CS 3041 **Lumbini Parnas**
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Human Computer Interaction

Project 4 - *Final Documentation*

Introduction

The goal of this project is to familiarize students with the concepts of interface design. The task given was to create a concept application that allows the user to view Linux Man-Pages without having to use the terminal. This was done by creating a simple user interface using Java and Javafx. The interface is a two-level, (pseudo three-level) help system that follows a tree format with the top-level being the homepage consisting of the main categories, followed by a summary and then details about the requested commanding in the topic. The following documentation will discuss the revised task objects, their attributes and the task actions related to the interface. In addition, the initial mock-ups along with the final screen-shots of the application will be analyzed.

Task Objects and their Attributes

1. Welcome Page
   (a) Name of the Application
   (b) Main Topics available in the man pages
      i. User Commands
      ii. System Calls
      iii. Library Functions
      iv. Device Commands
      v. File Commands
      vi. Superuser/System Admin
      vii. All Commands
   (c) Searching
      i. Editable Text Area
      ii. Search Button
      iii. NOTE: The search button in the application is currently not enabled as the number of included commands are very few. However, the components required for search do appear in the Interface.
   (d) Linux Logo
   (e) Appealing design to attract the user
2. Search Function
   (a) Allow the user to type characters and hit the search button to search in the database
   (b) Search button will be easily accessible from all levels of the interface

3. View Pages
    (a) Each topic will consist of multiple pages viewed as text containing all the required information released by Linux
    (b) The topics will have multiple levels of pages that increase in depth for the details
4. Bookmarks
5. Navigation
    (a) Home button is available in all levels of the interface that brings you to the main page with the main topics

Task Actions

1. The user desires to view a summary of the item he/she desires.
2. The user would like to view the details of a certain item.
3. The user desires to perform a search action. (Not functional Yet)
4. The user would like to sort commands depending on topic.
5. The user would like to view all available commands.

Error Handling

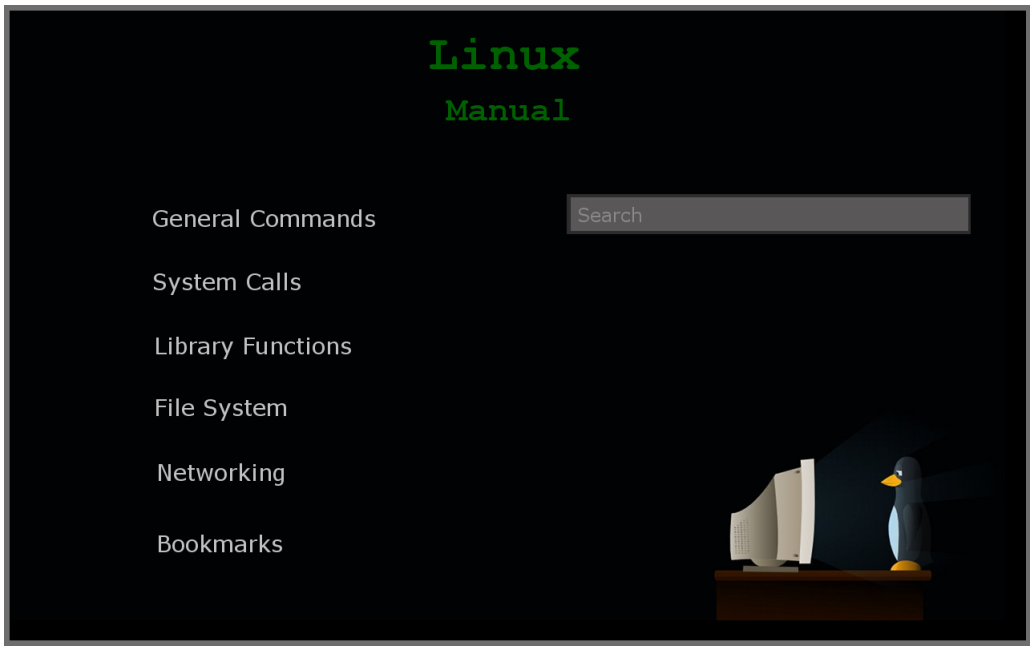
As humans, we tend to make mistake. Similarly, users may be prone to making errors while using interfaces. This interface is designed in a such a way that it minimizes the number of buttons to be clicked and being able to easily go back to previous state if an error does occur. Recovering from an error is handled by having only two levels but a pseudo third level which simply refreshes the text in the text Area. The user has access to all topics while viewing pages and other commands that may potentially be viewed in that particular topic. The layout of the buttons and the text area is grouped using Law of Proximity to minimize confusion and maximize efficiency so users aren't searching for desired commands. Once the search function is implemented it will have a notification system that if the user types something invalid an alert box will appear notifying the user to recheck the entry or change it accordingly.
In terms of software, exceptions are caught and dealt with wherever there is a possibility of an error occurring.

Platform Used

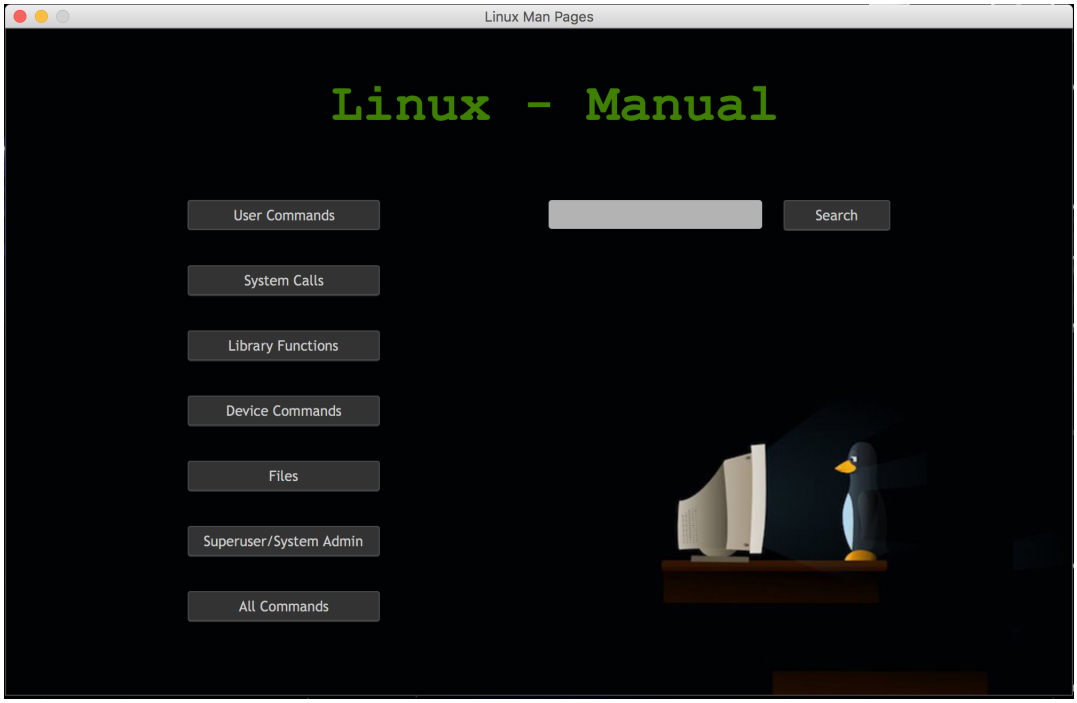
This interface was developed on Java using the graphics package - JavaFX. It was assumed that this interface will be used by a slightly above average user looking to learn Linux as not many average user interacts with Linux. Managing the various task objects was easy on this object oriented developing platform. Moreover, the wide range of graphics options provided by the Java FX libraries helped create an aesthetically appealing but minimalist application.
The application was developed with the mock-ups previously produced for the rough draft. However, some changes were made along the way to better fit the available commands and time constraints. The following section will discuss the changes made during the development process compared to the previous mock-up.

Low-Fidelity Prototype Vs. Final

Home Page (MOCK-UP)

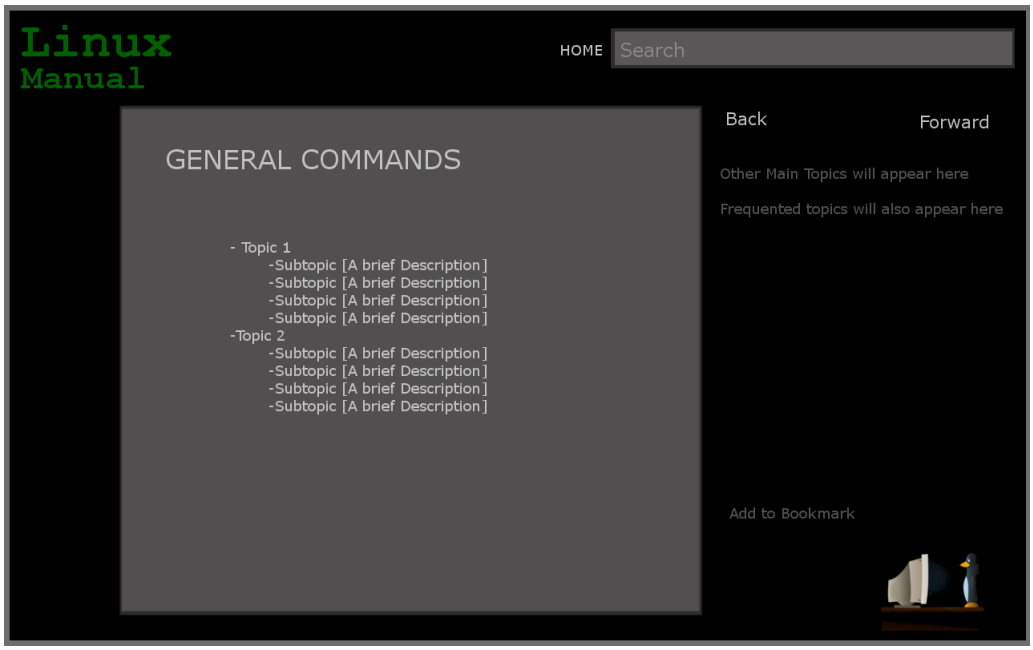


Home Page (FINAL)

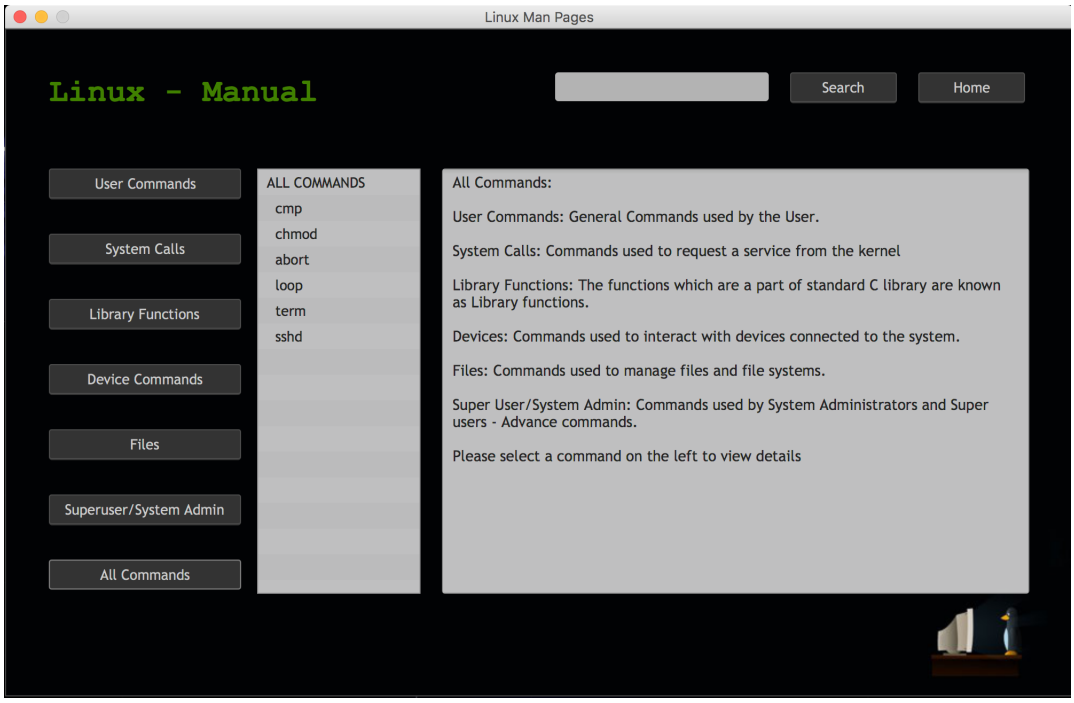


The homepage turned out to be pretty close to the planned design. In order to make the buttons more effective the effect of a button was created using the graphics package. A search button was added to show the location of one when implements. A simplistic approach was taken for this homepage. The image of the penguin shows a modified version of the Linux logo with the intent of adding adorableness to the interface. Clicking on the "All Commands" button will take the user to the next page shown in the next screentshot.

Second tier (MOCKUP)

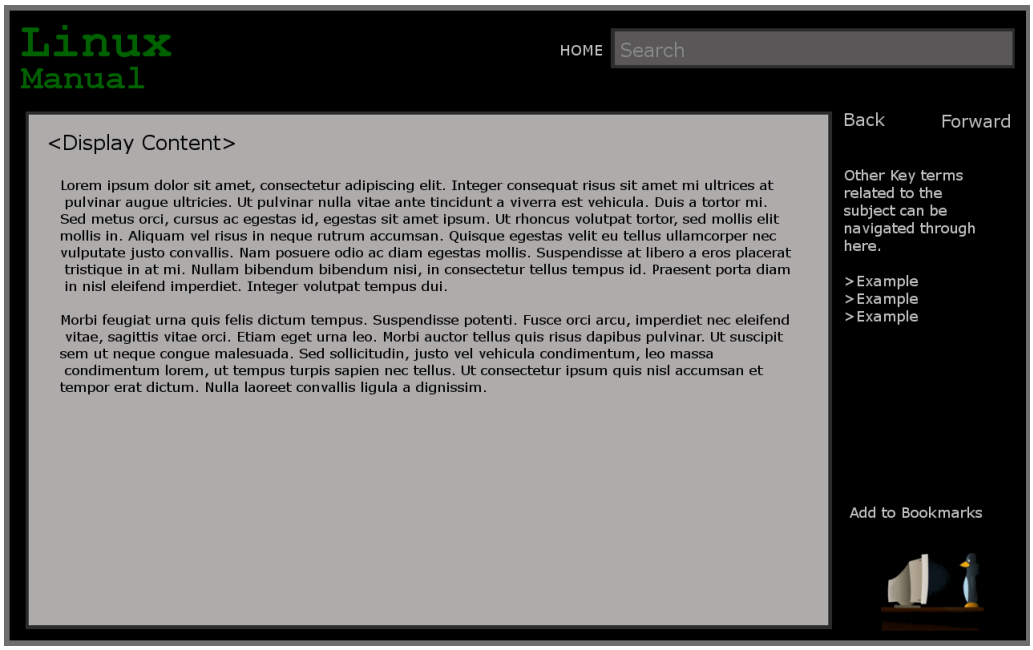


All Commands List (FINAL)

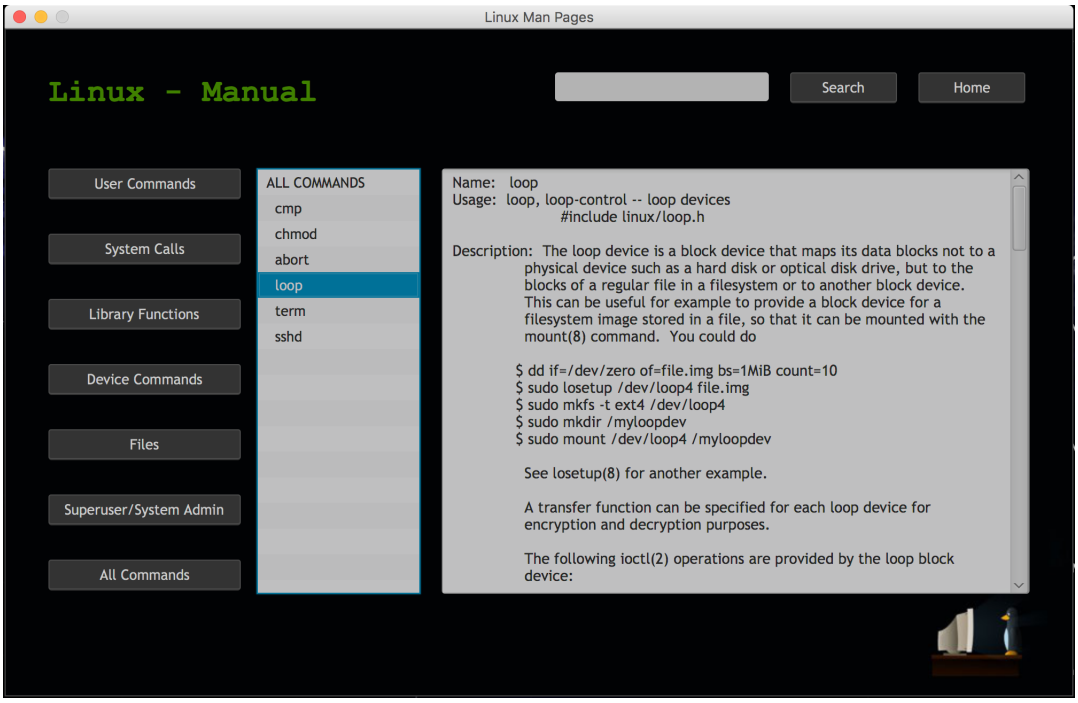


Once a high-level top is chosen in the homepage a new scene appears in which there exists a list of commands under the selected topic and a text area which summarizes the topic and the types of commands available under the selected high-level topic. This text area is being referred as the pseudo-third level in the application as it keeps updating every time a different button or option from the list is selected. If the user wants to view the details of a certain command he/she can select it from the list presented in the center menu. As you can see this scene has changes quite a bit from the mock up. I included the text area because I believed that the user would find it harder and distracting to go through multiple screens to achieve the required result. The mock up design was neither time efficient nor is it intuitive.

Content Page (MOCKUP)



Selecting Command from All Commands (FINAL)

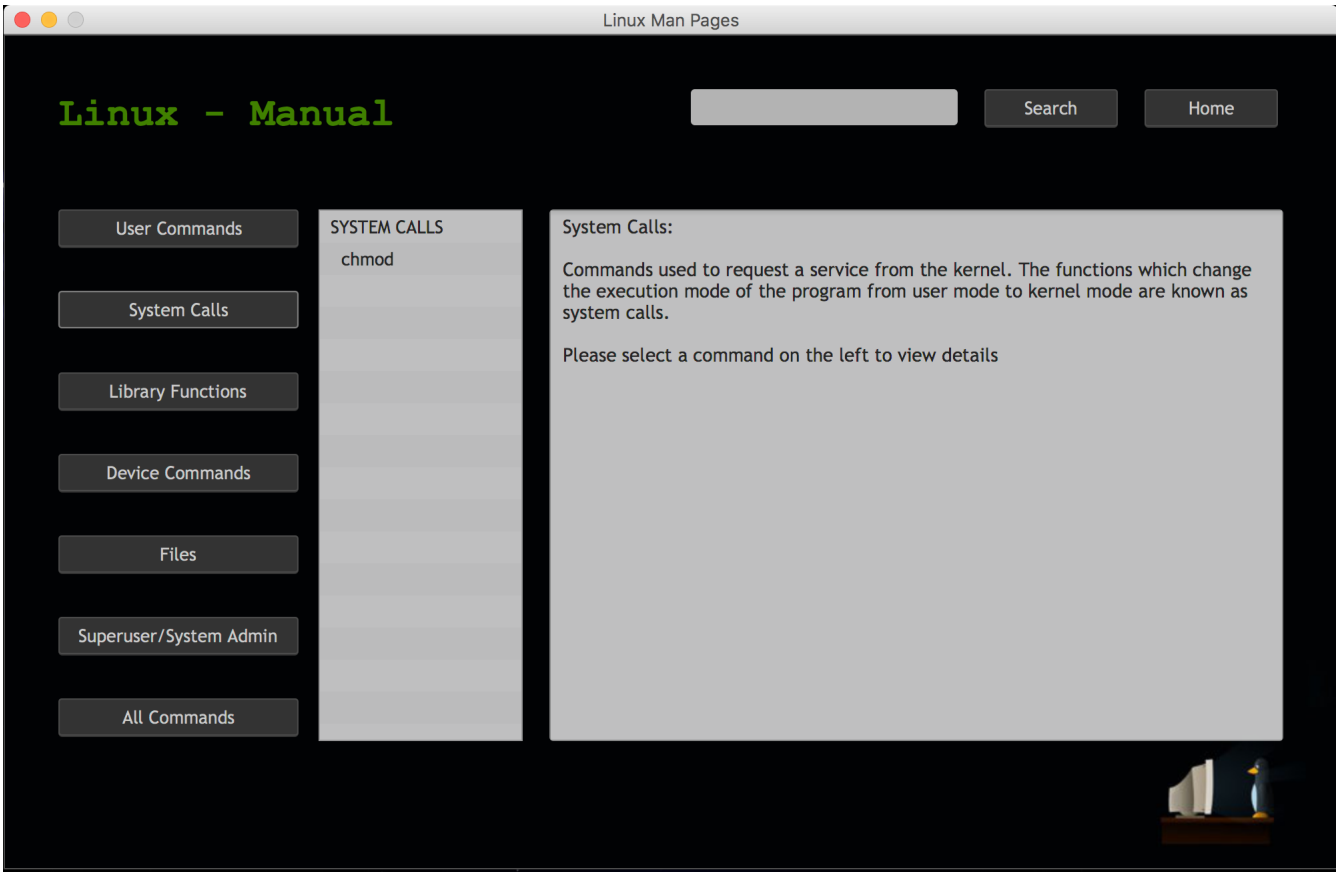


The final level of this application is the viewing of the Linux manpage itself. This can be done by clicking on the list of options presented in the center menu. By allowing the user to have access to all commands in the selected topic the user will have an easier time switching through them and selecting the required one instead of going back and forth on a different screen. This is the reason that the final strayed away from the mock up itself to enhance the user experience in terms of accessibility to various pages.

Once the User is out of the homepage, the ability to navigate between various options increases. The addition of the home button to the top right also allows the user to retreat to the homepage of the desire to not view the text.

Formal Specifications

Sorted Commands



State Transition Network

Homepage → Select Button (System Call) → Select option (chmod) → View Man Page

Using this state transition we get sorted commands under System Calls from which selecting chmod will briing up the Man Page for chmod on the right side, in the TextArea.

Design Rationale

My aim for this interface was to create a minimalist application which was straight forward which only the necessary components on the screen. The reason was because, any user using this interface is using it to acquire quick data on how a command works and prefers not to be distracted by unnecessary components on the screen. The theme used is adapted from a default Linux terminal - dark and easy on the eyes. Using this theme makes the user feel more connected and encourages to use Linux and transitioning to a terminal after using this interface will be much easier. The Buttons were more apparent with a subtle border around them to allow the user to be able to find them quickly. The color and the font of the title gives the user a Linux feel.

Testing and Implementation

The interface went through a couple of iterations before settling to this one. The first two iterations simply differed by their layout of the buttons - as in whether they were centered or aligned left. Aligning them left seems to be the better option as it gave me more space to place other menus. The first two iterations also had 3 distinct levels Homepage → Options → View Man Page. However, when asked a few of my friends to use the application they found that it was annoying to switch between the Options page and the View Man Page back and forth. Therefore, the application switch to a two level interface with a pseudo third level. Finally, once out of the homepage, a place for search and home button needed to be found. I thought that the best place to put this would be where the user can distinctly see it and not merge it into the rest of the layout. Therefore, I chose to put these components to the top right.

Content Diagram