

Comparative Analysis of Deep vs Wide Menu Structures

Milestone 2

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Progress

In this milestone, I nearly completed all the tasks I had planned, with the exception of testing, which I had intended to be conducted by at least 10 users. However, at this point, only 3 users, including myself, have completed the tests. Some users took the test multiple times, resulting in a total of 56 records of finding items.

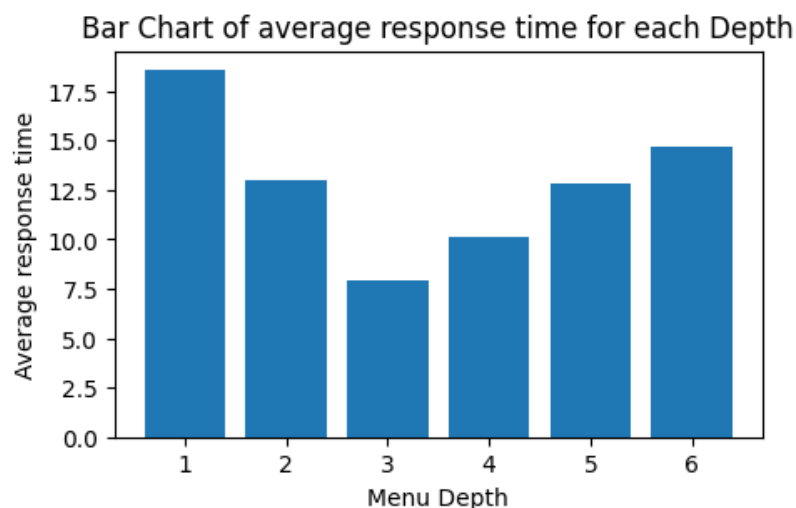
The process began with updating the styles and CSS to make the JavaFX application more user-friendly. During my own testing, I discovered some errors related to button functionality, time and mistake calculations, and button positioning while scrolling. All these issues have been resolved. I didn't encounter any problems with the data, and it remains unchanged from the first milestone.

Subsequently, I recorded the quiz results of three of my friends (one of them took the quiz twice to observe the effect of experience). Each quiz consisted of 12 item-finding tasks with a specific menu depth ranging from 1 to 6.

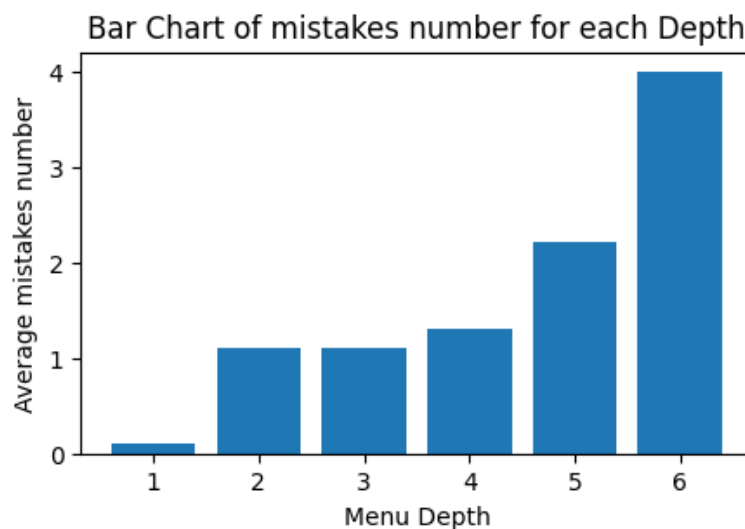
In an unplanned yet beneficial move, I initiated a Python Jupyter notebook to facilitate the analysis of results through charts and diagrams. It was helpful to rely on my experience with the Pandas library, which is renowned for its powerful data analysis features. Currently, this file contains preliminary code and partial results. As the project progresses and more data becomes available, I anticipate this file to reach completion.

Baseline Results

When the depth is 1, it shows a wide menu comprising all 64 items, requiring the user to visually search among these options. A depth of 2 indicates that the user initially faces 2 options, followed by 32. A depth of 3 presents the user with two sets of 2 options, and finally, 16 items to choose from. This pattern continues for depths of 4, 5, and 6.



The chart above illustrates the average time our users took to locate items during the quiz, measured in seconds and plotted against the menu's depth. With a very wide menu (depth=1), the visual search is time-consuming. At depth=2, the search time improves but still remains significant. Depth=3 appears to be the most efficient in our application, as users quickly make two general decisions before facing only 16 items. Depth=4 is similar for the same reasons. However, deeper menus, such as those with depth=5 or 6, seem less efficient because users spend more time making decisions and navigating through pages.



Furthermore, we can see in the above chart that users have done more mistakes when the menu is deep. Which sound reasonable because they are facing lots of decisions for finding an item. It's true that in a deep menu they have less options each time and visual search is less time consuming, but on the other hand they have to make decisions about the category that they're looking for which causes more errors and they have to use the back button. Error is extremely higher in menu with depth 6.

Note that these results are not finalized because data is limited. Hopefully I will have more mature results in the final report.

Next Steps

- Find more users for interaction and more reliable results and patterns.
- Try to think about the problem from different aspects and analyze the results from those point of views with diagrams in the analysis.ipynb file.
- Add some per-user analysis and maybe having interesting results.
- Find a reasonable answer to the main question which is the best depth and width at least on this Menu dataset, and change the number of items at each page if required for more solids then have quizzes again
- Analyze the importance of user's experience in the system