OOP Project Report – Group 61

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ABSTRACT

A clear and well-documented LaTeX document is presented as an article formatted for publication by ACM in a conference proceedings or journal publication. Based on the "acmart" document class, this article presents and explains many of the common variations, as well as many of the formatting elements an author may use in the preparation of the documentation of their work.

1 INTRODUCTION

Developing an app that will be used by people of different ages and backgrounds sometimes requires taking a step back and looking at the project prototype through the eyes of an independent evaluator, a person other than a programmer working on it. Therefore, following a set of principles, we conducted a Heuristic Usability Evaluation. We defined its objectives as follows: discovering a standard way users work in the application environment, measuring how well the app functions correlate with user expectations, determining how user-friendly the app is, and how well the design and styling were implemented.

The prototype that the evaluation was conducted on is an early functioning version of our application. It implemented the vast majority of the basic requirements and offered the evaluators a full idea of relations between scenes and objects like cards, card lists and boards. The prototype allowed the users to go through a standard sequence of performed actions including connecting to a server, navigating through the interface, browsing and modifying the presented data. The application presentation layer consisted of a basic layout design and primitive styling created mainly for clarity and simplicity while the project is in the development stage.

2 METHODS

- Experts: In order to conduct the following evaluation, we have recruited a total number of 6 experts, all of them being students at TU Delft, enrolled in the OOPP course, which is mandatory for all first-year students of the Computer Science and Engineering faculty. Their level of expertise is intermediate, having little prior work experience, but demonstrating sufficient knowledge and skills necessary for this field, therefore belonging to the category of more experienced users.
- Procedure:
  - Prior to conducting the evaluation, we had scheduled a meeting with all the experts, instructing them to evaluate the interface of our application and write down a comprehensive report, considering a list of 10 usability heuristics. They are tasked with testing every feature of the application and ask questions about any uncertainties that they might have, which will be answered promptly by a developer from our team.
  - The experts are given the most recent version of the application, at the time of the meeting, for conducting the evaluation, for which, even though it is not fully functional, the user interface should be complete and consist of all features that the user will have at his disposal when utilizing the final product. All parts of the graphical interface of the application provided are functional at the time of the evaluation, and all pages are linked between each other, so that the expert can navigate through all the scenes and view all of them. Therefore, we can ensure that the feedback will have the best accuracy.
  - Evaluators should go through the interface at least two times. The first evaluation is meant to provide the evaluator with a sense of the flow of the interface and the general scope of the system. Thus, on the next evaluation, he or she would be allowed to pay more attention to distinct interface components, while possessing more profound knowledge of the way these elements fit into the application. During these evaluations, the evaluator inspects several dialogue elements, comparing each of them with a list of recognized usability principles. Of course, the evaluator can implement his own custom heuristics in order to address specific situations.
  - In general, they are using Jakob Nielsen's 10 general principles for interaction design, which are:
    * 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 recognize, diagnose, and recover from errors
    * Help and documentation
- Measures (Data collection): Evaluators should report on problems and measure them, for example, on a severity scale. A report on a problem should have the following format:
  (1) Brief and concise explanation of the problem
  (2) The anticipated difficulties that the user will encounter as a result of this problem
  (3) The specific circumstances in which the problem may occur
  (4) An accurate description of the cause(s) of the problem

3 RESULTS

The evaluation of our product by another team was successful, as our demonstration showcased all aspects of the program and was quite thorough, thereby allowing the evaluators to locate a maximal amount of usability concerns. The evaluators compiled a list of feedback, which was grouped by the ten heuristics mentioned above. In order to process the feedback into a list of concise and actionable issues, we first split the feedback into individual points,

and then removed positive feedback as it did not point out problems that require solving.

To determine the priority of each usability concern, we employed a prioritizing severity matrix and placed each issue within said matrix, allowing us to assign a severity based on the impact and frequency of the issue. Unfortunately we did not receive feedback from each individual, but instead from the entire group, so we estimated both the impact and frequency ourselves. This yielded the following table of issues:

Usability Concern	Heuristic	Impact (1-3)	Frequency (1-3)	Severity (1-4)
No customization or personalization	Flexibility and efficiency of use	2	3	3
After connecting to the server, it is unclear if the user should join a board	Visibility of system status	2	3	3
No feedback when transitioning between screens leads to confusion about actions that occurred	Visibility of system status	2	3	3
No keyboard shortcuts	Flexibility and efficiency of use	2	3	3
Board name is displayed on the edge of the screen in a small font, and is easily missable	Aesthetic and minimalist design	2	3	3
Users cannot change the name of a board after creation	User control and freedom	2	2	2
Buttons to modify lists and tasks have an inconsistent style	Consistency and standards	1	3	2
Button to modify task is difficult to see	Recognition rather than recall	1	3	2
Buttons on top of screen occupy too much space	Aesthetic and minimalist design	1	3	2
Error messages are too technical	Help users recognize, diagnose, and recover from errors.	2	1	1
Checkbox for board passwords is redundant	Aesthetic and minimalist design	1	2	1
No documentation about keyboard shortcuts	Help and documentation	1	2	1

As can be seen in the above table, there is a fairly equal distribution of severities in the 1-3 range, and there are no concerns with the highest severity. Additionally, while there aren't any heuristics that are particularly over-represented, we noticed that certain heuristics tended to have higher severities than others. As such, we counted the number of usability concerns for each heuristic and weighed them with their severity to identify the most problematic areas of our program. Heuristics #1 (Visibility of system status) and #7 (Flexibility and efficiency of use) proved to be the biggest areas of concern.

4 IMPROVEMENTS

With the evaluation of our prototype by the other team we have opportunity to improve our product. This will be given in order which is specified in the table of issues. First of all if we begin with the visual settings, we can improve the customisation of the application. More specifically we will make a background color change option. So a board will be able have different colors as background. Another visual improvement, although unmentioned by the team, will be the formatting of the cards and and lists. Where they fit nicely next to each other. The other team said that the board name was not clearly seen. This is highly agreed within our team. This change is an easy fix, we will move the board name to the top or some other place where the team agrees. This way the client can clearly see the board they are operating on it.
Improvements about visibility of the system will be also made, the team mentioned there is some misunderstand about whether if the user should join a board or not. This will be made clear by a more clear main view. Our prototype does not have keyboard shortcuts, this improvement will be first discussed within the team and if seen applicable than we will implement it. Another change we will do is buttons. This is already in the implementation. Edit button will be more coherent to the style of the list. It will also be much clear to see it.
Another change we will do is improving error messages, it is said that the messages are too technical true. We just began with the error messages. These would be made in a way that the user can understand what went wrong and apply for help.

5 CONCLUSIONS

Consequently, the evaluation from the other team provided us with an opportunity to improve our product. The team has identified several areas for improvement, including the visual settings, system visibility, keyboard shortcut implementation, the cohesiveness of the Edit button with the list style, and the clarity of error messages. The team will make the necessary changes to address these issues and ensure that the client can clearly see and understand the board on which they are operating. Overall, these enhancements will improve the user experience and make the application more manageable to use.

REFERENCES