OOP Project Report – Group 33

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1 INTRODUCTION

Heuristic usability evaluation is a method used to detect unclarities in the way an application is designed. Its aim is to identify usability issues before making recommendations to improve user experience. The main objective of us conducting such an evaluation was to understand, from a non-developers viewpoint, how well each part of our application comes together in an attempt to form an intuitive experience for the average user.

The application's functionality is split into 5 main components: boards, lists, cards, tags and admin commands. Upon starting the application, users are prompted with entering the server port (Figure 2), after which they are presented with a window with all the active and joinable boards, also being able to create a new one (Figure 3). An admin sees an additional menu where they can edit an existing board's properties - name, password protection - or delete one (Figure 4). Once a board is joined, the application shows lists of tasks (Figure 5). In this view, there are contrasting buttons that can add a list or return the user to any of the previously visited pages - server select or board overview. After clicking on any of the cards, the user is presented with a menu where they can edit a card's properties: title, tags, description, subtasks, deadline, and colour (Figure 6). Editing the tags or colour of a card is done by clicking on a "+" sign next to the corresponding label. These actions each have a menu that will appear on the screen. Tags have fields for their name, whether they are active on the given card and their colour. New tags can be added within the same menu (Figure 7), and these tags will be available for use on all cards on the same board. Choosing a colour for both the tags and the cards is done with a colour picker (Figure 8) that presents a spectrum from which the user can choose the aspect of the item they are targeting.

2 METHODS

In order to have an extensive review of our own work, we recruited 5 experts that could help us find defective parts in our application's design. This group consisted of Computer Science TU Delft students, and although their expertise in Java application was at beginner level, the feedback provided from an external eye on the project's design, contributed towards upgrading the overall quality of the appearance.

Our group provided the experts with a Figma application where we displayed how our application would ideally look and work, with not only the designs but also transitions depending on the user's button selection. Alongside the prototype, we gave the experts a form with 3 types of questions. The first type consisted of a short task to complete, in order to get familiar with the application, for example, 'Delete a List'. We formulated these tasks in such a way that the expert testing our application would not just be receiving direct instructions. Instead, they were asked to carry out common tasks that often involved multiple steps. The experts would then be asked to describe what they did and what path they took to complete these tasks. The second type of question was a rating out of 5 on either the difficulty of the task or the visual design of the concerned page. This helped us receive a concrete rating on each component of the design so that we know which parts were appreciated, and which had to be possibly improved. The last type of question is for them to provide feedback or suggestions on functionality and design elements. This was our most insightful type of question, as their answers explicitly showed us what our plan was lacking.

In this exercise, the experts are using different types of heuristics. First of all, they used their error prevention skills by detecting mistakes that would lead to errors in the prototype. Most importantly, they practised their skill of giving critical and useful feedback on a completely unknown project that they haven't worked on. On top of giving this feedback, they had to keep their suggestions consistent, as the application has to remain coherent in order to make the user's experience as spontaneous as possible.

The short paragraph answers where the expert describes the path they took to complete certain tasks provide us with important insight into how the user navigates our application. Our goal was to assess button placement and the overall layout of our application. The questions that asked for feedback on their experience helped us identify improvements we should make and measure the changes that still need to be made. The number scale question offered us valuable statistics on how well certain functionalities were implemented, and the visual appeal of our design. Because this type of question was included with every scene and most functionality, we obtained an extensive evaluation across almost all features. With these questions, we were able to measure the intuitivity, the potential ambiguity and the visual appeal of our application.

3 RESULTS

Every expert succeeded in joining a board by id. It has to be taken into account that the form did not specify that the user should fill in the key of the server in order to access it. This, however, was not an impediment for the reviewers in fulfilling the task given. Their success indicates that the join board overview complies with the heuristic of recognition, rather than recall. One professional explained that when entering the board overview scene their first instinct was to press the "+" button at the bottom of the window, instead of the Join button. This is a result of the high contrast in the visuals which postponed the completion of the task. When asked about the difficulty of entering a board by ID, 4 out of 5 experts carried out the task without problems, whilst one of them considered it being a 2 out of 5 on a difficulty scale. Multiple experts suggested presenting the boards in descending order of interaction. When tasked with switching to another board, every expert carried it out successfully.

Through the exercises, one expert mentioned being inconvenienced by the design of the buttons, as the "Join" button in the board overview was smaller than the "Switch server" and "Admin

view" buttons. Another professional suggested that there should be a separate window where users can choose if they want to create a board or join an existing one.

The tasks which involved creating and deleting a list presented satisfactory results, as each expert mentioned a correct way of accomplishing the tasks. The result can be accounted to the list overview adhering to the heuristic of match between system and the real world. When asked to create a list, the respondents successfully noticed the "New list" button and pressed it intuitively. For the visual design of the list, one professional rated it 5 out of 5, three mentioned it is a 4 on appearance and one considered it neutral.

The results for editing a board name as the administrator had spread results. Only three people figured out the correct path. One of the respondents mentioned being doubtful about having chosen the right path from the board itself. The other two experts were confused about the task and pressed the wrong button. When asked to review this exercise's difficulty, one expert found it fairly difficult, two scaled it as neutral, one said that it was manageable and the last one wrote it was easy.

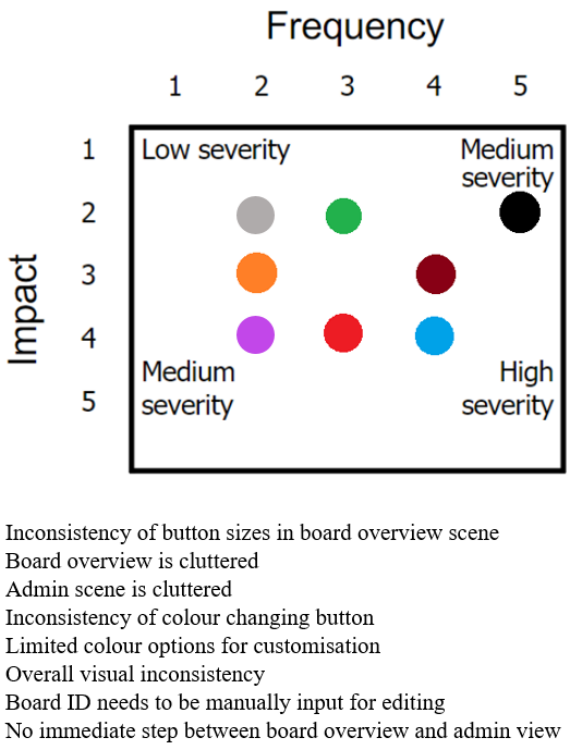
During the addition of a new card, one respondent was confused about not being able to find the "Add new card" button, since it took him directly to the "Edit card" window. Whilst deleting card 3 from list 1, all the experts mentioned the correct way to delete the respective card. When asked about the design of the card overview page, one individual expressed it is neutral, two rated it a 4 out of 5 on appearance and two said it was nicely arranged.

The colour customisation page was evaluated based on the heuristics of consistency and standards. According to one of the respondents, the button for colour customization blends in with the delete and save buttons at the bottom of the card view, which was considered a poor design choice. The same evaluator had issues with having a larger and different button for the colour picker in the card view than in the tag view page. They suggested changing the visual design of the card customization pages in such a way that the design becomes consistent throughout these scenes. From the received feedback it can be concluded that the colour customisation page did not comply with the heuristic of consistency. According to another response, the colour picker only had limited options.

While being presented with the task of adding a new tag to a card with a chosen colour, 4 out of 5 respondents found executing this task easy, while one of them rated it neutral. One evaluator found issues with the flow of the application that makes the tag customising feature possible. However, according to our evaluators the heuristic of user control and freedom was respected as they were presented with a cancel button, so they didn't have to carry out their action. They also suggested paying attention to setting the font colour of the tag according to the picked tag background colour, so the tag name remains readable regardless of colour choice. All evaluators rated the visual design of the tag customization page positively.

Each respondent found the resetting of the server doable since 3 out of 5 responses rated carrying out the task neutral on a scale from 'very easy' to 'very hard', whilst the two other respondents considered it easy. All evaluators took the expected steps to execute the task. The experts were also asked to remove the password of a board. In a similar manner, 3 out of 5 responses gave a neutral rating for the difficulty, while the other 2 found the process easy. In the current application, the user has to manually input the id of the board of which they want to edit the attributes, which was found cumbersome by two evaluators. One of them suggested having the option to edit the board directly in the admin board by clicking on it, instead of entering the details into a separate text field. Another response suggested having access to admin features in the lists view, to omit having to take the path between the board and the admin page each time. According to the evaluators, the admin scene violated the heuristic of flexibility and efficiency of use. Furthermore the heuristic of aesthetic and minimalist design wasn't adhered to either, as the visual design of the admin page was deemed too crowded. One expert suggested the use of intermediate scenes.

Figure 1: Frequency-impact matrix



4 CONCLUSIONS AND IMPROVEMENTS

After assigning five experts to test our application, we found that most tasks were completed with relative ease by our respondents. They were also mostly positive about the visual design of the app. However, there were some problems. See Figure 1 for the frequency-impact matrix evaluating the severity of the found issues.

Our first priority is making the board overview clearer and more intuitive. Currently on the board overview, the buttons for going back to picking a server and for going to the admin overview are much bigger than the "join" button for joining a board by its id, while the joining of a board is more common. We will make these buttons smaller and move them to the top left, and move the join by id section to the right, as this is more inline with other real-world applications.

Our next priority will be making the admin page more intuitive, by making the page less crowded. This means we will be dividing the admin features across two scenes. Features like editing a board will be moved to a separate edit board page, and the server features will stay on the main admin page. We also modified the way boards are accessed by the admin. Instead of having to fill in the board id of the board they want to edit, we made it so the admin sees an list of all boards on that server, where they can quickly and easily choose the board they want to edit. This also helps with the heuristic of error prevention as an admin can now no longer accidentally mistype an id.

Finally, we will be making adjustments to the card customisation view, as this issue is relatively close to being high severity, as seen in our Frequency-impact matrix (Figure 1). In our current mock, the "change colour" button is in line with and the same size as the save and delete buttons, which the experts found confusing. Therefore, we made the colour edit buttons consistent between tags and cards, as well as changing their position and style to differentiate it more from the delete and save options. These changes will improve the heuristic of consistency and standards in our application. The button has been brought to the top and gets some colour itself so it stands out some more. Furthermore, after picking a colour for a tag, the user will be sent back to the tag customization, rather than the card customization page. On top of that, to improve the heuristic of user control and freedom, we will add more colour options by allowing our users to pick any hex value rather than limiting them to seven colours.

We also slightly changed the look of the application by changing the main colour from blue to a light purple. This makes the application itself calmer and more cohesive, as well as being in line with the heuristic of aesthetic and minimalist design. An updated version of our mockups with the aforementioned changes can be found at the end of this document.

Overall, the expert's evaluation was successful in giving us a good overview of the users' experience, what issues need to be addressed, and what changes need to be made in future iterations.

5 SCENES

Figure 2: Server Selection Page

Figure 3: Join Board Overview

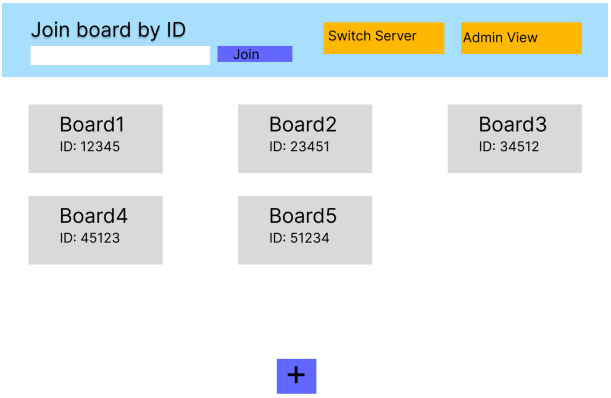


Figure 4: Admin Control Panel

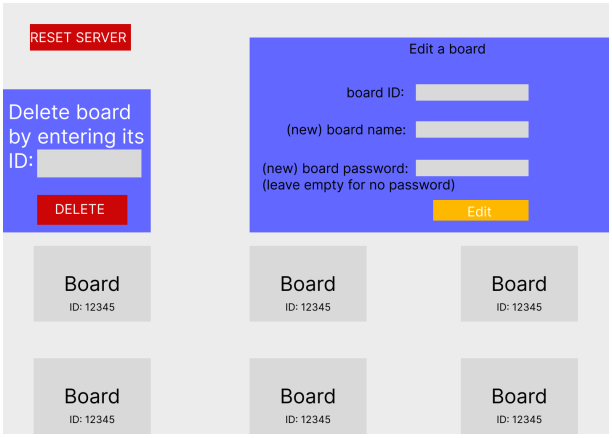


Figure 5: Board Overview

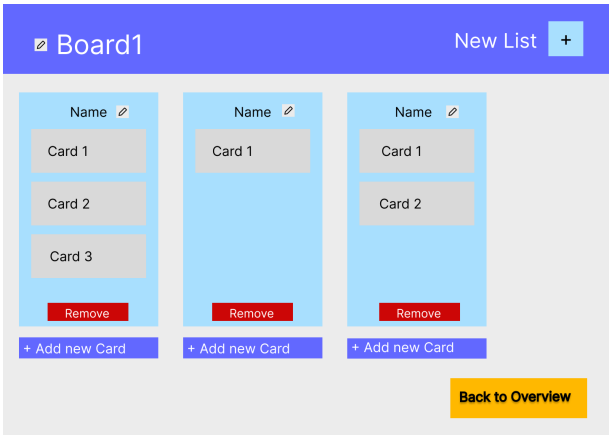


Figure 6: Card Overview

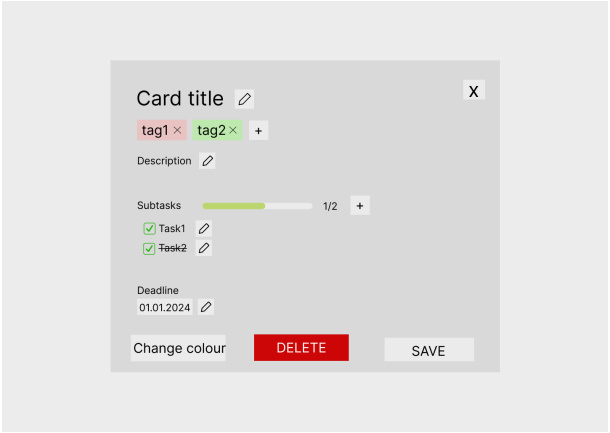


Figure 7: Tag Editor

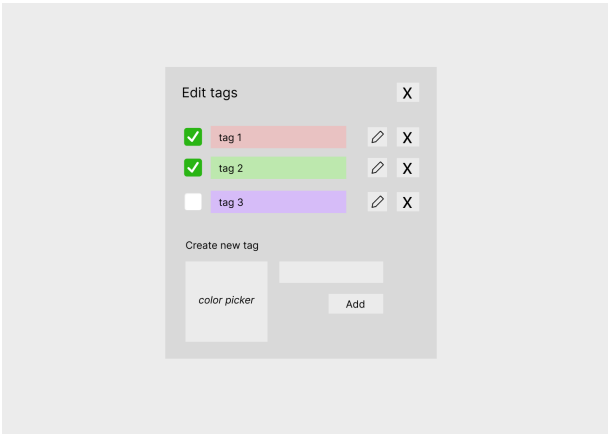
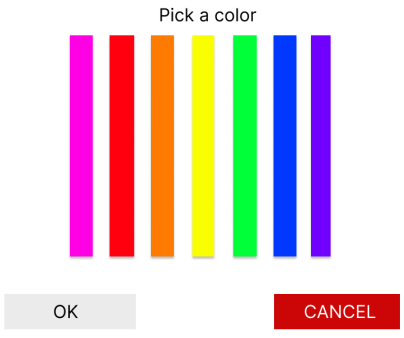


Figure 8: Colour Picker



6 IMPROVED SCENES

Figure 9: Join Board

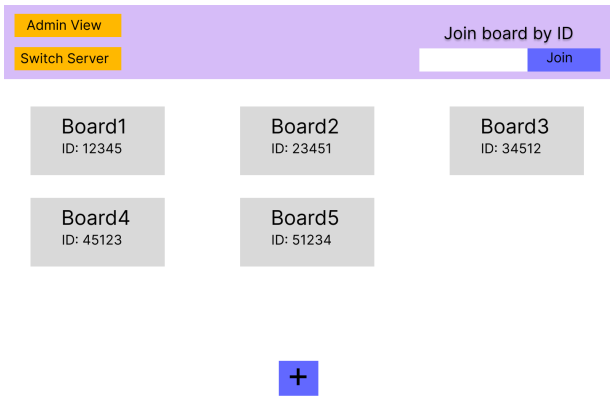


Figure 10: Admin password

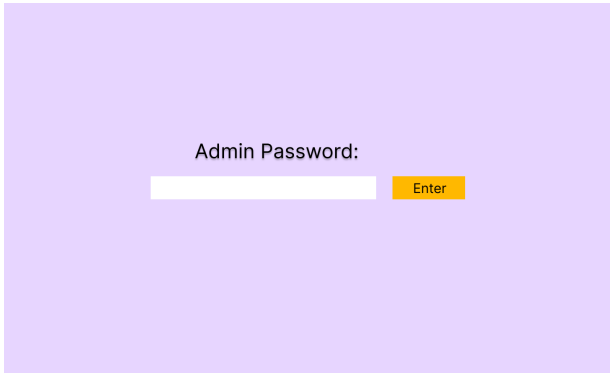


Figure 11: Admin Panel

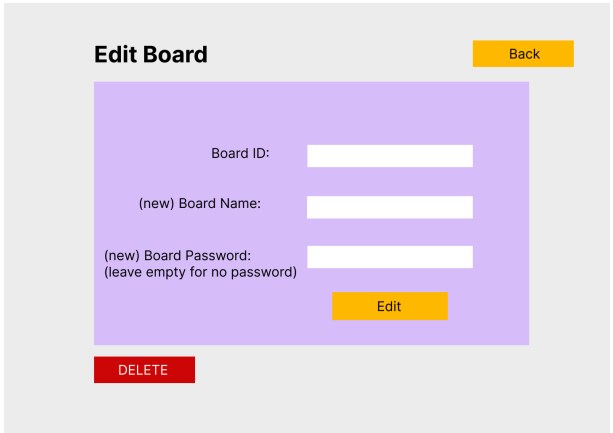


Figure 12: Admin Overview

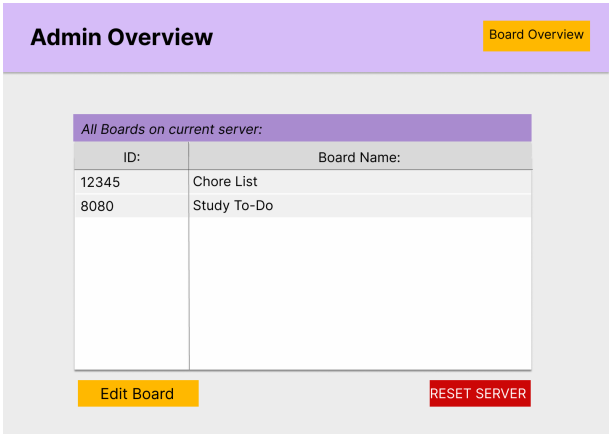


Figure 13: Edit Card

Figure 14: Edit tags

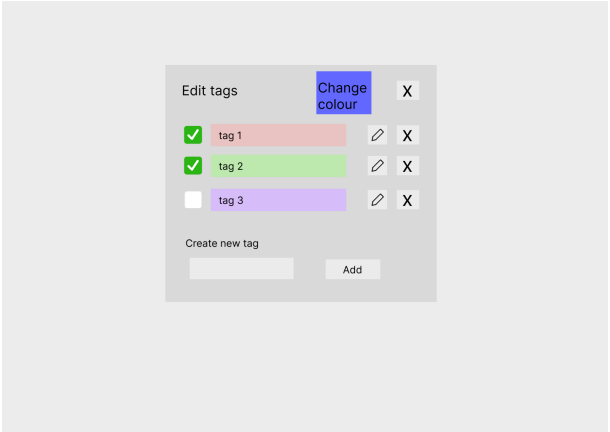
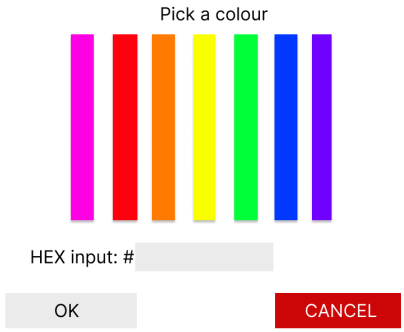


Figure 15: Colour picker



7 REFERENCES

Jakob Nielsen. 1994. Heuristic Evaluation: How-To: Article by Jakob Nielsen