OOP Project Report – Team 27

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1 INTRODUCTION

For the course Object Oriented Programming Project at the Technical University of Delft we are making a product "Talio", where a user can manage their to-do lists in the form of task cards, task lists, and task boards. We (team 27) have paired up with another team (24) to evaluate how well we have designed our product so that we both can make improvements to our design. We have both made a prototype to effectively show how the final product will look. Team 24 has reviewed our prototype, and this report mainly concerns their review.

The prototype that we sent to team 24 was in the form of a Figma mock-up, where we built wire-frames of the most important pages of our application in order to showcase the implementation of almost all Basic Requirements in the Backlog and how they have been connected to each other. Since we decided not to showcase the Server Selection page in our mock-ups due to its simplicity, our prototype begins from the Board Selection page shown in fig. 1, where the user has the option of inserting a board ID to join an existing Board, or alternatively create a brand new Board on the spot. In both cases, this goes via a quick press of a button. In case the user chooses to create a new Board, they are met with an overlaying, non-decorated popup window, where they may optionally choose a personalized Board name before proceeding to its creation.

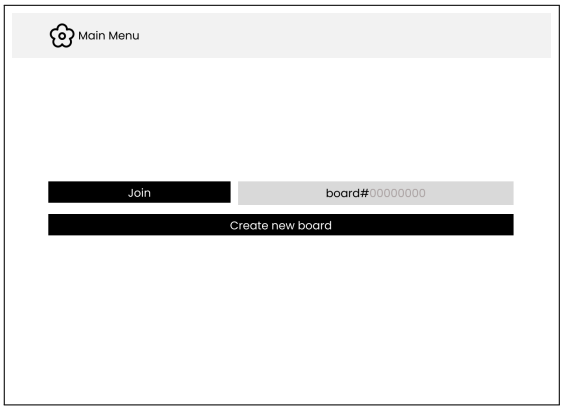

Figure 1: Home Page - Before

The skeleton of the Board page, illustrated in fig. 2, is the same regardless of whether the user chooses to create a new Board or join an existing one. On the top, there is a ribbon with our app's logo that may be clicked to navigate to the initial Board Selection screen, and on the right of it the name of the Board, as well as its ID can be found. Below said ribbon the actual workspace of the Board is located, containing all the Tasklists that have been created by users. The Tasklists are placed in fixed positions on a grid that supports vertical overflow. Looking at the last Tasklist in order, there is a large button used to create a new Tasklist, as well as a "Delete Tasklist" button right next to each existing Tasklist's name. To create a new Tasklist, a user must click on the "Create Tasklist" button, in which case they are again met with an overlaying, non-decorated popup window, where they may specify the new Tasklist name in a Text field and save it, or easily close the overlay without committing any changes. This is exactly how the workflow also looks. In case the user wants to edit the name of an existing Tasklist, they may simply click on a Tasklist's name to be met with the appropriate popup window.

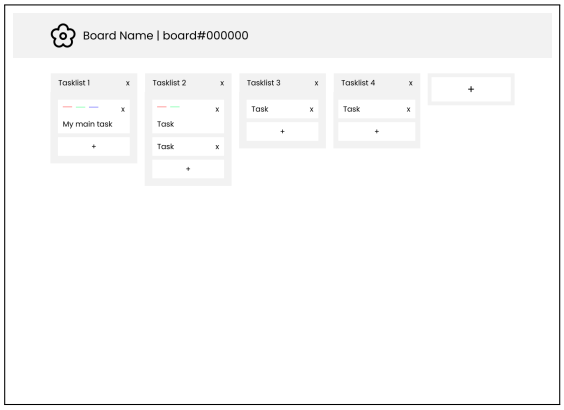

Figure 2: Board Page - Before

Additionally, on this page the user can view all the Tasks that are located within each Tasklist, right below its name, in a vertical list that also supports overflow. Besides each Task's name, what also accompanies it is a color-coded ribbon indicating the Tags assigned to said Task, each of which is identified with its own color, as well as a "Delete Task" button. At this point, the user may choose to view the details of any of the Tasks in the Tasklists or create new ones using the button located at the bottom of each Tasklist area. Supposing the user wants to view or edit the details of an existing Task, he must click on said Task's area within its respective Tasklist, in order to be met with a popup window akin to the ones previously mentioned in this report and which can be seen in fig. 3. Here the user may view and edit the Description of a Task by editing the labeled text field, or even optionally leaving it empty. Below said text field there is the labeled Subtasks area, where a user may create a new Subtask by pressing on the "+" Button on the bottom, as well as view the existing Subtasks, or mark any of them as "Completed" simply by pressing on the checkbox right next to their name. The final element on this page is the Tags area, where a user may view the Tags listed as colored cells of a horizontal list, and may delete any of them by pressing on the "X" Button next to their name or creating a new on by clicking on the "+" button located on the right of said list.

By pressing the aforementioned button, another overlaying popup appears, where a user may input their personalized Tag name by

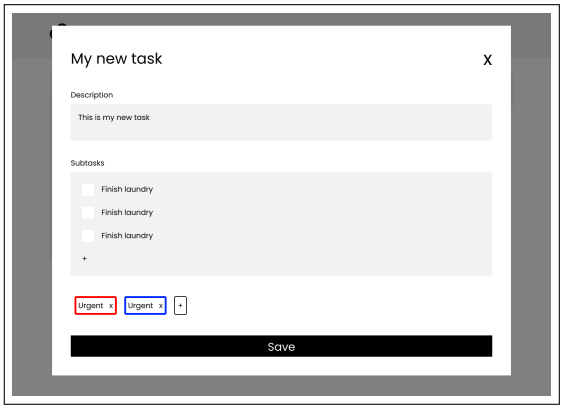

Figure 3: Edit Task - Before

editing a labeled Tag field, choose any color from the list below to assign to each Tag, as well as save their new Tag or cancel the changes at any time using the appropriate buttons. These possibilities are also offered on the Task page, where the user can save their potential changes by pressing the "Save" button or exit the Board page without committing any change via the "X" button.

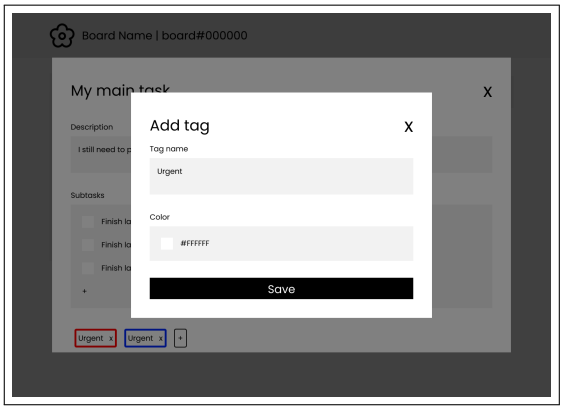

Figure 4: Add Tag - Before

2 METHODS

2.1 Experts

The experts we have recruited to review our prototype are the six members of team 24. Their level of expertise is minimal, except that they attended a lecture about Heuristic Usability Evaluation by dr. Myrthe Tielman and dr.ir. Willem-Paul Brinkman and studied the related bibliography provided as part of the course. The lecture talked about the most effective ways to review a product, which is very helpful information when reviewing a prototype. Obviously, being Computer Science students, some of them may have more experience than others in certain relevant fields due to, for example, work experience, at home experimentation or previous studies.

2.2 Procedure

The experts received the link to the prototype, as well as a written document containing a detailed set of instructions, telling them exactly how to get to work on reviewing the prototype and what we expected from their review, as well as a link to the Figma mock-ups.

They were supplied with a typical usage scenario in the form of a list of step by step instructions. This was done to ensure that with any level of expertise or experience, all of the experts would be equally able to explore the prototype, ensuring equal bases for the review. The steps that the experts needed to follow were to, in this order: Click on the play button on the top right corner of your screen, click "Create new board" and close the popup. Click the join board button, click on the + button under tasklist 4, add a tag and save it. Click on "My Main Task", and remove the task in tasklist 3. Click on tasklist 4, making a rename popup appear. Click save, and add another tasklist. Remove it again. Click on the flower logo on the top left, this should take you back to the homepage.

The experts also had to first individually review the prototype several times over, each making a list of problems with the design. This was done to guarantee that their opinions were unbiased. Afterwards, they were asked to combine their six lists of problems into one list.

The experts were then asked to link every problem that they found to the corresponding heuristic that it violates. The usability heuristics they were given were taken from Nielsen (2020). [1] The list of usability heuristics contained the following:

- Visibility of system status
- Match between system and the real world
- User control and freedom
- Consistency and standards
- Error prevention
- Recognition rather than recall
- Flexibility and efficiency of use
- Aesthetic and minimalist design
- Help users recognise, diagnose, and recover from errors
- Help and documentation

2.3 Measures

The experts were asked to provide one document containing their positive and negative feedback in the form of a list. For each problem they found, they were asked to also provide an explanation if necessary, and link the problem to the usability principle(s) [1] that said problem violates. For each page of the prototype (6 pages in total) we asked for separate feedback, highlighting positive and negative features of the page. Additionally, an overview of the prototype as a whole was given, describing its positive and negative aspects.

3 RESULTS

The document that team 24 delivered contained 6 individual reviews, each with lists of positive and negative feedback as described in section 2.3. Using their reviews, we identified the areas that could be improved upon in order to enhance the overall user experience during the use of our interface. We have grouped the problems by heuristics, and display them here in order of our perceived priority.

3.1 User control and freedom

Most importantly, it was not clear how to edit the Board details (1). The user was also unable to rename/remove a Subtask (2), to edit a Tag after its creation (3), and the user is unable to view Boards that have been visited (4).

3.2 Recognition rather than recall

It was not clear how to edit names (5), or how to enter a board that a specific user already created at an earlier time (6). The function of the app's flower logo also was not clear (7), and the way deletion of Subtasks worked is not intuitive (8).

3.3 Aesthetic and minimalist design

The most important problem was that the positioning of the buttons does not always correspond to the text field (9). The placement of the join button was also perceived as misleading (10), the coloured Tag ribbon was too small (11), the colour selection should work differently (12) and the Subtask check-boxes were not visible enough (13). Lastly, the Tag section should also have a name (14).

3.4 Error prevention

There was no configuration prompt when deleting a Board or a Tasklist (15). Additionally, it was possible for an exception to be caused in case the user attempts to save a specific (big) number of characters in a field (16). There were also some spelling errors present (17).

3.5 Help and Documentation

It was unclear which details should be provided to join a Board (18).

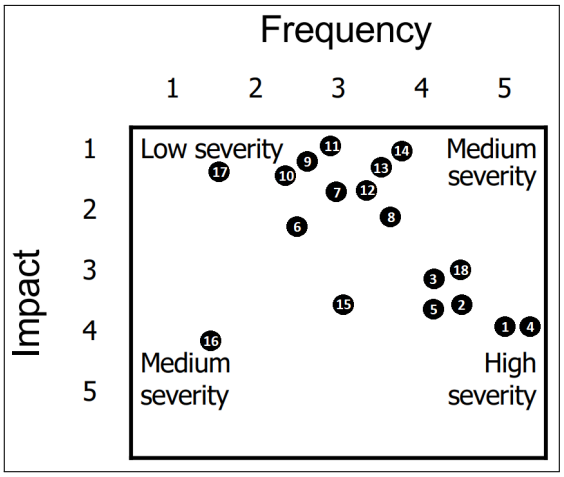

Figure 5: Prioritisation matrix including all 18 problems reported

4 CONCLUSIONS & IMPROVEMENTS

Based on the heuristic evaluation, several usability problems were identified within the application. In order to improve the application's usability, changes were made to address each identified problem. Each improvement is described in depth in the following paragraphs based on its priority, including a description of the changes made, the issues it covered, and before-and-after images of the affected elements.

Improvement 1. The most frequent problem was referring to the fact that in the initial design of the board page in fig. 2, it was unclear for the users how to edit the board settings. We addressed this inconvenience by adding a menu button on the top right, as shown in fig. 6. This allows the user to edit all the board details in a popup.

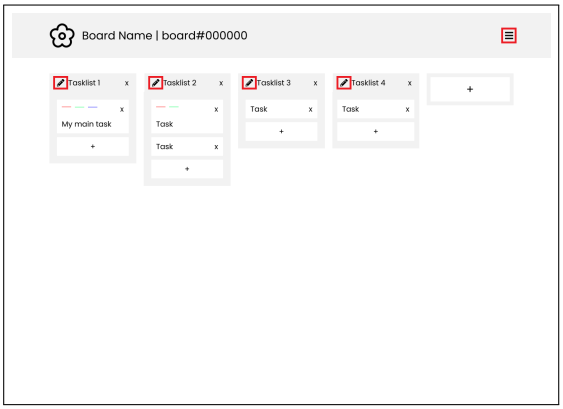

Figure 6: Board Page - After

Improvement 2. Most parts of the evaluators had difficulties in finding out which fields are editable and which are not. As a consequence, we added a pencil icon to every editable part of the design. This way, the users can be more familiar with their accessibility and control of the fields encountered. Such icons can be seen in fig. 6 and fig. 7.

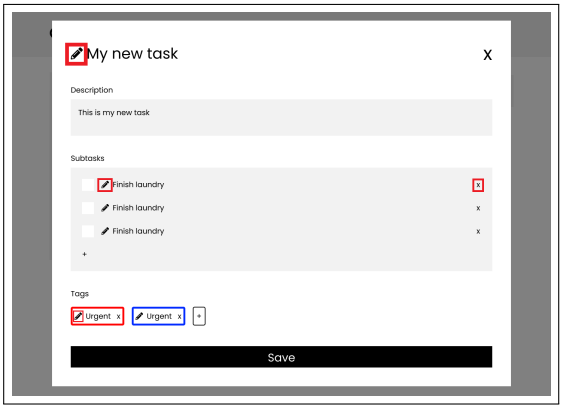

Figure 7: Edit Task - After

Improvement 3. The users have also encountered the common problem of not being able to renter an already visited board in a more convenient way. To solve this problem, we introduced a section named "Visited boards" on the home page. In this manner, the boards will be more accessible, preventing them from always

using their id to join. The difference can be seen as a transition from fig. 1 to fig. 8.

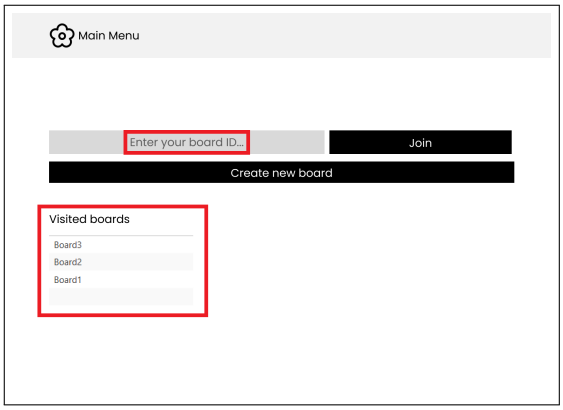

Figure 8: Home Page - After

Improvement 4. In the initial design showcased by fig. 1, the users find it difficult to figure out what they should enter in the text field to join the board, so we added a predefined text to describe what they are supposed to provide. The added text "Enter your board ID" can be seen in fig. 8.

Improvement 5. To make the deletion of Subtasks more intuitive, a new delete button was added in the leftmost part of each Subtask in the Subtask list, clearly indicating the action that will occur. The button can be seen clearly in fig. 7, while it's missing in the previous design shown in fig. 3.

Improvement 6. The design of the prototype was also a major factor in the problems of the interface and therefore will suffer some changes according to the feedback. In this regard, we changed the position of the Join button from fig. 1 on the home page. Before the changes, it was to the left of the Board ID field. It has now been shifted to the right so it follows the natural Western Left to Right reading methods, as shown in fig. 8.

Improvement 7. The users encountered a small set of spelling errors and inconsistencies throughout the labels and the terminology of the app. These issues can lead to significant misuse of the app and misunderstandings by the user and therefore we went through all the labels in order to ensure that all such problems are fixed. The most common complaint was regarding the color code in the tag section, which now has a more user-friendly form, as seen in fig. 9.

Improvement 8. Equally important was our decision to implement a character limit for all fields which ensures that all fields are used within their operational limits and no potential exceptions or misuse of the input fields are caused. The users will be alerted with a warning if their input doesn't satisfy the requirements imposed.

Improvement 9. We also added confirmation prompts that appear every time the user chooses to delete a Board or a Tasklist. This is because these types of changes weren't initially accompanied by any warnings, and there was the danger of accidental deletions that could result in the loss of precious time for the user.

Improvement 10. We changed the 'Join board' placeholder from "boardX000000" to "Please enter your Board ID...". We did this

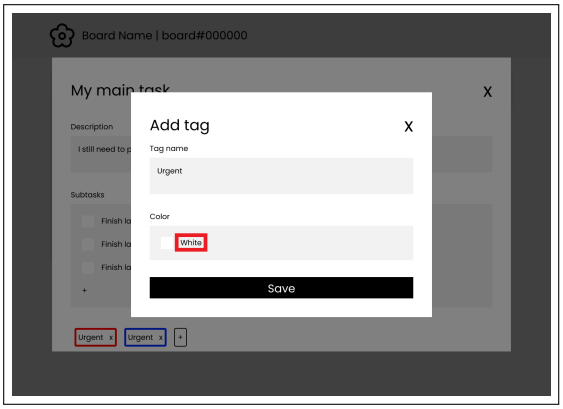

Figure 9: Add Tag - After

so that the user can see what exactly is expected from them. Most experts highlighted this as a pain point in the initial design, so the field now looks similar to the one in fig. 8. The sizes of certain input fields have also been changed to be more reflective of how long the certain input is expected to be.

REFERENCES

[1] Jakob Nielsen. 2020. *10 Usability Heuristics for User Interface Design.*