HCI - Literature Review

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HCI - Related Features

Top Bar: Logo and Search Bar Position

For our application design, we decided that we are going to implement a top bar that consists of the application logo and a search bar. This application logo is basically a clickable shortcut that when clicked it will direct the user to the application's home page. This top bar will be fixed and located on top of the application and will stay there regardless of what part of the app that they are in [1]. This is done so that the application design is always consistent from the usability principles. Consistency itself is the likeness in input/output behaviour arising from similar situations or task objectives. In our app this means that even though a user is in another part of the app and doing another task, the search bar will still be up on top usable regardless of what part of the app they are in so that they can access our main functionality easier. Consistency is important as it is one of the design principles of HCI.

As Jeff Young, an accomplished UX designer that has been working for 13 years in the industry has said, the search functionality is the first thing that users want to see and since people want to find things quickly without looking all around the screen, users expect a search functionality. Other than that, users have been trained to expect a search bar at the top of an app, therefore it is better to put a search functionality at the top. Also according to a survey conducted with 142 participants it found out that the best spot for putting a search bar for users is the top right or top left of every page on your site, where users could easily find it using the common F-shaped scanning pattern. And so that is why we are putting our search bar on the top right corner of the screen. This follows the familiarity usability principle in the learnability section. Familiarity itself talks about how a feature matches user's expectations and how users prior knowledge applies to a particular feature. By having a search bar, and having the search bar located on the top right corner as explained above will definitely accomplish the familiarity aspect in the golden rules of design principles.

On the other hand our we decided to use the application's logo to double as a home button because according to research even though a logo has no clear indication of it linking to another page, people still click on the logos to get to the home page. Even sometimes people get annoyed if the logo is not a link that leads to a home page. Just as discussed previously on familiarity, people are just so used to that particular feature that we had to add it to accomplish the familiarity aspect of the design principles.

Search bar

It would be crucial for a Dictionary App to have at least some way to instantly search a single word, certainly one can't expect the user to use an Dictionary App and find a word how he would with a conventional Dictionary. Hence why there should be a search option. In this case it is located in the "TOP BAR" and will never move staying in place, placed in plain sight for users to see and of course use [1].

It is also important to point that a search bar should be made to be noticeable, or somewhere where the user would expect/predict it would be and use a simple similar icon that's used by everyone else as it would lead to a more convenient experience for the user and decreases the effort it would take when otherwise it would take more effort because the user needs to find it [2]. Search bar will be triggered to search when the search icon is clicked or the enter button is clicked in the keyboard, an autocomplete feature should is implemented and will be explained further, the transition will be just changing the page but keeping the search bar intact [3].

Search bar: Autocomplete

Autocomplete makes life much more easier for the user and overall will help in a more convenient experience, not only that it reduces the amount of needed user input and speed up user's data entry it also a helpful tool as a guide that helps the user in their constructing their search query[1]. Why? Although not all but usually users are poor at query formulation, if the first attempt ended in failure don’t expect much for the next one. Autocomplete remedies that with its suggestions if work well.

The autocomplete feature has to be designed well too as it will ensure it to be actually useful as a poorly executed autocomplete will put the users in more disarray, you want to help the user not confuse them even more. Tools such as auto-correct, recognition of roots, and predictive text will be important for an autocomplete feature.

Custom Search

If the user wants to do a custom search and individually see each word from each alphabet in the dictionary without using the search bar functionality the user will be able to do that too because sometimes a user would like to see the structure before they have an idea of what to search first [4]. Therefore we decided to make a section in the application to view the list of words from each alphabets so that the user can easily see the dictionary contents first so that they can find a word that they want to see the definition for.

Navigation Bar (Left side of the screen)

Almost all applications these days have a navigation bar that allows users to quickly access different features of the application quickly without having to go through a complex set of steps. Like a vehicle that takes users to where they want to go, navigation should help users find the information that they’re seeking from an app. Even Gerry McGovern, CEO of customercareworks.com discusses how his team did some research and testing and said that “navigation is more important than search” in his article about usability. McGovern said that 70% would use the navigation bar first compared to using a search bar. Therefore it is important for our navigation bar to be great. So what are the rules for designing a good navigation menu? Uxbooth.com claims that consistency, clear interactions, and avoiding deep navigation is the top three rules to follow.

Therefore we decided to implement a vertical navigation bar at the left side of the screen since research says that left navigation bar is the best position because it performed best in terms of navigation functionality and it is also preferred by users the most [5]. By default this navigation bar will consist of the different options of the applications listed as icons followed by a clear and concise text description that describes the functionality or feature provided. We also plan to make the navigation bar able to fold and hide the text by clicking a hamburger icon (the triple horizontal line icon) on the bottom left of the screen so that only the icons are showing. This is done so that the main content pane of the application can expand and be bigger and there will be less clutter on the screen. Previous research on uxplanet.org has proven that a hamburger icon is very convenient for navigation especially if located on the bottom left of the screen because it is a natural position for users. Also uxplanet.com has agreed that it is a better way to reduce clutter.

By putting it on the left side of the screen at all times, it fits with the design principle of consistency. This means that the user can always find it on their left hand side whenever they want it and at whatever screen they want. Also since it can be expanded or minimized, it allows it to reduce clutter which is also another important aspect in HCI. This conforms with the design principle of flexibility specifically with customizability allowing users to determine whether they would want to see the navigation bar expanded at all times to see the icon and the text or to hide it so that they can only see the icons. Also since the icon we are using to expand and minimize the navigation bar is a hamburger, it conforms with the design principle of familiarity because as seen in the research above, most users already know what this icon means and what it does.

Main page (Auto expanding, auto show/hide scrollbar)

Every good app needs a good and innovative content app to support all the function that the app provides. A good main page should be comfortable and easy to use. In our app the main page is mostly used for displaying most of the information accessible from our app so therefore it is one of the most important piece of the app. Every app no matter what kind of app they are all have their main page cover more than half of the app window. This shows the importance of the main page and shows how important it is to have a good main page.

Since it is the most important part of the app that covers almost all the functionality, our main page shall be designed while considering the importance of consistency. The main page shall change and adjust depending on the content and user input. For instance when displaying content that are too long or doesn't fit the height of the page, the main page will automatically provide a scroll bar for the player to navigate around the main page. Also when minimizing the navigation bar the main page will also automatically fit the page.

This consistency will also increase the Familiarity of the app since many of modern app today will have similar function or design that allows one application content to change to suit the user's need. The main page are also designed while considering simplicity to better familiarize the user with the application in the hopes of the user would be able to learn how to use the application faster and more effectively.

Splash screen (Including loading bar/loading animation)

A good application should have a splash screen as the first thing they show when launching the application. The importance of splash screen are usually foreshadowed by application's main page. But the fact is that splash screen remain important nonetheless. This fact is supported because not only that splash screens are often used to welcome a user to the application, splash screens are also often used for different purposes as a splash screen can act as a loading screen too.

As we all know when performing a certain action in an application, a good application should be able to show Observability. A well designed splash screen should be able to show this by having a loading bar that shows the user the progress of launching the application. Since launching the application might take a longer time than expected, the loading bar in splash screen should make the user more tolerant towards the application waiting/loading time.

The loading bar function in splash screen helps also in terms of Synthesizability since a lot of times the user expect some sort of loading information when waiting for a certain task. Since an app a lot of times might need performs task that needed time to load information, it is very general to use loading bar to enable the user to keep track of progress.

This is why we are designing a splash screen that other than greeting the user will inform the user that the application is currently initializing while also informing a user about the creators of the app. It also display the state and current version and other useful information regarding the application [6].

Database

The database that our team will make is used for getting data from the server and load them to the application. The application should be able to edit data through the application and put the edited data to the server. Editing data covering the scope of deleting word, and adding word to the server. For this feature, we decide to implement Recoverability and Synthesizability.

Recoverability principle means that the system should be able to recover from any error that user makes [7] and gives a response so as not to make an error. As such, our application should be able to handle the situation when application failed getting the data from the server and when the application failed to make change to the data in the server through editing in application.

Synthesizability principle means that the user should be able to see what change he made to the application directly [7]. Example : After deleting word, user should be able to see that word is deleted from the dictionary. So the next time user open the application, the deleted word is not in the dictionary anymore.

Profile

We are also going to implement a profile system into the dictionary. This comes with a word history, the ability to view bookmarked words, the ability to log in and log out of accounts, and display customization such as font options and the ability to use a darker theme with the app. There will be a “Profile” option in the sidebar tab that takes the user into a page with these options. Only the login option will be available if the user is not signed in with a valid account. User accounts are used to save all of the user’s bookmarks and history into the online database, allowing them access to their previous history and bookmarks on a different device or if they had deleted the application prior.

The main features of the Profile menu, are of course, the ability to log in and log out of an account. The login page contains a username and password form, along with a check option to stay logged in using this account for this device. The user can also register a new account through this page if they don’t have one yet. Failing 5 login attempts in a row will lock the user from attempting another login for 3 minutes, with the time displayed in the login page. The user can still access the dictionary or close the app and the timer will still advance. A successful login will load the user’s saved data from the database while notifying the user through displaying text describing what the system is doing. The successful login and visible timer fulfill the observability principle, giving them visible information on the system that tells them what needs to be done, which is waiting in both cases. The login message also fulfills the responsiveness principle, as the message gets immediately displayed while the database is verifying the login credentials and loading the data.

The word history, as the name implies, allows the user to look through words they have viewed, ordered by recency. They can click on a word to go straight to the word’s definition page, delete individual words from their history, or delete their entire word history. This gives them the ability to quickly retrieve a word they forgot about. Similarly, the bookmarks page allows the user to revisit words they previously saved by bookmarking, in case they need to revisit those words often. These bookmarks can be renamed or deleted. Both of these features are extremely familiar to the modern-day user, since similar features are standard in web browsers and certain popular websites like YouTube. This fulfills the familiarity principle, which means that the user can look at the function and immediately understand what they do based on their understanding of internet browsers.

There's a display options menu, which can be used to change the program's font, font size, and to enable dark mode. The fonts are chosen from a list, or they can search this list by typing in a search box. Allowing multiple options for input fulfills the substitutivity principle. The user can also switch from the default light mode to a dark mode, which changes the UI's background from white to mostly black. The options menu is meant to fulfill the customizability principle, giving the user options to change their interface according to their own preferences. The dark mode in particular is important, because according to Silas Brown of Cambridge University, there are advantages to having a dark background display in computers, such as reducing eye fatigue, reducing blue light, but there are also disadvantages, such as being hard to see on reflective displays, or harder to read small text. This means that it's better to have an option to swap between the two as opposed to locking the application to one of the two styles, because some users might prefer one or the other.

Edit Menu

The edit menu allows the user to edit the dictionary, giving them the ability to add and remove words from the dictionary, add/remove bookmarks to a word page, and copying a word and its definition to the clipboard. The sidebar tab includes a edit option to go to the main edit page that contains all the edit functions, but it also has delete, copy and bookmark as smaller submenus below the edit option, allowing the user to quickly copy or bookmark the word they're currently on without leaving the page. The edit menu is only available to users who are logged in.

Adding a word in the dictionary provides the user with two forms, one for what the new word is, and the other, larger form for the word's definitions. If the word is already in the dictionary, the new word will not be allowed in the dictionary. The dictionary will also not accept empty word names or words without definitions. Attempting to leave the add word submenu without saving the changes will warn the user about unsaved changes, and the user has the option to either discard their work and leave or stay in the page to finish. This is to fulfill the predictability principle, which more clearly displays what option is available for the user to do next, namely save before leaving.

The delete option allows a user to delete a word from the dictionary. This is done through searching the word using the search bar, and selecting the word to delete. The user will then be asked to confirm if they want to delete it or not.

In the edit menu itself, there’s a button to undo and redo changes made to the dictionary. Clicking on either button displays a list of previous changes, and clicking on an option will either revert the dictionary to before the selected option was done (in the case of undo) or advance the dictionary to after the selected option was done (in the case of redo). Making new changes will get rid of all the redo options up to that point, and shutting down the program will also get rid of both the undo and redo options. This is done for the recoverability principle, allowing the user to fix whatever mistakes they made in editing the dictionary.

The bookmark and copy options aren’t in the edit menu itself, but are nonetheless part of the edit function. While inside a word definition page, the sidebar options are available. On top of bookmarking the word page and copying the definition, the user can also quickly delete it using the sidebar delete option. These icons allow the user to quickly understand access the menu’s functions [8]. It also fulfills the substitutivity principle, as the delete function can be accessed either through the edit menu, which allows them to search out the word for the specific purpose of deleting or through the sidebar, in case they plan to navigate to the word itself before modifying it.

Recommended Words

During a word search, the user may misspell or type words that aren’t in the dictionary into the search box, which would normally cause the dictionary to return no results. To prevent this, there will be a function that recommends words to the user based on what they typed, in case a word wasn’t found. The system will list out 5 words that are the most similar to the search. This gives dialog initiative to the system, which is necessary as the user may not know that they have misspelled the word, or not know that the word isn't in the dictionary.

Including a recommended words function also fulfills the recoverability principle, giving users the ability to notice and correct their search mistake, and guiding them to what is available. In particular, this allows them to achieve a possible goal of improving their english writing, as according to Heather Fitzgerald of the University of Toronto, a spell-checker along with a dictionary are valid tools for learning how to spell, so combining them will allow you to find hard-to-write words that the user isn't familiar with.

Help Menu

Help menu might be unused for most of users because they will try every feature that we developed in the application by themselves without even look the 'help menu' feature. But we will keep develop help menu itself to ensure that everyone can use the application with its maximum potential of its application. We make dictionary for everyone as their daily-use application.

So that's why we will do our best to giving user best experience in the help section. We will start the whole help menu by 'welcome' section and 'get started' section as our main help page menu. We will categorize every single information that might be asked by user based by feature that we develop into the application. We will attach icons beside the feature name too to get make user familiar and get used the meaning of the icons. User only need click the feature title to know 'how to use' of that feature. In that section, there are detail information and helpful guide of the feature including question and answer that can help user instantly without ask developer directly first to get information. We will never change the layout of help menu even if we update this help menu feature.

In order to create useful help menu, we will use structured formatting and procedures. We will create our own standard of the procedure, so the format of a procedure should always be the same. Screenshots and video guide will inserted to the application, so the user will much helped by the meaningful guides through graphical content in help section [9]. New feature or first time start-up the application will be shown, in pop-up animated demonstration and video. The categorized and organized help section will be put consistently so the user need to do is click the feature and can read it right-away to get the guide.

We also input all of our informations as developers of the application in ‘about us’ section that we put in help menu so user know where they should contact us if they need our help.As a developer, we believe any-kind user responses are the main factor that can help us to update the app to be better. And it's our responsible too as developer for users to get their best experience in using our application. So we will response user’s feedback as soon as possible to make sure that user can get their best experience in using our application.

Fun Fact

As user open ‘ducktionary’ application, they will see fun fact feature in the home screen of ducktionary. Fun fact is a short fact about anything that interesting and fun. We believe fun fact section will giving different unique experience to user where the user can entertained just by seeing the fun fact.. The fun fact information that we give will be related about language knowledge to user that they may never know before. And the fun fact itself will be shown to the user randomly generated fun fact every single day. So user will get new fun fact every day.

We put the fun fact feature in Ducktionary because we want user to get entertained and get new information that might be they never know before. New information, or novelty, engages the user towards continuing to use the app, which makes them use it more frequently, improving their opinion towards the app [10].

Feasibility Study

1) Description of Products and Services

For this project the product we are developing is a Dictionary application for personal computers called Ducktionary. **Just like other dictionaries when the user searches for a word the following appears:**

1. Parts of Speech : (Verb/Noun/Pronoun/Adjective/Adverb/Preposition/Conjunction/Interjection etc.)
2. The word itself
3. Definition (There's multiple definitions)
4. And an example sentence with the word

In the situation that nothing is found:

1. Recommendations is displayed instead

The application provides the user with the following features:

1. Top bar (Stays consistent in one place in the screen)
2. Search bar with search functionality and autocomplete feature (On the top bar)
3. Navigation Bar/Side Bar (with hide functions)
4. Fact/Word of the day
5. Adding a new word to the existing database
6. Remove a word from the database
7. Create a profile
8. Copy word definition functionality
9. View previous searched words
10. Set and View favorite words
11. Store data locally
12. Help Menu/Page

2) Technology Considerations and Identification of Risks

Dictionary applications that are on PC today don't really look that neat with outdated UI. Therefore to combat that, we will be creating a dictionary application for PC with Material Design in mind. So that compatibility isn’t an issue, the application that we will be creating will be created with the Java programming language. Therefore this should work on most PCs since Java is usually installed in most PCs already. However, since we will be creating the dictionary app with Material design in mind, Java itself cannot handle the complexities of material design. This is why other than java, we have to use JavaFX and especially the JFoenix library which is an external library that allows the usage of material design in a Java application. Therefore we will need to learn how to use JavaFX and JFoenix from scratch since it is new for us.

What dictionaries such as Oxford, Cambridge, Merriam-Webster and other mainstream established dictionaries have other than the functionality of searching for a word and a definition for that word is that they will usually supply additional definitions of that queried word (if available) and also the type of word it is (verb/adj/noun etc.). Since our team only consists of six people we might not be able to create a dictionary with that huge of scale ourselves. That is why instead of defining our own definitions, we will be using a compiled list of words and definitions along with the word descriptions that we have found online from a source that allowed us to use their list of words through a Creative Commons license as long as we properly cite our resource.

The database for the words, on the other hand will have the format of word, type of word, definition, and the origin of the words in each line. So there are only one columns. This saves a lot of memory rather than having each part of the words in separate columns. We want to implement a dictionary that can be customized by each user but still don’t know how to implement it. For now, We decided to use XAMPP to connect to our SQL database because our application is still ongoing so we don’t know how to make a bigger server.

After the database for the words, we decided to make a database for the accounts feature. This database functions to save each words that have been searched by the user in the application. The hardest part to implement is to get every word that user search from the database and display it on the application. The format on the database is still unclear so it's still not implementable for now.

3) Product/Service Marketplace

Because a Dictionary provides them with detailed information for a something they might encounter and is unknown. A dictionary might also be useful in a work environment to ease communications when a translator is not available take for example an online dictionary might not work without internet. A dictionary provide reference to words of a language that may provide a quick support (ex: correct spelling) to the existing marketplace[1].

A large percentage of our competitors are mostly deploying their own version of dictionary application. Some of our biggest competitors are Kamusku application and Babla.com. Kamusku is a pretty popular android dictionary on android app store while Babla is an online web dictionary. Both of these application are pretty popular in indonesia.

We are very confident in entering the marketplace with our current product design. This application is basically an indie application developed with no budget at all therefore there are 0 cost investment for this application. Because of this we are taking a bold attitude when entering unknown marketplace/competition. Plus most of the application on the marketplace has no offline function. So most consumer might consider using our application for the offline function value alone.

For the shipping process will be conducted via online download on our website.

[1] Ece Sarigul. *THE IMPORTANCE OF USING DICTIONARY iN LANGUAGE.* Istanbul, n.d.

4) Marketing Strategy

To be able to compete with similar applications on the market, we try to make our product as simplified as possible without removing any important features. According to our intensive research, Indonesian marketplace for applications are rather small compared to other countries take for example Japan. In case of dictionary applications, only a very small percentage of applications in Indonesia that belongs in this category. Therefore our aim for this application are the customer of indonesian marketplace.

This is also supported by the fact that Indonesians have lower english TOEFL compared to the rest of the world[2]. According to our sources for countries in Asia Indonesia scores 78 while Singapore, Malaysia, and India scores 98, 88, and 92 respectively. In this ever modernizing world the english language become ever more important by the day. This fact doesn't exclude Indonesia. As a matter of fact we think that Indonesian consumer needs for a good dictionary will keep growing as day goes. Especially for let's say lecturers and people who works for multinational companies like Tokopedia.

In terms of feature it's more or less the same as other dictionary applications on the market, maybe with a bit of extra feature here and there. But in terms of design we are confident that we can create a better and more sophisticated application user interface that can stand out on the market. In terms how how we are planning to do our marketing, for now we are only considering to use conventional means in which we

[2] Asian Scientist Magazine. *TOEFL: Singapore Third Worldwide In English Proficiency Test, Top In Asia.* April 28, 2011.

would use free social media platforms like instagram, facebook, and line to market our product. This marketing strategy will also be done while considering the costs of operation. Since this is application a small college project developed by our indie team, our funds are very limited therefore we are striving to use the most conventional method as much as possible to minimize our expense.

5) Organization and Staffing

As this is Ductionary Inc. first time working as an organization to make an application, all of the staff and work division will be established in this document, for future reference. In most cases, all of the staff will work from home, and communicate using online messaging apps such as LINE or Discord. All of the staff will report their work to the Coordinator. The work division is as follows:

Coordinator: Held by James. This position is responsible for managing and directing the other staff members, along with providing them with necessary information, such as information on features.

Feature Set: Held by James. This position is responsible for establishing all of the required features that will be implemented into the application.

User Interface (Front-End): Held by James and Thompson. This full time position is responsible for designing and implementing the layout of the user interface into the application.

Graphic Design: Held by Andre. This position is responsible for designing the application’s graphical elements. This includes its logo and any icons that appear in the app.

Programming Features and Functionalities: Held by Andreas and Regy. This position is responsible for the programming the functionalities of the application, by handling the implementation of its core features.

Database Management: Held by Dean. This position is responsible for implementing and managing the database systems required for certain features.

Assembling Dictionary Words: Held by Andre: This position is responsible for gathering all of the words and definitions along with the word descriptions/properties (adj/adverb/verb/noun/etc).

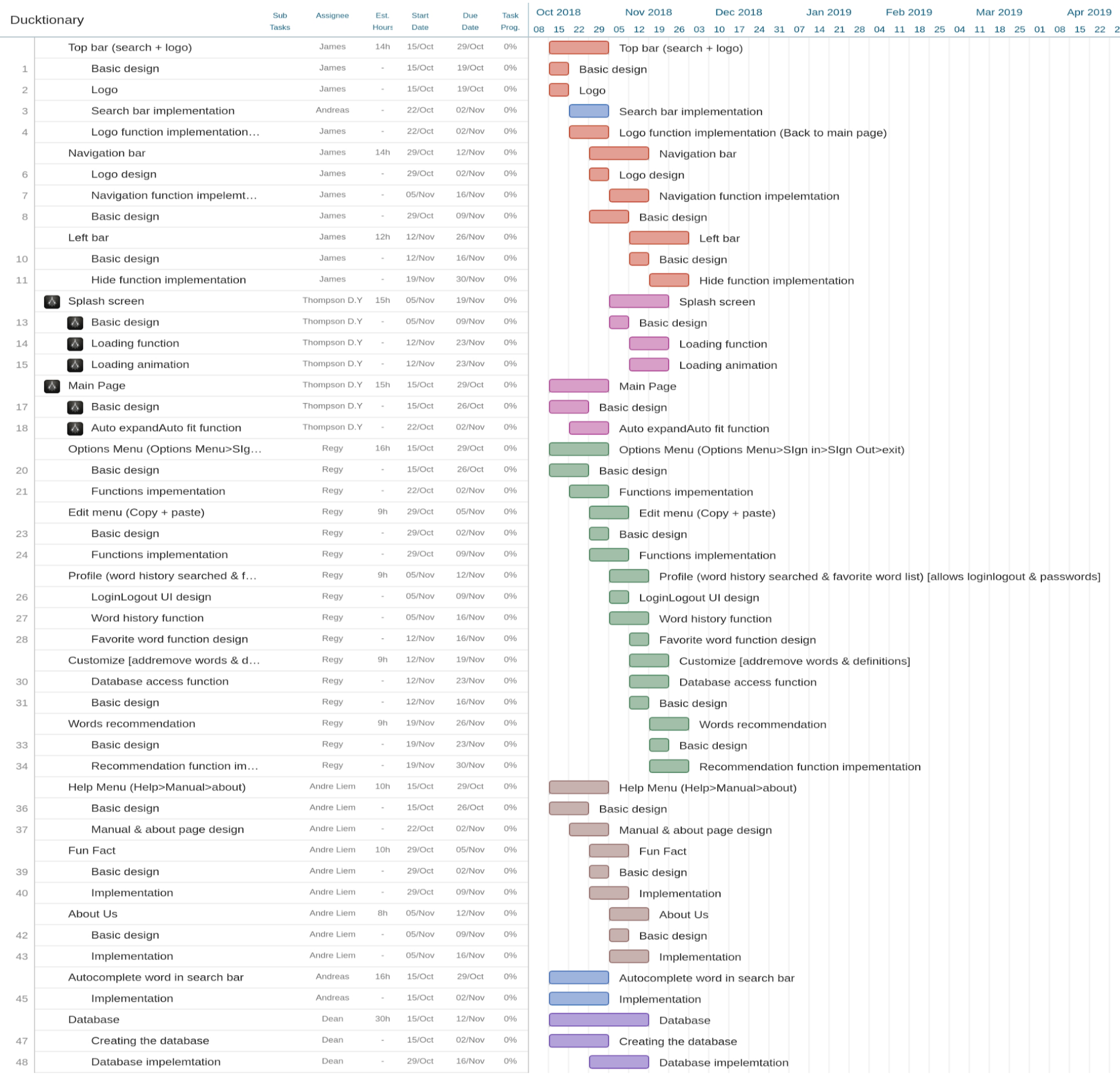
Presentation Management: Held by Dean. This position is responsible for readying presentation materials for proposing the application to potential investors.

Application Documentation [Program Manual and User Manual]: Held by James and Andre. Responsible for documenting all of the application's features and functionality, and giving them clear instructions on how they are used. These consist of the user manual and the program manual.

6) Schedule

In order to finish the project on time, we try to make specific timeline such as deadline for every tasks that we discuss before. By creating deadline for every task, we believe it will help us to reach our own expectation for the application like what we planned before. Because in many cases, a project will be unsuccessful if it takes longer than it was estimated. And most of those cases, the main reason is because they didn't make the timeline for their tasks. To make the timeline followed by all the members of the group,the coordinator makes sure that all tasks are done on schedule and follow the timeline.

Since we only have a limited time to develop this app, we created a gantt chart below:



Ducktionary		Sub Tasks	Assignee	Est. Hours	Start Date	Due Date	Task Prog.
	Top bar (search + logo)		James	14h	15/Oct	29/Oct	0%
1	Basic design		James	-	15/Oct	19/Oct	0%
2	Logo		James	-	15/Oct	19/Oct	0%
3	Search bar implementation		Andreas	-	22/Oct	02/Nov	0%
4	Logo function implementation…		James	-	22/Oct	02/Nov	0%
	Navigation bar		James	14h	29/Oct	12/Nov	0%
6	Logo design		James	-	29/Oct	02/Nov	0%
7	Navigation function impelemt…		James	-	05/Nov	16/Nov	0%
8	Basic design		James	-	29/Oct	09/Nov	0%
	Left bar		James	12h	12/Nov	26/Nov	0%
10	Basic design		James	-	12/Nov	16/Nov	0%
11	Hide function implementation		James	-	19/Nov	30/Nov	0%
	Splash screen		Thompson D.Y	15h	05/Nov	19/Nov	0%
13	Basic design		Thompson D.Y	-	05/Nov	09/Nov	0%
14	Loading function		Thompson D.Y	-	12/Nov	23/Nov	0%
15	Loading animation		Thompson D.Y	-	12/Nov	23/Nov	0%
	Main Page		Thompson D.Y	15h	15/Oct	29/Oct	0%
17	Basic design		Thompson D.Y	-	15/Oct	26/Oct	0%
18	Auto expandAuto fit function		Thompson D.Y	-	22/Oct	02/Nov	0%
	Options Menu (Options Menu>SIg…		Regy	16h	15/Oct	29/Oct	0%
20	Basic design		Regy	-	15/Oct	26/Oct	0%
21	Functions impementation		Regy	-	22/Oct	02/Nov	0%
	Edit menu (Copy + paste)		Regy	9h	29/Oct	05/Nov	0%
23	Basic design		Regy	-	29/Oct	02/Nov	0%
24	Functions implementation		Regy	-	29/Oct	09/Nov	0%
	Profile (word history searched & f…		Regy	9h	05/Nov	12/Nov	0%
26	LoginLogout UI design		Regy	-	05/Nov	09/Nov	0%
27	Word history function		Regy	-	05/Nov	16/Nov	0%
28	Favorite word function design		Regy	-	12/Nov	16/Nov	0%
	Customize [addremove words & d…		Regy	9h	12/Nov	19/Nov	0%
30	Database access function		Regy	-	12/Nov	23/Nov	0%
31	Basic design		Regy	-	12/Nov	16/Nov	0%
	Words recommendation		Regy	9h	19/Nov	26/Nov	0%
33	Basic design		Regy	-	19/Nov	23/Nov	0%
34	Recommendation function im…		Regy	-	19/Nov	30/Nov	0%
	Help Menu (Help>Manual>about)		Andre Liem	10h	15/Oct	29/Oct	0%
36	Basic design		Andre Liem	-	15/Oct	26/Oct	0%
37	Manual & about page design		Andre Liem	-	22/Oct	02/Nov	0%
	Fun Fact		Andre Liem	10h	29/Oct	05/Nov	0%
39	Basic design		Andre Liem	-	29/Oct	02/Nov	0%
40	Implementation		Andre Liem	-	29/Oct	09/Nov	0%
	About Us		Andre Liem	8h	05/Nov	12/Nov	0%
42	Basic design		Andre Liem	-	05/Nov	09/Nov	0%
43	Implementation		Andre Liem	-	05/Nov	16/Nov	0%
	Autocomplete word in search bar		Andreas	16h	15/Oct	29/Oct	0%
45	Implementation		Andreas	-	15/Oct	02/Nov	0%
	Database		Dean	30h	15/Oct	12/Nov	0%
47	Creating the database		Dean	-	15/Oct	02/Nov	0%
48	Database impelemtation		Dean	-	29/Oct	16/Nov	0%

Figure 1 Our Team's Gantt Chart

7) Financial Projections

Since this work is done for a college project and not for commercial work or for a bigger project where we have all of the time and budget that we need. Since this is a college project, we also do not have any budget at all for a program tester, designer, and all of the extra bells and whistles that we may need. Even though our application uses a database. Since our project is also done for HCI class, our priorities will lay on to the interaction part of the application and not the correctness of our application.

8) Findings and Recommendations (Scope) After Risks are Identified

Dictionary Contents

Considering the size of our team, our budget, and our schedule we decided to make this the contents of the dictionary consist of only English words. Other than that, we have limited our dictionary data to only store the parts of speech (verb/noun/pronoun etc), the word itself, the definition (if there are multiple definitions, then store only 1 or 2 or 3 definitions), and if possible an example sentence for the word (not all the words will have a sentence example).

Database

Using local database for now, but planning to use a more bigger server in the end. Need to be able to fully implement every feature first on the local database and then we can move to bigger server. Implementation of bigger server is still not done yet, so it is unclear if that will be feasible or not.

Since the database is fully online, the dictionary cannot be accessed offline as a result. This may interfere with the user experience as they may not always have a stable internet connection, so depending on feedback, we may need to include offline functionality into our scope.

A possible alternative that allows for easier offline functionality is to give the user their own customizable dictionary, which they can edit without affecting other dictionaries. However, it further requires a large server to keep a separate dictionary for every user, which in turn makes it possibly unfeasible as again, we currently don’t know our server size.

User Interface

So far in terms of UI design we are planning to use JavaFX more specifically the Jfoenix library. Jfoenix is a modified version of JavaFX that’s designed to better support material design for applications. However, we are definitely limited to what JavaFX and JFoenix is able to handle. This is why in the end there might be several changes to the planned design prototypes.

Profile

The entire profile functionality is dependent on the fact we have an online database to save the dictionary and account information. The login feature will be redundant without it, as the credentials would have to be saved offline otherwise. The scope of the application will be reduced to offline functionality only, and the aforementioned login feature would have to be removed entirely, instead opting for an exportable/importable local profile.

As of now, we plan to allow multiple users to access and change the dictionary concurrently. It may not be feasible to include if the database is still local by the dictionary’s completion, or if we don’t implement a suitable way to lock/unlock access for each user, in which case, we will only allow one user to access the database at a time.

Edit

Editing the dictionary is a core functionality of this application, so regardless of any issues arising from other functions, there will always be options to add and delete words from the dictionary. However, certain edit functions, particularly the undo/redo function, may be harder to implement with multiple users on an online database, such as a user trying to undo an added word after a different user has deleted it.

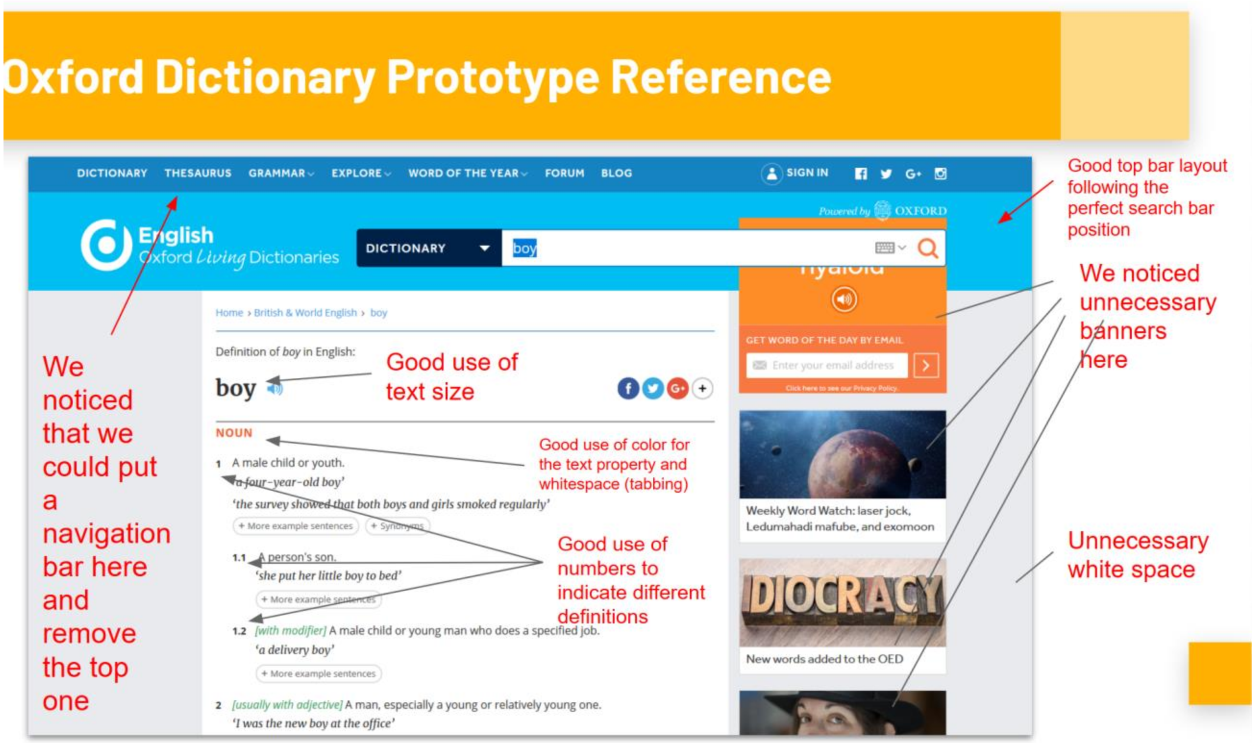
Tentatively, this is solved by user locking to the word first and then another user can’t modify the word until the user that locks the word is finished, but it may cause the second user to wait for too long as the undo/redo functions don’t get cleared until the user ends the application. If the issue can’t be solved without adversely affecting user experience, the function will not be feasible, and has to be removed.

Prototype References:

Before we designed our prototype, we analyzed a few other competitors before settling on a few of our own design concepts.

oxforddictionaries.com

Oxford Dictionaries. *boy*. n.d. https://en.oxforddictionaries.com/definition/boy (accessed
November 18, 2018).



Oxford Dictionary Prototype Reference

DICTIONARY
THESAURUS
GRAMMAR
EXPLORE
WORD OF THE YEAR
FORUM
BLOG
SIGN IN
Powered by OXFORD
English
Oxford Living Dictionaries
DICTIONARY
boy
hyaloid
GET WORD OF THE DAY BY EMAIL
Enter your email address
Click here to see our Privacy Policy.
Weekly Word Watch: laser jock, Ledumahadi mafube, and exomoon
DIOCRACY
New words added to the OED

Home › British & World English › boy

Definition of *boy* in English:

boy

NOUN

1 A male child or youth.

'a four-year-old boy'

'the survey showed that both boys and girls smoked regularly'

+ More example sentences + Synonyms

1.1 A person's son.

'she put her little boy to bed'

+ More example sentences

1.2 *[with modifier]* A male child or young man who does a specified job.

'a delivery boy'

+ More example sentences

2 *[usually with adjective]* A man, especially a young or relatively young one.

'I was the new boy at the office'

We noticed that we could put a navigation bar here and remove the top one

Good use of text size

Good use of color for the text property and whitespace (tabbing)

Good use of numbers to indicate different definitions

Good top bar layout following the perfect search bar position

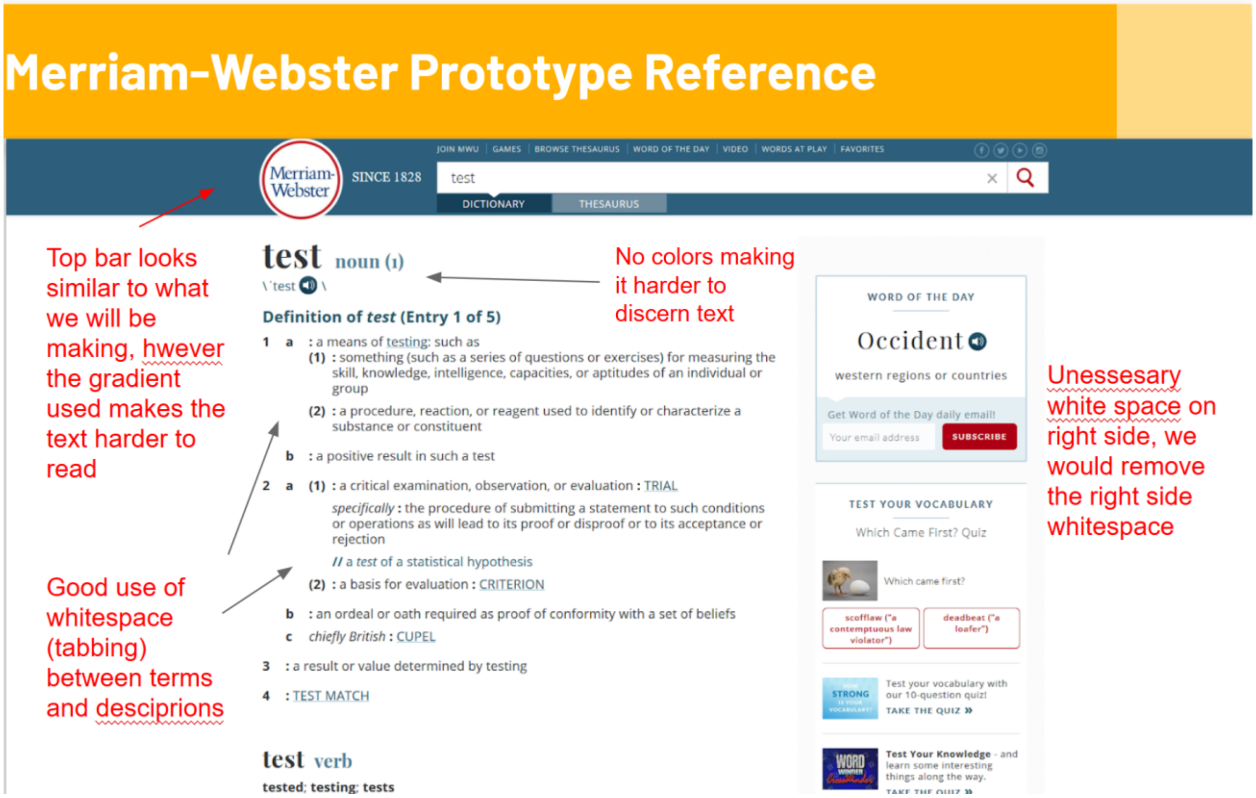
We noticed unnecessary banners here

Unnecessary white space

Figure 2 Oxford Dictionaries Prototype Example and comments

https://www.merriam-webster.com/

Merriam-Webster. *Test.* n.d. https://www.merriam-webster.com/dictionary/test (accessed
November 18, 2018).


Merriam-Webster Prototype Reference
JOIN MWU | GAMES | BROWSE THESAURUS | WORD OF THE DAY | VIDEO | WORDS AT PLAY | FAVORITES
Merriam-Webster
SINCE 1828
test
DICTIONARY
THESAURUS
WORD OF THE DAY
Occident
western regions or countries
Get Word of the Day daily email!
Your email address
SUBSCRIBE
TEST YOUR VOCABULARY
Which Came First? Quiz
Which came first?
scofflaw ("a contemptuous law violator")
deadbeat ("a loafer")
STRONG
Test your vocabulary with our 10-question quiz!
TAKE THE QUIZ »
WORD
Test Your Knowledge - and learn some interesting things along the way.
TAKE THE QUIZ »

test noun (1)
\ˈtest \

Definition of *test* (Entry 1 of 5)

1 a : a means of testing: such as
(1) : something (such as a series of questions or exercises) for measuring the skill, knowledge, intelligence, capacities, or aptitudes of an individual or group
(2) : a procedure, reaction, or reagent used to identify or characterize a substance or constituent
b : a positive result in such a test
2 a (1) : a critical examination, observation, or evaluation : TRIAL
specifically : the procedure of submitting a statement to such conditions or operations as will lead to its proof or disproof or to its acceptance or rejection
// a *test* of a statistical hypothesis
(2) : a basis for evaluation : CRITERION
b : an ordeal or oath required as proof of conformity with a set of beliefs
c *chiefly British* : CUPEL
3 : a result or value determined by testing
4 : TEST MATCH

test verb
tested; **testing**; **tests**

Top bar looks similar to what we will be making, hwever the gradient used makes the text harder to read

No colors making it harder to discern text

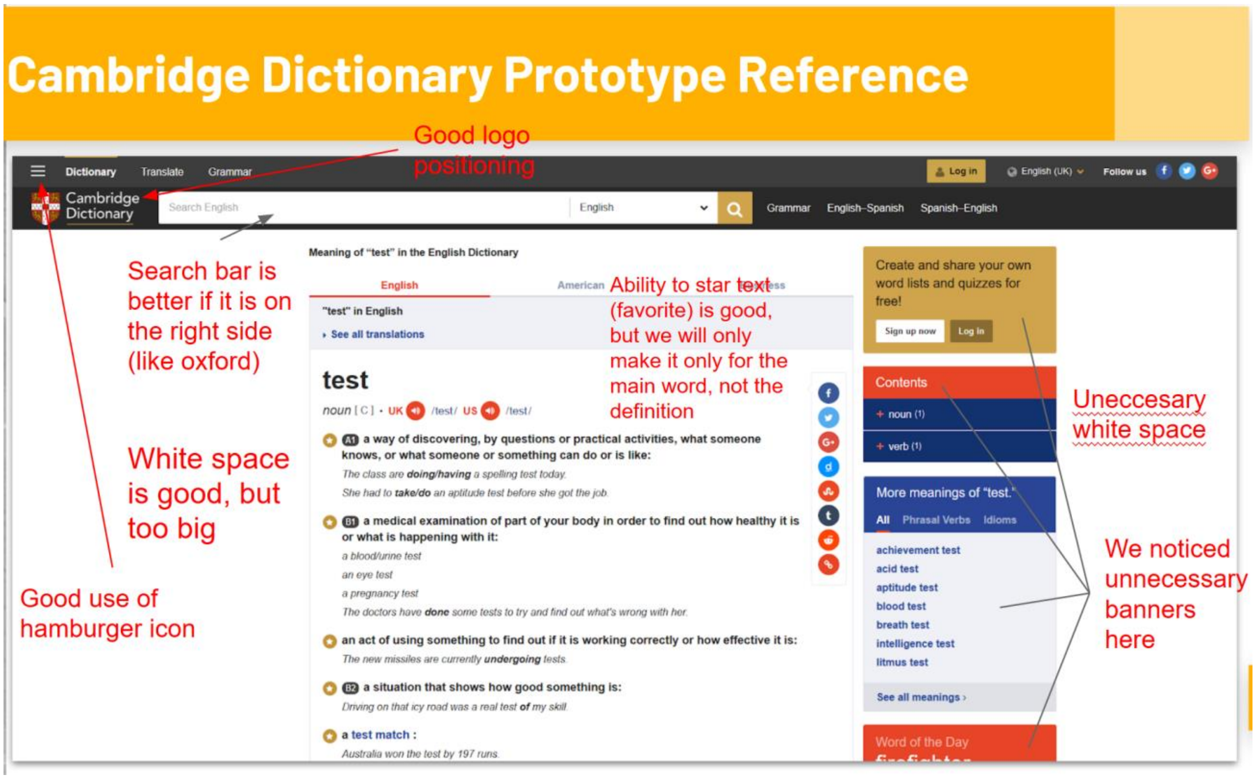
Unessesary white space on right side, we would remove the right side whitespace

Good use of whitespace (tabbing) between terms and descriprions

Figure 3 Merriam Webster Prototype Sample and comments

https://dictionary.cambridge.org/

https://dictionary.cambridge.org/dictionary/english/test (accessed November 18, 2018).



Cambridge Dictionary Prototype Reference

Good logo positioning

Search bar is better if it is on the right side (like oxford)

White space is good, but too big

Good use of hamburger icon

Ability to star text (favorite) is good, but we will only make it only for the main word, not the definition

Uneccesary white space

We noticed unnecessary banners here

Meaning of "test" in the English Dictionary

"test" in English

test

noun [C] · UK /test/ US /test/

A1 a way of discovering, by questions or practical activities, what someone knows, or what someone or something can do or is like:

*The class are **doing/having** a spelling test today.*

*She had to **take/do** an aptitude test before she got the job.*

B1 a medical examination of part of your body in order to find out how healthy it is or what is happening with it:

a blood/urine test

an eye test

a pregnancy test

*The doctors have **done** some tests to try and find out what's wrong with her.*

an act of using something to find out if it is working correctly or how effective it is:

*The new missiles are currently **undergoing** tests.*

B2 a situation that shows how good something is:

*Driving on that icy road was a real test **of** my skill.*

a test match :

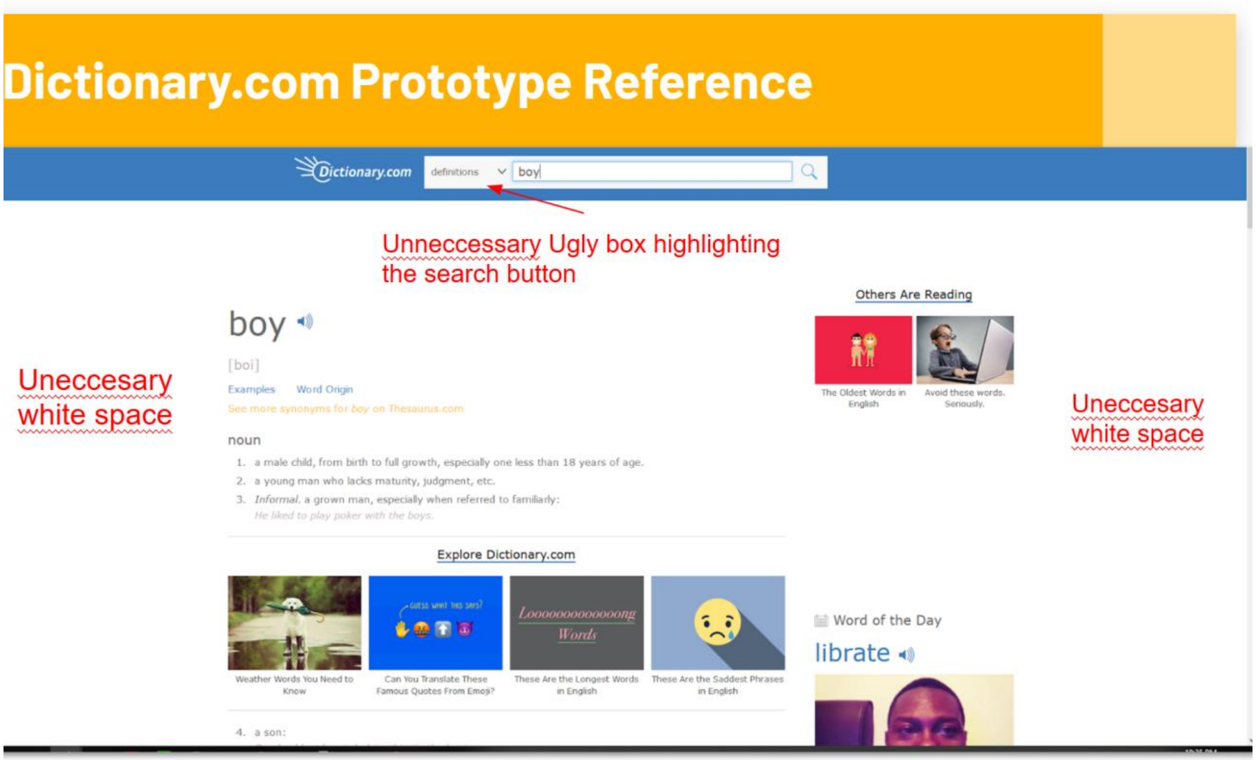
Australia won the test by 197 runs.

Create and share your own word lists and quizzes for free!

Figure 4 Cambridge Dictionary Prototype Sample and comments

https://www.dictionary.com/

Dictionary.com. *Boy*. n.d. https://www.dictionary.com/browse/boy (accessed November
18, 2018).



Dictionary.com Prototype Reference

Dictionary.com
definitions
boy
Unneccessary Ugly box highlighting the search button
Uneccesary white space
Uneccesary white space
Others Are Reading
The Oldest Words in English
Avoid these words. Seriously.
Explore Dictionary.com
GUESS WHAT THIS SAYS?
Looooooooooooong Words
Weather Words You Need to Know
Can You Translate These Famous Quotes From Emoji?
These Are the Longest Words in English
These Are the Saddest Phrases in English
Word of the Day
librate

boy

[boi]

Examples Word Origin

See more synonyms for *boy* on Thesaurus.com

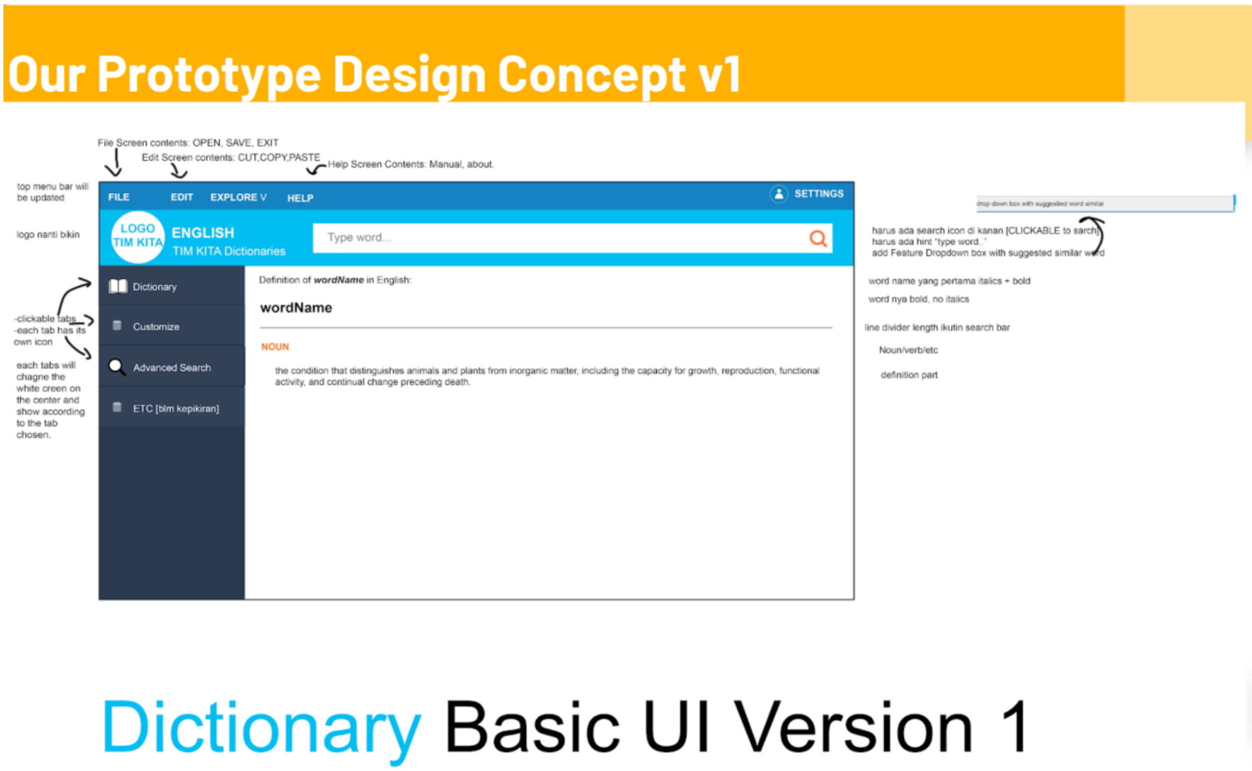
noun

1. a male child, from birth to full growth, especially one less than 18 years of age.
2. a young man who lacks maturity, judgment, etc.
3. *Informal.* a grown man, especially when referred to familiarly:
   He liked to play poker with the boys.
4. a son:

Figure 5 Dictionary.com Prototype Sample and comments

Our design prototypes

We based off our prototype from the above examples, taking the parts that worked and improving on the parts that were lackluster. We kept most of their good positioning, such as a logo on the top-left for convenience, and a search bar made noticeable by having it take up most of the top section of the application. One of their main downfalls was the overabundance of white space on their sites, so we aim to cut down on that by moving the navigation bar to the side of the program, making the layout more compact. Also, our application is desktop-only, so it will not incorporate any advertisements in the program.



Our Prototype Design Concept v1

File Screen contents: OPEN, SAVE, EXIT

Edit Screen contents: CUT,COPY,PASTE

Help Screen Contents: Manual, about.

top menu bar will be updated

logo nanti bikin

-clickable tabs
-each tab has its own icon

each tabs will chagne the white creen on the center and show according to the tab chosen.

drop down box with suggestied word similar

harus ada search icon di kanan [CLICKABLE to sarch]
harus ada hint "type word.."
add Feature Dropdown box with suggested similar word

word name yang pertama italics + bold

word nya bold, no italics

line divider length ikutin search bar

Noun/verb/etc

definition part

Definition of ***wordName*** in English:

wordName

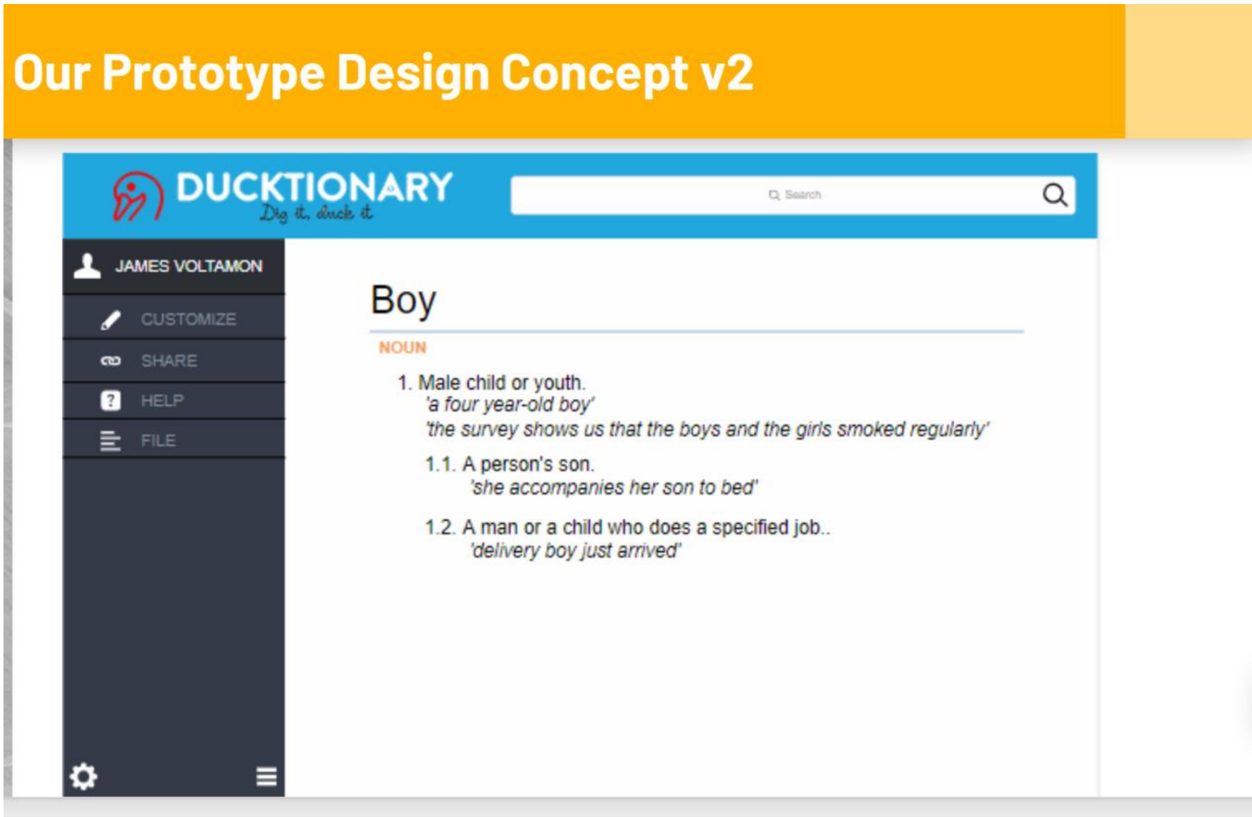
NOUN

the condition that distinguishes animals and plants from inorganic matter, including the capacity for growth, reproduction, functional activity, and continual change preceding death.

Dictionary Basic UI Version 1

Figure 6 Our Prototype Design Concepts and Comments

The prototype below is similar to that of Figure 6, but it incorporates an early version of our logo and title, so it better reflects the appearance of the final version. The colors are also not final (particularly that of the logo), and further adjustments will be made for the application's final design.



Our Prototype Design Concept v2

Boy

NOUN

1. Male child or youth.
   'a four year-old boy'
   'the survey shows us that the boys and the girls smoked regularly'

   1.1. A person's son.
   'she accompanies her son to bed'

   1.2. A man or a child who does a specified job..
   'delivery boy just arrived'

Figure 7 Another design concept prototype with its comments

In the coming months, we will combine these design concepts and improve on it as we create the software. The final product will probably not look exactly like the design concepts however the main functionality should be similar.

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Post-Evaluation

Purpose & Design Specification & Design Considerations

Please view the attached design manual for this section.

Redesign

We want to see if the icon in the application is intuitive enough to be used by user. For the survey, we did not give any information to recipient. We want the participants to find 3 methods of searching for word "Animal" in the application. We will gather the data based on how much time needed to find each method. After we gather the data, we will do Anova test.

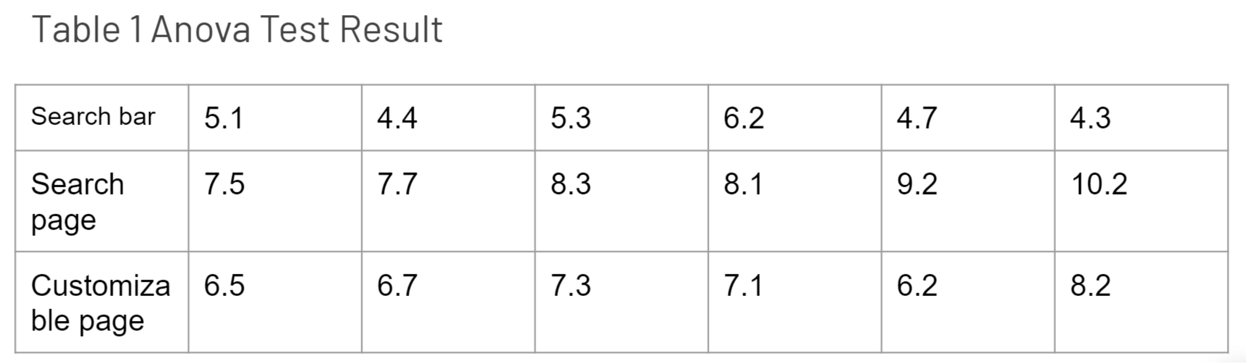
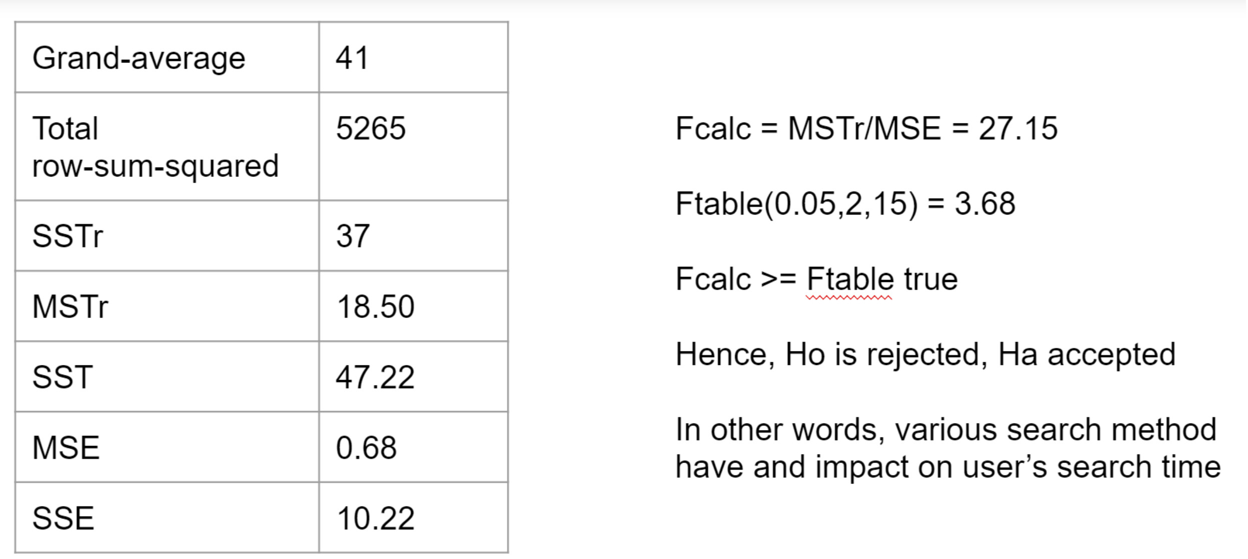


Table 1 Anova Test Result

Search bar	5.1	4.4	5.3	6.2	4.7	4.3
Search page	7.5	7.7	8.3	8.1	9.2	10.2
Customizable page	6.5	6.7	7.3	7.1	6.2	8.2



Grand-average	41
Total row-sum-squared	5265
SSTr	37
MSTr	18.50
SST	47.22
MSE	0.68
SSE	10.22

Fcalc = MSTr/MSE = 27.15

Ftable(0.05,2,15) = 3.68

Fcalc >= Ftable true

Hence, Ho is rejected, Ha accepted

In other words, various search method have and impact on user's search time

We also did a survey for our application that consists of showing the user interface of our applications before we modified our application.

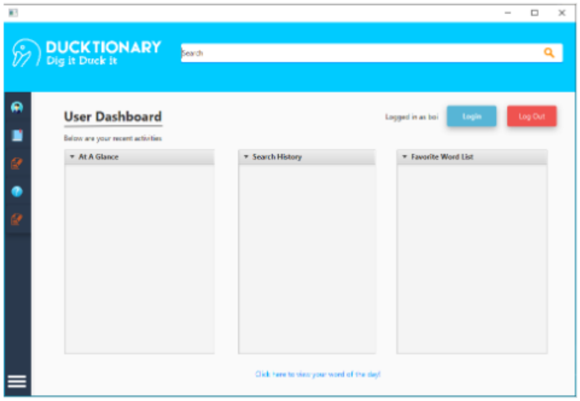
User 1	User 2	User 3	User 4	User 5
3	3	4	4	3

Average =(3+3+4+4+3)/5 = 3.4

This is the data from the survey before redesign. Maximum score is 5 and minimum score is 0. The data consisted of color and icon placement in application and we average it to obtain a single score. We want to get total average at least 4. So we decided to redesign the application.

To improve our scores that we got (refer to the attached excel file and the power point file), we decided to redesign our application.

Old Dashboard



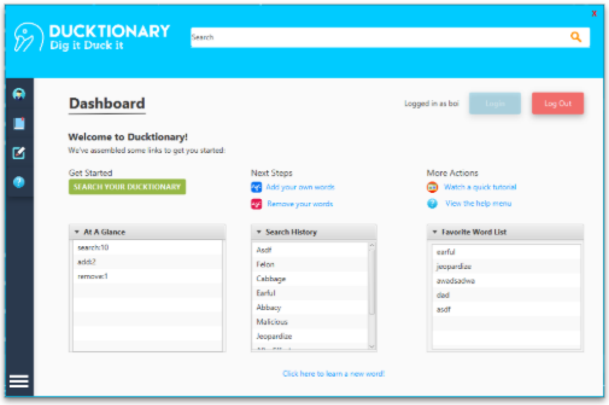
User Dashboard

Logged in as boi

Below are your recent activities

Click here to view your word of the day!

New Dashboard



Dashboard

Logged in as boi

Welcome to Ducktionary!

We've assembled some links to get you started:

Get Started

Next Steps

Add your own words

Remove your words

More Actions

Watch a quick tutorial

View the help menu

search:10
add:2
remove:1

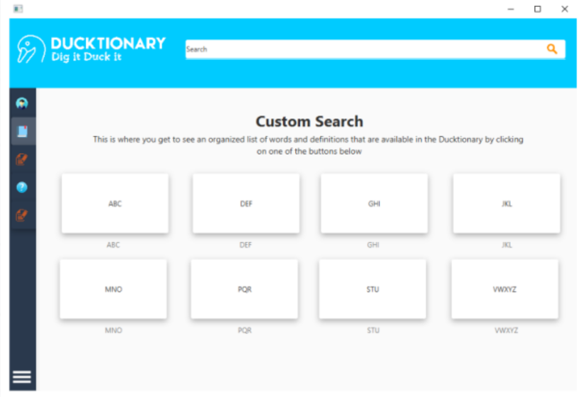
Asdf
Felon
Cabbage
Earful
Abbacy
Malicious
Jeopardize

earful
jeopardize
awadsadwa
dad
asdf

Click here to learn a new word!

Above is the new dashboard that is more intuitive for the user and has the functions that can help the user do the main features of the application faster and better.

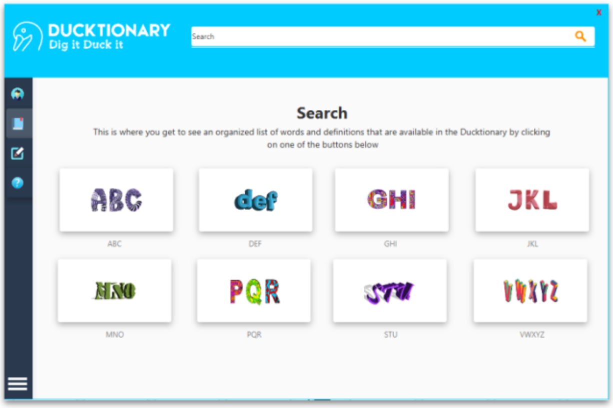
Old Search Screen



Custom Search

This is where you get to see an organized list of words and definitions that are available in the Ducktionary by clicking on one of the buttons below

New Search Screen

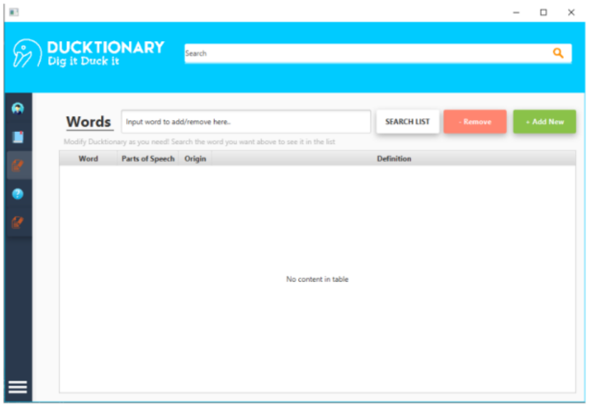


Search

This is where you get to see an organized list of words and definitions that are available in the Ducktionary by clicking on one of the buttons below

Above is the new search page that pops more and has contrasting colors that lets the user view the word index of the dictionary faster and better. Previously the users have to read one by one to find the index of the words, now since we added icons its much easier to use.

Old Customize Ducktionary



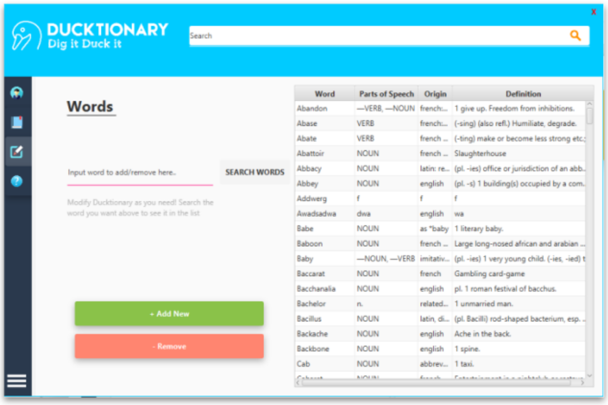
Words

Modify Ducktionary as you need! Search the word you want above to see it in the list

Word	Parts of Speech	Origin	Definition

No content in table

New Customize Ducktionary

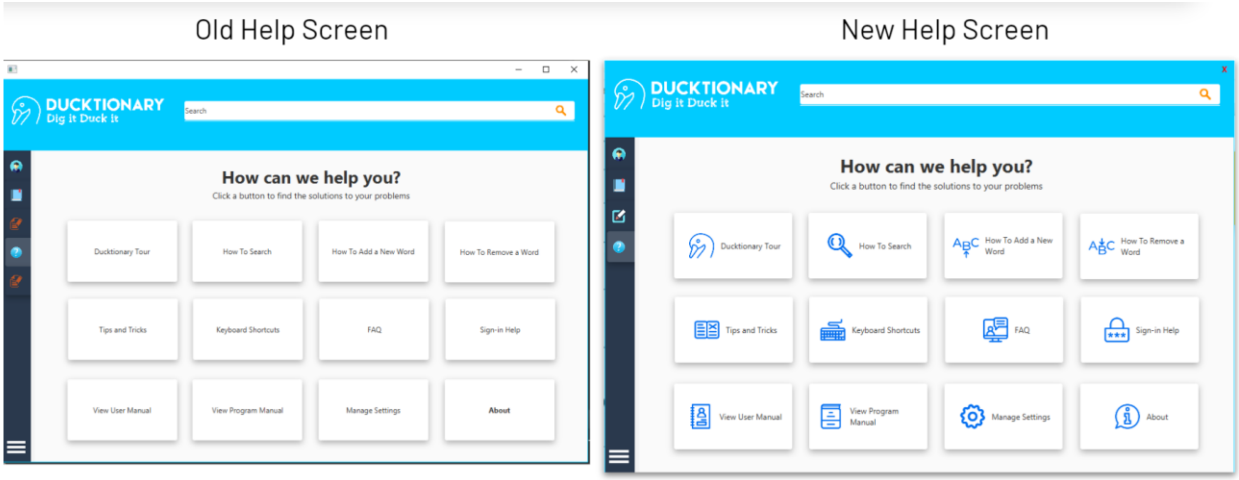


Words

Modify Ducktionary as you need! Search the word you want above to see it in the list

Word	Parts of Speech	Origin	Definition
Abandon	—VERB, —NOUN	french:...	1 give up. Freedom from inhibitions.
Abase	VERB	french:...	(-sing) (also refl.) Humiliate, degrade.
Abate	VERB	french ...	(-ting) make or become less strong etc.;
Abattoir	NOUN	french ...	Slaughterhouse
Abbacy	NOUN	latin: re...	(pl. -ies) office or jurisdiction of an abb...
Abbey	NOUN	english	(pl. -s) 1 building(s) occupied by a com...
Addwerg	f	f	f
Awadsadwa	dwa	english	wa
Babe	NOUN	as *baby	1 literary baby.
Baboon	NOUN	french ...	Large long-nosed african and arabian ...
Baby	—NOUN, —VERB	imitativ...	(pl. -ies) 1 very young child. (-ies, -ied) t
Baccarat	NOUN	french	Gambling card-game
Bacchanalia	NOUN	english	pl. 1 roman festival of bacchus.
Bachelor	n.	related...	1 unmarried man.
Bacillus	NOUN	latin, di...	(pl. Bacilli) rod-shaped bacterium, esp. ...
Backache	NOUN	english	Ache in the back.
Backbone	NOUN	english	1 spine.
Cab	NOUN	abbrev...	1 taxi.

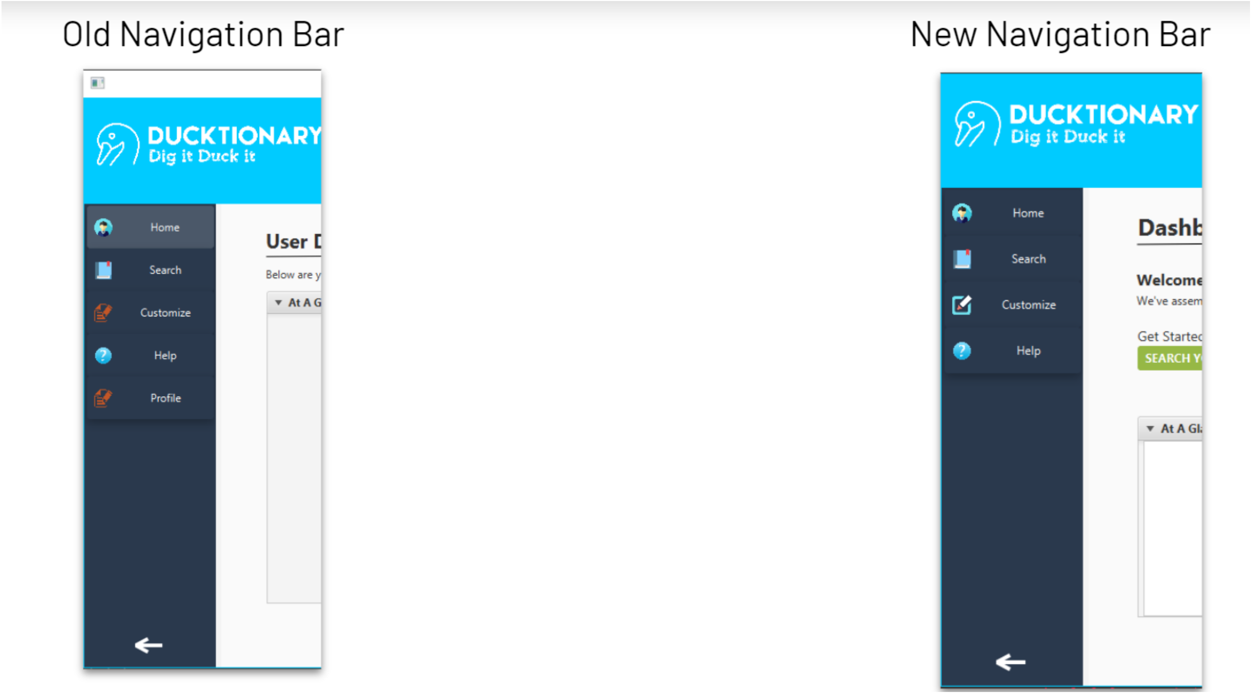
Above is the new customize dictionary page where users can add/remove words. It is much more intuitive with the bigger buttons and better captions to help the user get to the main functionality faster.



Old Help Screen

New Help Screen

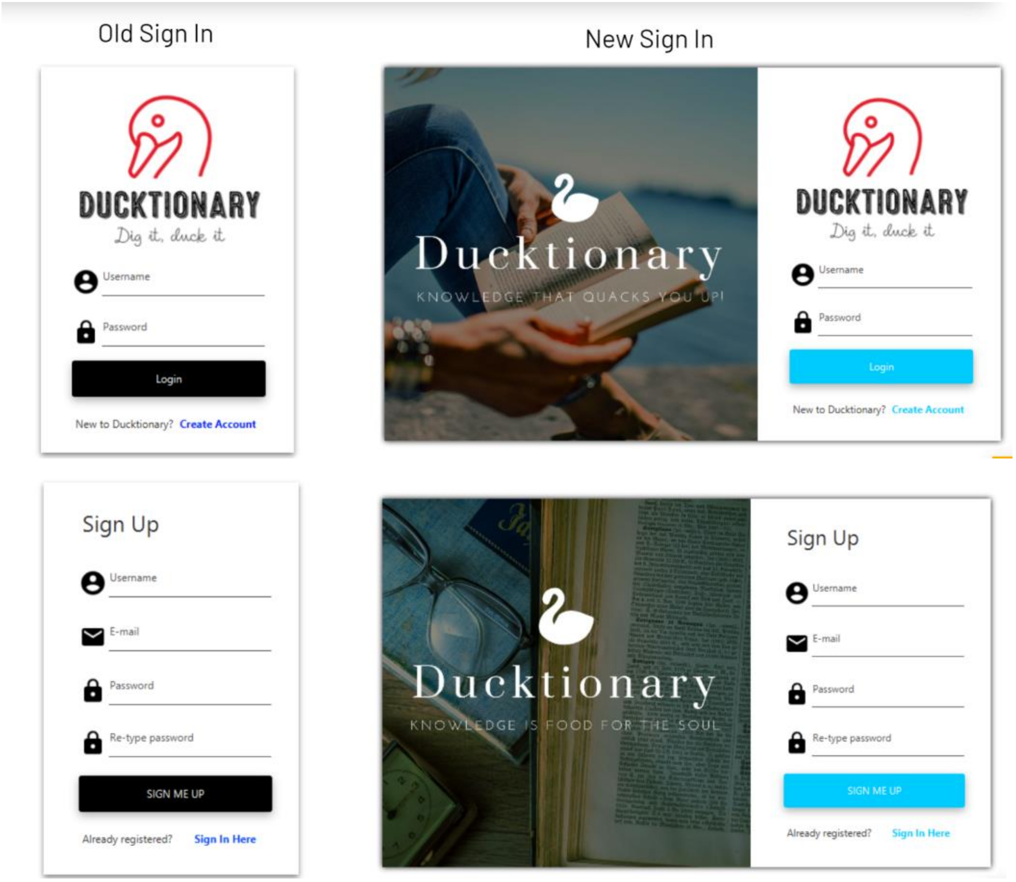
This is the new help screen with icons, we previously didn’t have icons which made some users confused as to what these helps screen actually means. Now that we have icons it has improved user satisfaction.



Old Navigation Bar

New Navigation Bar

This is the navigation bar that has been redesigned so that the icons are more indicative of their function.



Old Sign In

New Sign In

These are the login and sign up pages, it used to be just an empty popup with unclear buttons, now that it has blue buttons it follows the material design guideline of making important buttons have primary colors (instead of the previous design of black button which makes the user confused of which button to press since the links underneath it is more contrast in color).

Work Distribution & Job Description

James:

Overall UI (Front-end), animation, Program Manual, Tooltip Text, Cursor Variation, Menu, Form captions, prototype consideration,, Redesign, Report completeness, button min 7, Form shapes variation

Overall James was responsible for the user interface and all the front-end elements of the application. There are over 20 buttons that were created, the page layout/design of the overall application, and the overall look and feel was created based on the prototype considerations that were previously analysed. This included all the animations from the onboarding until the animations that are inside the application such as the “word not found” page. James was also responsible for the smaller animations like the hamburger icon animation and the drop-down list animation on the help screen. James also created the help screen and coded all the necessary parts for playing the videos and displaying things properly on the screen. Other than that, on the UI side James was responsible for placing all the tooltips that are in the application. This means that if the user puts their cursor on top of a certain object (may it be a button, label, text, etc.) a tooltip with a brief description of the object appears. James was also responsible for the cursor variation such as when a cursor is on top of a clickable entity, the cursor changes from a default pointer to the hand cursor indicating that it is clickable. The cursor also changes when the application is loading. The menu which in this application is the navigation drawer is also created where the user can expand the navigation drawer to expose the text description of the button or hide the drawer and just see the icon of the button. Also, the functionality for these buttons were coded so that it can send the user to the different tabs/pages. Other functions were also coded that relates to the user interface. Form captions were also filled out with brief but informational descriptions and the form shapes were changed according to the current needs. After the evaluations, James also redesigned what was needed to be changed. Also James was responsible for all the report completeness by checking all the reports and modifying it where needed. In the end, James learned a lot about designing user-interfaces that follow the material design guidelines (as this application is using the material design guidelines).

Andre :

Icon-Logo Design, Splash Screen + Fun Fact, Button Design, Help Files + Documentation, User Manual, Design Manual, about page

Overall Andre responsible for visual section for Ducktionary such as Icon-Logo Design and Documentation. Icon, logo and splash screen that were made came up from many references that Andre search and think before those contents applied to the application. Simplicity was the main idea that came up for icon design in Ducktionary. Somehow, it was not easy to made simple icon but it has informative meaning in its own icon but the team wanted the app can be understand everyone. Consistency and familiarity for icons were two goals that we should reach when to achieve friendly application. In order to make user-friendly application, we give our a lot of effort to make easy-to-understand guides in help section. We made informative guides in text and visual too (video tutorial). So new user only need to spend thirty until sixty seconds to understand the capability of Ducktionary that they can experience by watching videos. The other main goal that we want to achieve is creating interactive application through design too. In search section, colourful design in logo were applied. Manual and Design Manual was made for our own documentation too. Video tutorial idea came up from our coordinator (James) and Andre did the task to do. About page and splash screen were made with same idea and concept, the only thing t

Andreas :

Complexity of Coding: Coding Features (refer to documentation), Program open file or other form of input/output functions, Assembling Dictionary Words, Profile

Overall Andreas was responsible for making the Java class that will contain the words and its information, functions that takes or store information. Functions for the class to find the text file that contains the data of the words and the functions on how to read the text file, and write into it. Created function on searching for a certain word and returning its information.

Also created the Java class that will contain profiles and its information, function on how to find a profile with a given parameter for login, functions to create new profiles. Functions for the java class to find the text file that contains the data of profiles and functions on how to read the text file also write into it. Helped on the feature Word of the day with its functions, on which word to choose and displaying the information. Also worked on the search bar for its searching function and its auto complete feature.

Dean :

SQL Connection, Passworded Database and username + pwd, Anova, slides + presentation, Questionnaire & Evaluation

Overall Dean was responsible for the SQL Connection and statistical test. SQL Connection scope is adding and removing word in database. Dean makes class DatabaseFunction.java that contain method for application to communicate with database. Statistical test scope is doing survey, gathering data, processing data, and making Anova based on gathered data. There are survey for evaluation and there are survey for user experience.

Survey for user experience is used to base decision whether to redesign or not. Survey for evaluation is used to make Anova. Dean also helps making the presentation and program manual. Presenting data result from survey and adding DatabaseFunction.java method to program manual.

Regy:

Program Manual, Complexity of Coding, Coding Features (refer to documentation), Limitation Considerations, Quality Control check, Report completeness

Regy was responsible for describing the majority of the classes in the program manual, along with its functions and variables, and describing the “go to definition page” functionality as a flowchart. He was also responsible for outlining all of the program’s limitations, managing the complexity of coding, and parts of quality control for the program, including bug-fixing. Other responsibilities also include implementing some of the program’s features, particularly in the search, definition, and the top level of the customize pages, and putting the finishing touches on the report, particularly managing some of the references.

Specifically for the program, he was most responsible for the ViewSearchedWordsPageController and the DefinitionPageController, making the correct range of words display depending on which button was pressed, displaying the word list in the ViewSearchedWordsPage and the CustomizePage (along with the double-click listener), and how the word is displayed in DefinitionPage, particularly how clicking on a part of speech changes the definitions to the ones corresponding to that part of speech. He also modified the Dictionary class to convert the raw file’s short parts of speech to full, capitalized forms to be displayed in the program, and setting up a way to return a list of words with their concise information, to be displayed in the CustomizePage.

Thompson:

Complexity of Coding: Coding Features (refer to documentation), Splash, Loading Bar, background, slides + presentation, Documentation, Program Manual

Overall Thompson was responsible for the functions and functionalities in the ducktionary. Such functions and functionalities includes addword and removeword function. When making the addword and removeword function Thompson also helps to design the addword and removeword page using scenebuilder.

Thompson also helps at making the splash screen complete with its funfact and loading bar. Thompson also helps making the power point for the presentation and documentation with its program manualn