OOP Project Report – Group 41

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1 INTRODUCTION

The overall goal of the Heuristic Usability Evaluation is to get a different perspective on our current application user interface. We are taking into account present design problems that we might have overlooked as a team, having gotten feedback from a diverse group of evaluators. Our goal is to improve our application design to ensure that our product is user-friendly and accessible.

For our prototype, we have prepared a document containing screenshots of the current state of our user interface. Moreover, we added indications explaining the possible interactions with the interface in order to help the other team evaluate in a more organized manner and provide them with a sense of orientation.

The evaluators noted down parts of our front-end overview that were counter-intuitive or inefficient, according to the heuristics we have learned during lectures. In this report, we will discuss what can be taken away from the experts' observations to further improve the quality of our application's ease of use and, in consequence, end up with a more polished end product.

2 METHODS

In this section of the report, we will provide an overview of the method for our heuristic usability evaluation. There will be four sections - how we instructed our experts, what information the experts were given, how would the experts proceed the heuristic evaluation, and what heuristics the experts referred to.

2.1 Experts

For the evaluation, we have recruited six experts who are peers from our course. As a computer science student, each expert has a strong understanding of usability principles and based on their knowledge and experience in the field of software development and user interface design can offer a unique perspective and objective assessment.

Furthermore, as fellow students, the recruited evaluators are well aware of the overall functionality of the application. For this reason, it should be noted that their knowledge and, as a result, user experience, might differ from the one we expect from the average app user. Hence, it is expected that their preconception of what the application should feature might prevent them from fully discovering all interface problematic points that a new user might encounter. Nonetheless, based on the expertise of the evaluators, we also consider fixing the discovered problems in the prototype of greatest priority, as they might cause difficulty even to advanced users.

The prototype of the interface provided to the evaluators contains, at the moment, all of the basic requirements for the application, except for the "Connect to server" scene. The evaluators were given visual guidance and brief instructions on the information we require in our review, to ensure consistency of their reviews.

2.2 Procedure

1. Instructing the experts.
We have provided the expert group with a prototype of our application, and 10 usability heuristics[1] for user interface design. They could refer to the heuristics given, keeping their evaluations consistent.

2. What are the experts seeing?
The experts were provided with a prototype of our application, which is a pdf file of screenshots. The screenshots show the details of all the features currently implemented in our application. The screenshots were accompanied by additional explanations and visual indications to show which feature is being presented, so that it resembles the transitions that are happening in the actual application.

3. What do the experts need to do step-by-step?
The experts would:
◦ First open the prototype that we sent to them and carefully analyze it.
◦ Review the features of the application, contemplate on what problems might arise and evaluate its usability based on the usability heuristics we have learnt about in lectures.
◦ Record their observation and feedback in the survey we have provided.

4. What heuristics are they using?
The experts were given with 10 usability heuristics.

The 10 heuristics are:
1. Visibility of system status
2. Match between system and the real world
3. User control and freedom
4. Consistency and standards
5. Error prevention
6. Recognition rather than recall
7. Flexibility and efficiency of use
8. Aesthetic and minimalist design
9. Help users recognize, diagnose, and recover from errors
10. Help and documentation

2.3 Measures

We researched usability problems that might occur with future users, through studying the root causes for them and their specific contexts. We collected the data we will be analyzing in this report through an online, anonymous, survey. Our evaluators were prompted to fill in the form for each usability problem they have found. The fields they were asked to complete were:

◦ Problem description;

∘ Likely/ actual difficulties;
∘ Specific context;
∘ Assumed causes;
∘ Choose the heuristic which it concerns;
∘ Other remarks.
The cumulative answers were gathered, by the survey in a table. This way, we could easily see overlapping usability problems, but also encompass the current accessibility level of our application.

3 RESULTS

3.1 Results

After having our program design analyzed by a fellow team of evaluators, we have come to several main conclusions, which will be used as improvement guidelines for the upcoming design of our application.

1. The lists inside of a board have a limited display capacity of only three cards at a time, requiring the user to scroll down to view additional information. The "add card" button is positioned too high, and the cards themselves appear longer than necessary, potentially leading to wasted screen space and an inefficient use of the available display area. This may cause inconvenience and frustration for users who frequently work with larger lists.

2. The app does not provide clear and concise instructions to users to help them navigate the app and avoid confusion and frustration. It was noted by evaluators that not all functionality is documented properly, which implies that the user might remain completely unaware of existing features and limit their experience with the app. In the case specified, dragging cards is a feature that is important for the user to know, therefore it should be included in the help screen or other instructional materials so the user does not miss out on it.

3. The current design lacks a feature that allows users to cancel the creation of a new card, which could lead to cluttered overviews and unnecessary information. The user may also feel constrained if they start creating a new card but change their mind and are unable to undo the creation. Providing a "cancel" option can help users maintain a cleaner and more organized overview and avoid potential data redundancy and unnecessary deletion of cards that were not intended to be created in the first place.

4. The application lacks a proper description, leaving users unsure about its purpose and how best to utilize it. The absence of a clear overview or explanation may lead to confusion or reduced user interaction, as users may not understand what the application is meant to do or how it can benefit them.

5. The current design of the application features small text fields and error messages that can easily remain unnoticed by users, particularly those who are new to the application or have less digital experience. For example, not being aware of the requirement to add a title when creating a new card may cause frustration when users attempt to perform the action and fail to notice the current error prevention mechanisms.

6. The text field for adding cards to a list is small and difficult to read, which can be a problem for users with poor eyesight. Thus, any mistakes made while typing the title are not immediately apparent, requiring the user to rename the card. 7. The current design of the application lacks a safe mechanism for deleting cards or lists. This means that if a user accidentally presses the delete button instead of the rename button, for example, there is no confirmation or warning message that appears to ensure that the user actually wants to delete the card or list. As a result, users may unintentionally delete important information, causing frustration and potentially even loss of data.

8. The edit and delete buttons on cards and lists are in very close proximity to each other in the current design of the application. This can turn out to be a major cause for wrongly performed actions and lead to poor experience with the app. Users may accidentally delete cards or lists when they intend to edit them. Since there is no confirmation screen to ensure that they actually want to permanently delete the content, this can result in the unintended loss of important information without a way to recover it. As a result, this poses the risk that some users experiencing the problem may cease using our application.

9. In the current design of the application, there is no clear way for users to add or edit descriptions for cards. Users may create cards but want to add additional details or context to them, which can be frustrating if they are unable to do so.

3.2 Adjustments

To settle on what adjustments to make to our application, we analyzed the underlying causes the evaluators provided. By looking at the cause-effect relationship of our usability problems, as a team we brain-stormed and we were able to pin- point how to materialize ideas for improvements.

1. Trying to solve the problem of user confusion and frustration when using our application, we have decided to make some changes in the help screen. Now the help screen will not only contain the information about the keyboard shortcut but also the fact that the user can double click to view the card details.

2. To minimize the screen space wasted, we can make each card view smaller and place the 'Add Card' button lower. We hope this change will make the application more convenient, especially for users who add many cards in one list.

3. To provide a concise, organized view of the interface, we have decided to add an 'X' button on the interface, next to the 'OK' button. Now the users will be able to cancel the addition of cards to lists.

4. Providing a short description in the start screen of the app and tool tips when on mouse hover on buttons can help users better

understand the value and functionality of the application and improve their overall experience with it.

5. To potential confusion, we can improve the visibility and prominence of the error messages that is displayed when a user attempts creating objects with empty title field. The user will then know they have to type at least one character to proceed with the creating or renaming action.

6. To improve the user experience, we will space out the edit and delete buttons or provide visual cues to differentiate between the two functions. Additionally, we can incorporate a confirmation screen for deleting cards or lists can help prevent accidental deletions.

7.To have our application provide maximal usability to the user, it may be helpful to incorporate a feature that allows users to add or edit descriptions for cards, either through a dedicated edit screen or through a tool tip or context menu option. This can help users better organize and contextualize their content, leading to a more efficient and effective workflow.

8.To address the issue with self deletion, it may be helpful to add a confirmation message or dialog box that appears when a user tries to delete a card or list, giving them an opportunity to reconsider before making any irreversible changes. This can help prevent accidental deletions.

9.To make the user go through a time-efficient process when adding a card, we will not add the functionality of associating a description to a card whilst creating it. This will ensure that the time spent on the addition of a single card is minimal. However, a detailed card view will be implemented where description can be easily added and edited.

3.3 Prioritization of problems

When analyzing the raised problems, we took a look at the main heuristics concerning them, because we believe heuristics make a good starting point for overall efficient categorization.
We have found that the main three troublesome ones were:
1. Error prevention;
2. Aesthetic and minimal design;
3. Recognition rather than recall.

From here we derived connections within our problems, and were able to prioritize them:
1. No fail-safe for deletions;
2. Small text an button size throughout the application;
3. Counter-intuitive placement of the "Add a card" functionality;

As we are still in the midst of the development of our application, we want to continue to have a streamlined process of finalizing it. Based on the feedback we received, there is a clear pattern of features of advanced functionality our implementation should have a focus on, namely the detailed overview of a card and a start screen, containing the overview of all recently accessed boards.

4 CONCLUSIONS AND IMPROVEMENTS

After the experts assessed our submitted prototype, based on the heuristic problems they highlighted, we prioritized the issues in order of importance and settled upon changes that improved them through a thorough group discussion.

4.1 Main Conclusions

Based on the received feedback, there seem to be several usability concerns with our application, which were overlooked in the initial stage of development. These include:

1. Lack of a clear application description, which makes it difficult for users to understand the purpose of the application and how to use it effectively.
2. Inconsistent placement of important functions, such as the "add card" and "delete" buttons, which can lead to accidental removals.
3. Limited options for editing card titles and descriptions, which can make it hard for users to correct mistakes or add important information.
4. Small text fields and error messages that can be hard to read, particularly for users with poor eyesight or other impairments.

To improve the usability of the application, it was necessary to address these points and redesign certain aspects of the interface so we can deliver clearer instructions and a more convenient way for users to utilize our app. This will include adding more descriptive text, providing visual cues and responses, and simplifying the layout of certain features to make them more intuitive and user-friendly. Additionally, incorporating consistent feedback into the design process can help us identify and address any remaining issues with our application.

4.2 How to improve our application

1. We will add a fail-safe button when deleting any data. 2. The text size and fonts will be consistent throughout the application. 3. The buttons will be placed in a more appropriate location. 4. More explanations and descriptions about the functionalities will be given, either on the help screen or the board screen. 5. The size of text fields will be increased, and made consistent throughout our application.

4.3 Final GUI design

1. No fail safe for deletions;
2. Small text size throughout the application;
3. Counter-intuitive placement of the "Add a card" functionality;

REFERENCES

[1] [n.d.]. https://www.nngroup.com/articles/ten-usability-heuristics/.