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 Server Selection page, 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 personalised Board name before proceeding to its creation.

The skeleton of the Board page 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.

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. Here the user may view and edit the Description of a Task by editing the labelled text field, or even optionally leaving it empty. Below said text field there is the labelled 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 coloured 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 personalised Tag name by editing a labelled Tag field, choose any colour 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.

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 exact order:

(1) Click on the play button on the top right corner of your screen.
(2) Click "Create new board"
(3) Imagine that the board name is editable. Close the popup.

(4) Imagine it is possible to edit the board id input field. Click the join board button.
(5) The board was saved. Now it is visible on the main page.
(6) Now click on the + button under tasklist 4. (Obviously in the final product all the +'s will be clickable.)
(7) Add a tag. (click the + next to urgent, click save)
(8) Save the new task
(9) "My Main Task" is now clickable. Click on it, look at the options and click save.
(10) Remove the task in tasklist 3.
(11) Click on tasklist 4. A rename popup will appear.
(12) Imagine the name textfield is editable. Click save.
(13) Add another task list
(14) Remove it again
(15) 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, 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 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) separate feedback was received, 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.

RESULTS

Based on the evaluation of our prototype using Nielsen's 10 Heuristics for usability, we identified a couple of areas that could be improved to enhance the overall user experience during the use of our interface. Most of the problems correspond to the following Heuristics:

- User control and freedom:
  - Not clear how to edit Board details
  - Unable to rename/remove a Subtask
  - Unable to edit a Tag after its creation

- There is no way to view Boards that have been visited before
- Recognition rather than recall:
  - Not clear how to edit names
  - Not easy to understand how to enter Board that a specific user has created
  - App logo's function is not clear
  - Deletion of Subtasks is not intuitive
- Aesthetic and minimalist design:
  - The positioning of the buttons does not always correspond to the text field
  - The placement of the Join button is misleading
  - Coloured Tag ribbon on Tasks is too small
  - Colour selection should work differently
  - Subtask check-boxes are not visible enough
  - The Tag section should have a name
- Error prevention
  - There is no confirmation prompt when deleting a Board/Tasklist
  - It is possible for Exceptions to be caused in case the user attempts to save a specific number of characters in a field.
  - Spelling errors present.
- Help and documentation
  - Not clear what details should be provided to join a Board
  - Text fields should have a character limit

3 CONCLUSIONS & IMPROVEMENTS

3.1 User Control and Freedom

In order to improve user control and freedom, separate buttons will be added for actions mentioned in the review. A board settings button was added to the header of the board page. This allows the user to edit all the board details in a popup. We added a pencil icon to every editable part of the design. This way users can see what parts are editable. We also added a visited boards section in the main menu so that the user can easily open boards they have access to.

3.2 Recognition rather than recall

Editing a name of a Board or a Tasklist by hovering on top of it or in a separate details menu. We will also add a list of Boards joined during a session so users don't have to provide Board ID every time they want to join one. Our Logo will be just visual and a separate Back button will be added on its left. There will also be a button to delete a Subtask placed on the right of each Subtask name as a response to the criticisms by the Experts.

3.3 Aesthetic and minimalist design

The design of the prototype will be changed according to the feedback. Specifically, the visibility, positioning and size of several elements will be changed. For example: we changed the position of the Join button in the main menu. 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. We also encompassed both this field and the Join button in a separate frame in order to better represent the connection between the two elements. Additionally, labels were added next to every field so the user can quickly see what each of them corresponds to.

3.4 Error prevention

W implemented multiple changes in order to mitigate what we believe are the the most potentially damaging design problems with our initial mock-ups. Specifically, we added confirmation prompts that appear every time the user chooses to delete a Board/Tasklist, as before this change there was always the danger of accidental deletions that could result in the loss of precious time for the user. 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 potentially catastrophic Exceptions are caused. Finally, because spelling errors and inconsistencies in the Labels and terminology throughout the app could lead to misunderstandings by the user and therefore errors, we went through all the Labels in order to ensure that all such problems are fixed.

3.5 Help and Documentation

We changed the 'Join board' placeholder from 'boardx000000' to 'Please enter your Board ID'. We did this so that the user can see what exactly is expected from them. Most experts highlighted this as a pain point. The size of certain input fields have been changed to be more reflective of how long of a input is expected of the user. One expert highlighted the fact that in the 'Add board' popup the name input field suggested that multiple lines of text were allowed. This of course wasn't the case and the input field size got edited to reflect this better.

REFERENCES

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