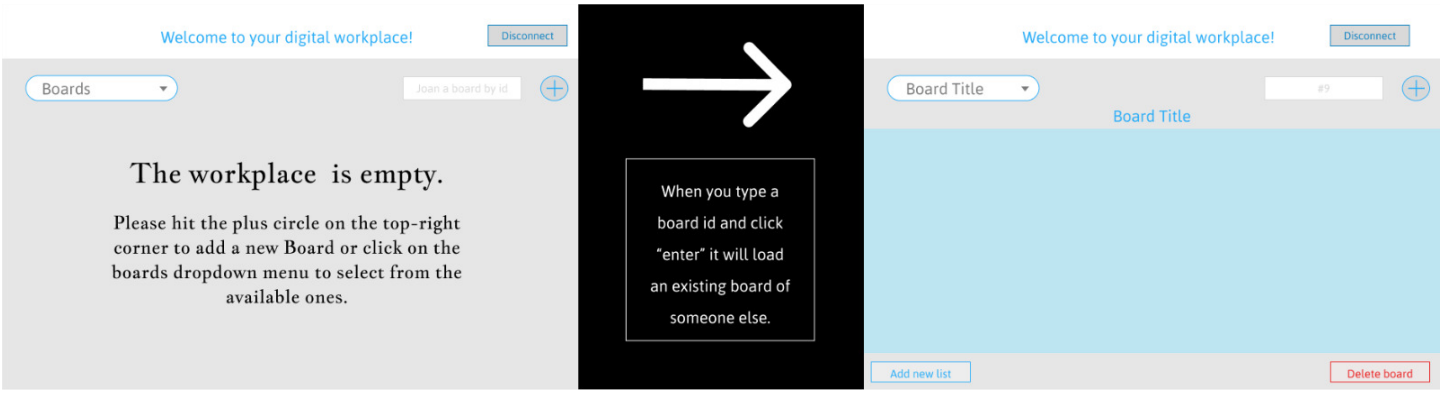

Figure 2b: Improvements to empty state
We improved the state of the board when there are no joined boards by adding some text

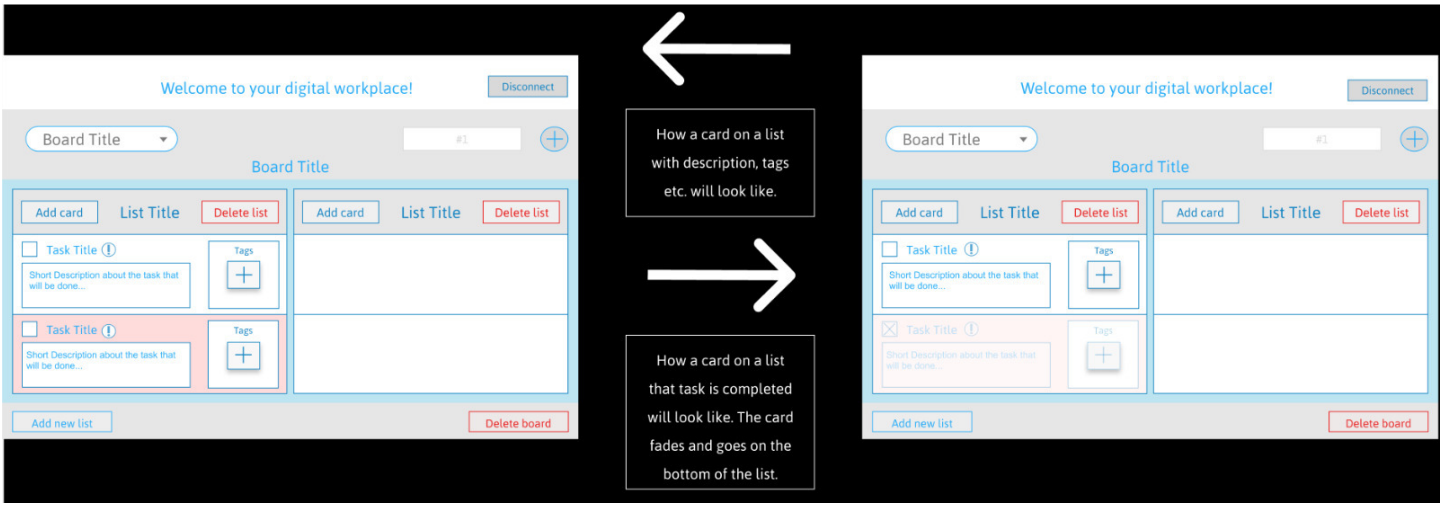

Figure 2c: Improvements to card display
We added a faded-out effect to cards that are marked as done

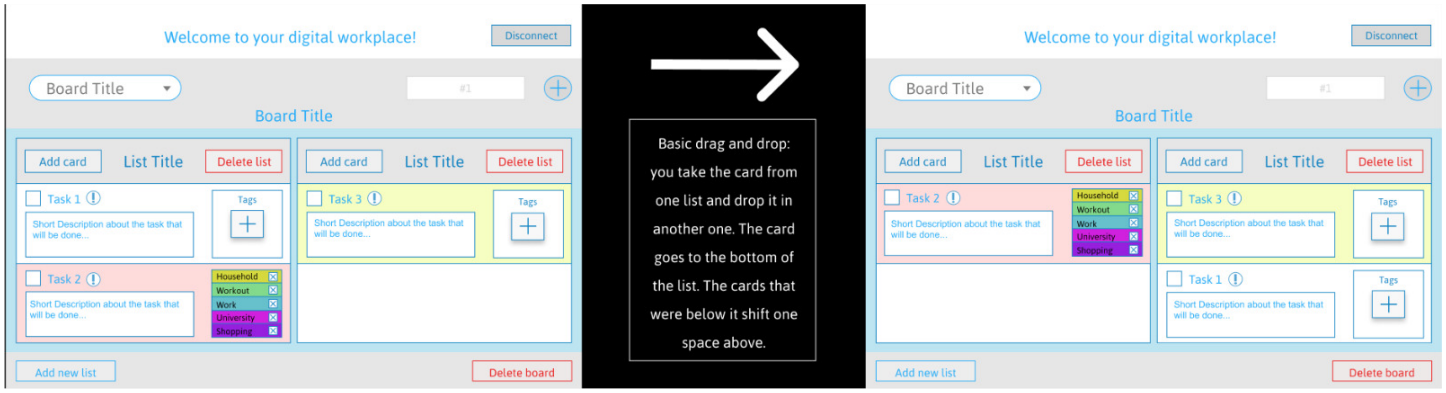

Figure 2d: Improvements to drag and drop
We improved the description of drag and drop in the mockups

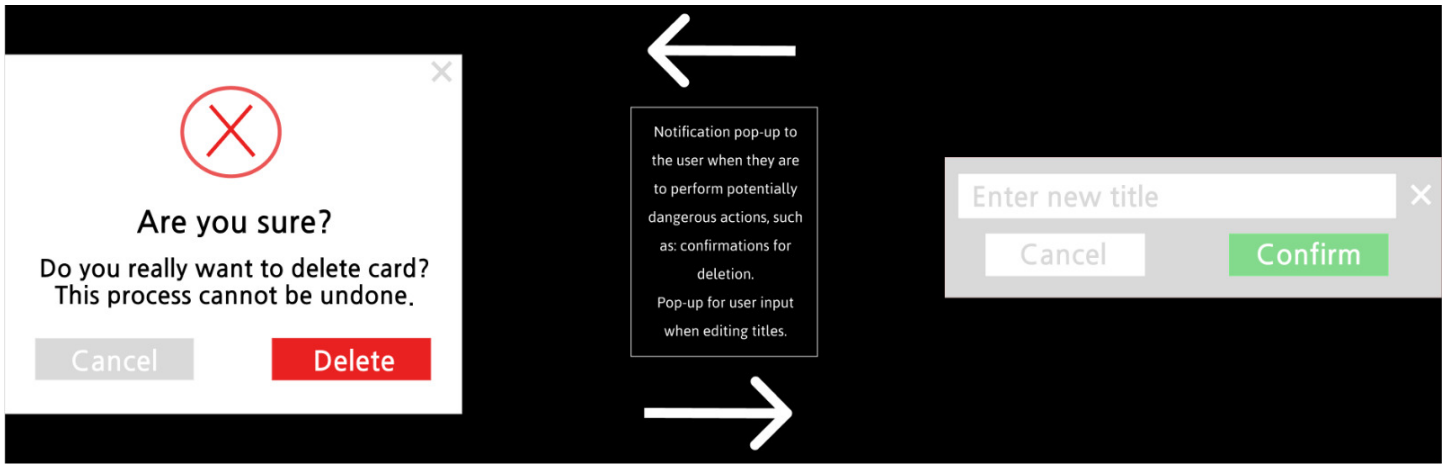

Figure 2e: Improvements to editing and deleting
We added popups to confirm deletions, and a new popup for editing the card title when it is created

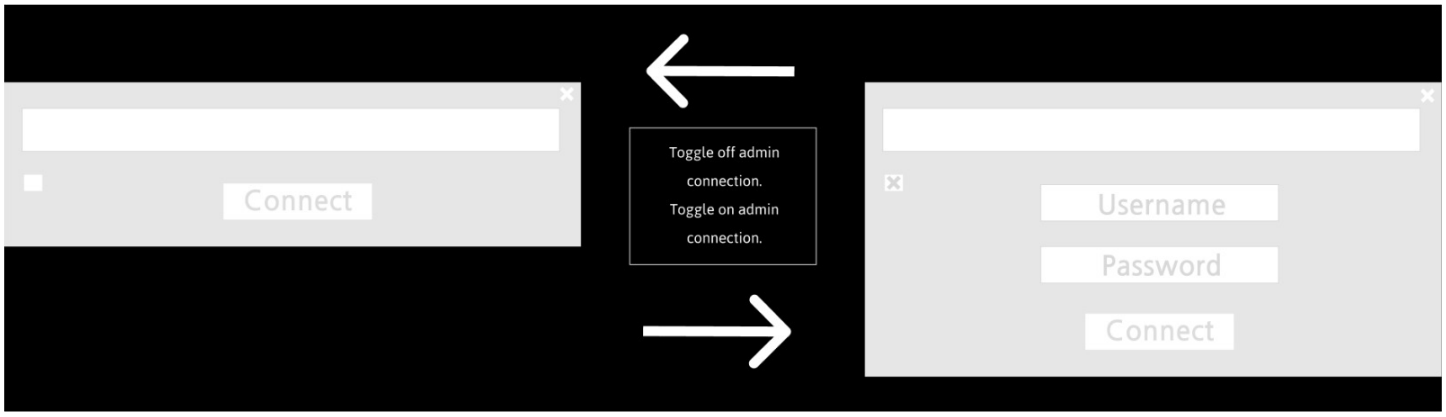

Figure 2f: Improvements to admin login
We added a toggle for admin login instead of always showing the password field