



Warehouse Management System

CMPT120_Cache Us If You Can



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Team Description

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- Year: Junior
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- Role: Team Leader

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Team Description

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- Role: Team Member

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Team Description

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- Experience: Python, C#, R
- Role: Team Member

Project Description

Objectives, Goals, and details regarding our project



Project Description

- Project Title: Warehouse Management System
- Project Summary: Store and edit data pertaining to products in a warehouse. Products are stored with their ID number, Name, and Producer. Admin users are able to edit product data, and regular users are able to request to borrow or buy warehouse items. Items are stored in Comma Separated Value (CSV) Files.



Project Description

- Admin User Capabilities:
 - Have a login and password
 - Be allowed to change their password
 - Be allowed to create a guest user
 - Be allowed to remove users
 - Add, Delete, and edit items in the warehouse
 - View list of user item requests, and accept or deny them
- Regular User Capabilities:
 - Search the warehouse based on item details
 - Save items to a list of favorites
 - Request to buy or borrow items for a specific timeframe.
 - View the history of their borrowed items
- User-Friendly Requirements
 - Show welcome page
 - Provide a menu of all functions
 - Illustrates the data in a well-organized list
 - Provide an exit function and thank the user for utilizing the software
 - Show warnings if:
 - An admin tries to add an item that already exists
 - A user attempts to borrow more than 3 items
 - A user search returns no items

Graphical User Experience Design

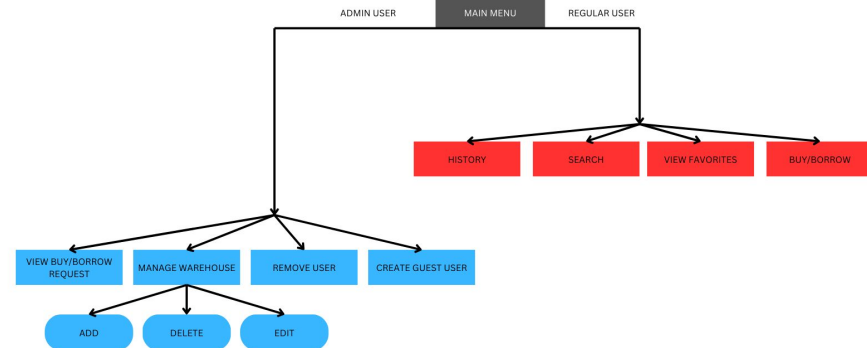
Flowcharts were used to design the user experience,
building a blueprint for our actual code

Graphical User Experience Design

Login Page Design

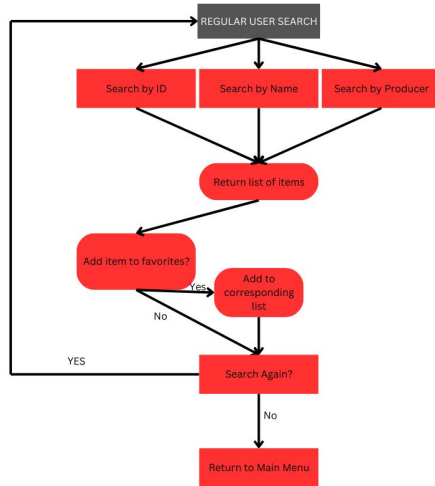


Main Menu Design

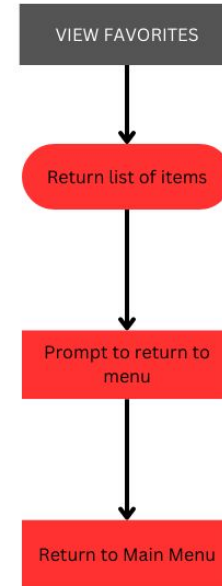


Graphical User Experience Design

Regular User Search Design

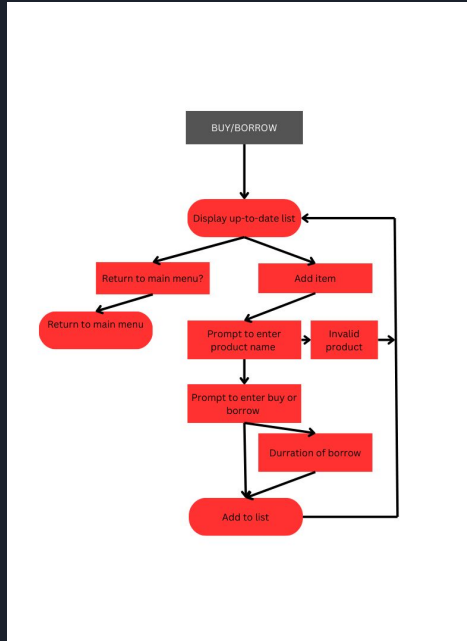


View Favorites Design

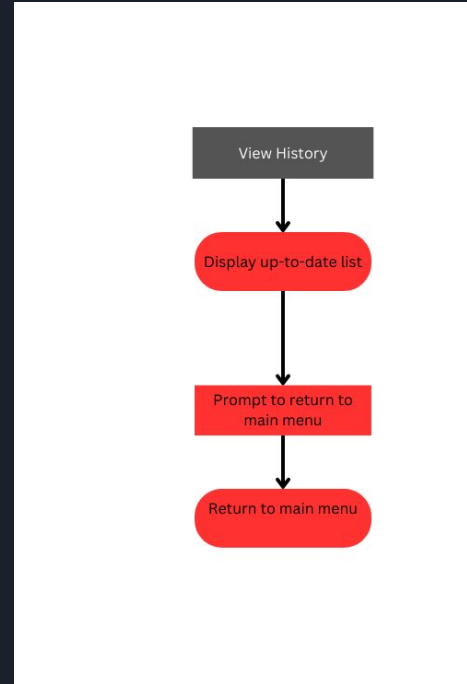


Graphical User Experience Design

Buy or Borrow Design

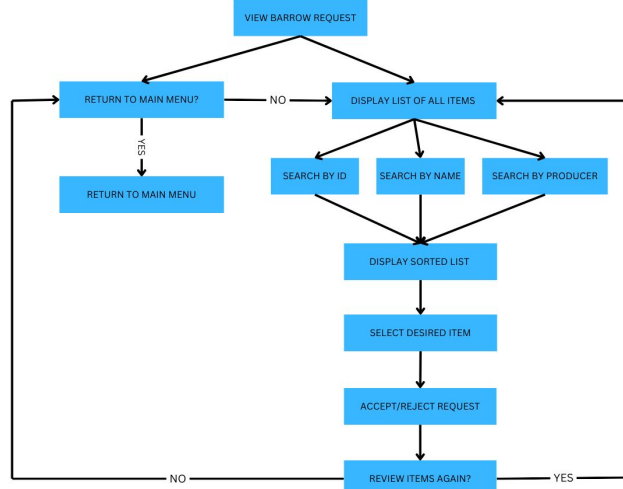


View History Design

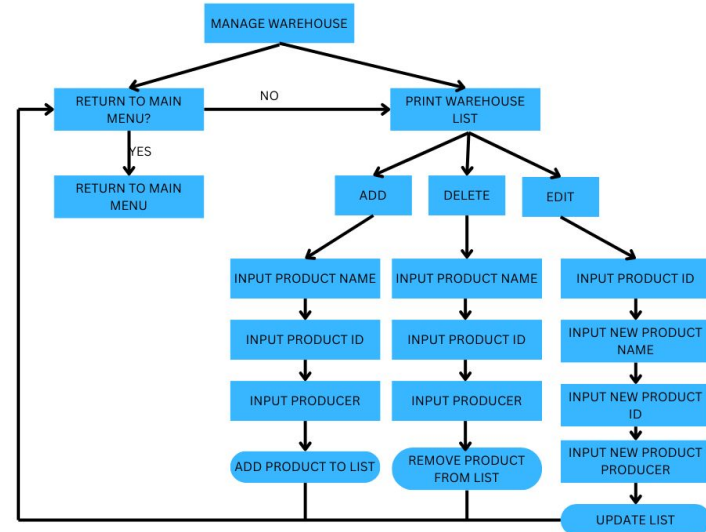


Graphical User Experience Design

View Borrow Request Design

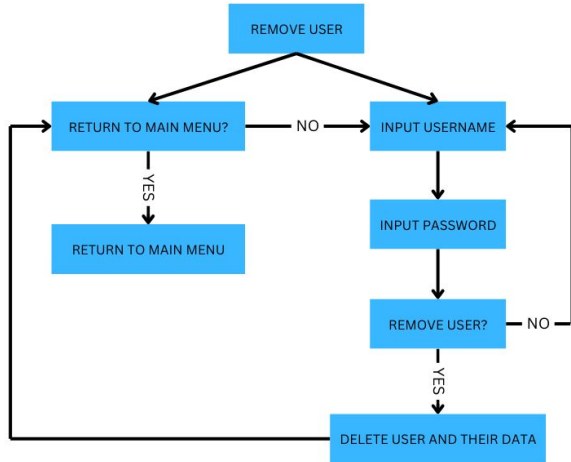


Manage Warehouse Design

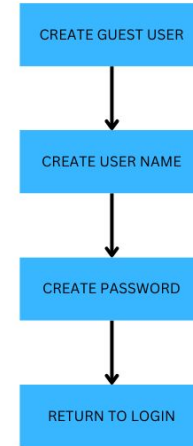


Graphical User Experience Design

Remove User Design



Create Guest User Design



Virtual Environment

The Virtual Environment contains all the packages required for the program to run



Virtual Environment

- List of packages:
 - Pip
 - Virtualenv
 - Venv
 - Csv
 - Tkinter
 - Datetime
 - OS

Data Storage

Data is stored in various CSV files for various purposes.



Data Storage

user_data.csv

This list stores a list of users, their usernames and passwords, and if they are a guest or admin.

- Items are written when a admin calls for the addition of a user by giving the username and password.
- Items are read when a admin opens the view user data windows.
- Items are deleted once a admin calls for the deletion of a user.

BorrowList.csv

This list stores the current requests pending admin approval.

- Items are written to this list when the user selects and adds them from the search.
- Items are read when the admin opens the window to view requests
- Items are deleted when the admin approves or denies a request



Data Storage

Favorites.csv

This list stores a list of all items that the user has added to their favorites list

- Items are written when a user selects to add it to favorites
- Items are shown when a user requests to view favorites
- Items are removed at user request when viewing favorites

UserHistory.csv

This list stores a history of all items the user has requested to buy or to borrow

- Items written when a user requests to buy or borrow an item
- Items shown when a user requests to view history
- Items removed at user request when user is viewing history



Data Storage

products.csv

This list stores data for all the products in the warehouse

- Items are written to the file when an admin adds them to the warehouse
- Items are added when a user searches the warehouse, or when an admin views it
- Items are deleted when an admin removes them.

products_history.csv

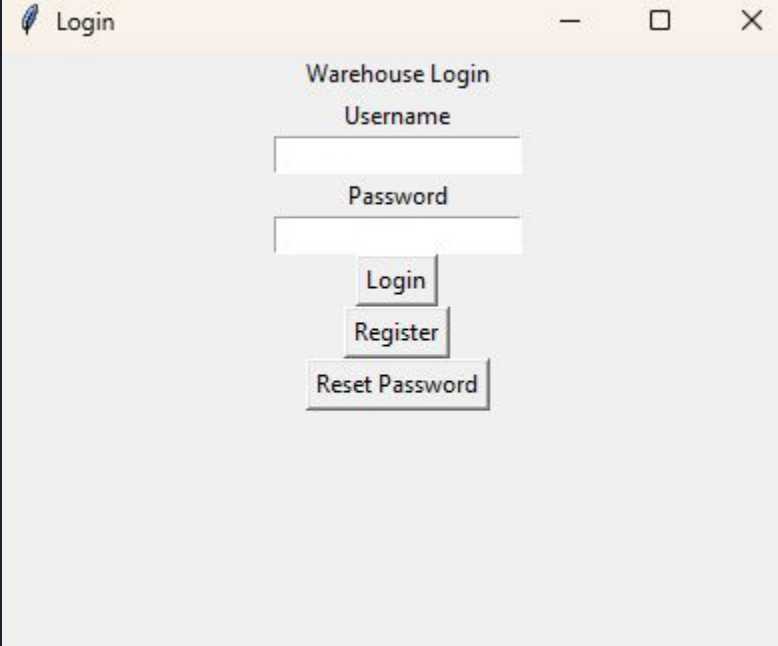
This list stores changes to the warehouse.

- Items are written to the file when an admin makes an edit to the warehouse
- Items are read when an admin requests to view history.
- Items are deleted when an admin selects to do so while viewing history.

User Interface Design

Each window was made using tkinter GUI, and was made to be as user friendly as possible.

User Interface Design – Login Page



A mockup of a 'Warehouse Login' window. The window has a title bar with the text 'Login' and standard minimize, maximize, and close buttons. The main content area is light gray and contains the following elements centered vertically: the title 'Warehouse Login', a 'Username' label above a text input field, a 'Password' label above a text input field, and three buttons stacked vertically: 'Login', 'Register', and 'Reset Password'.

Login

Warehouse Login

Username

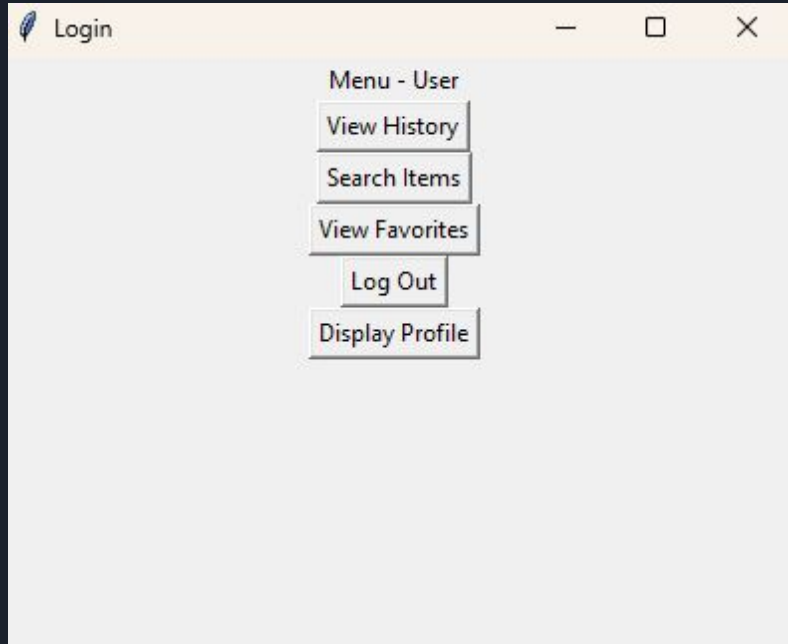
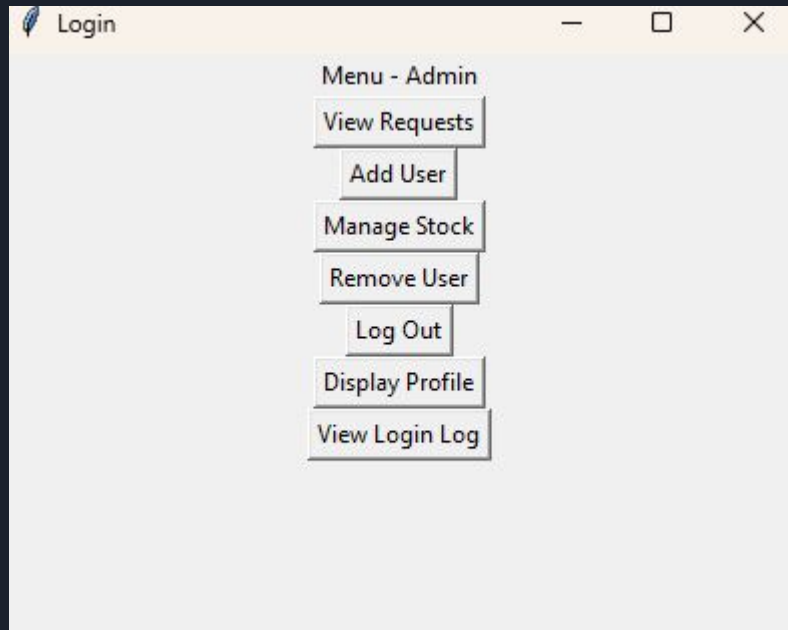
Password

Login

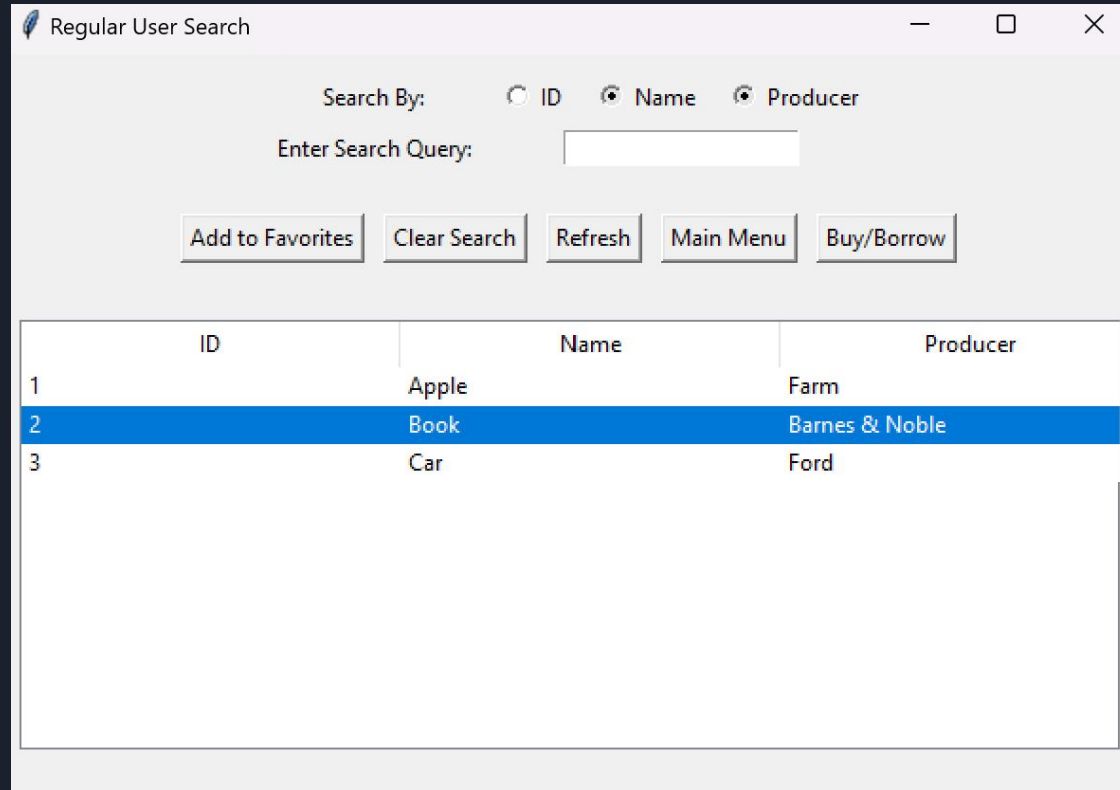
Register

Reset Password

User Interface Design – Main Menu



User Interface Design – User Search



A screenshot of a web application window titled "Regular User Search". The window has a light gray background and standard window controls (minimize, maximize, close) in the top right corner. Below the title bar, there is a "Search By:" section with three radio buttons: "ID", "Name", and "Producer". The "Name" radio button is selected. Below this is a text input field labeled "Enter Search Query:". Underneath the input field, there are five buttons: "Add to Favorites", "Clear Search", "Refresh", "Main Menu", and "Buy/Borrow". At the bottom of the window is a table with three columns: "ID", "Name", and "Producer". The table contains three rows of data. The second row, with ID 2, Name "Book", and Producer "Barnes & Noble", is highlighted in blue.

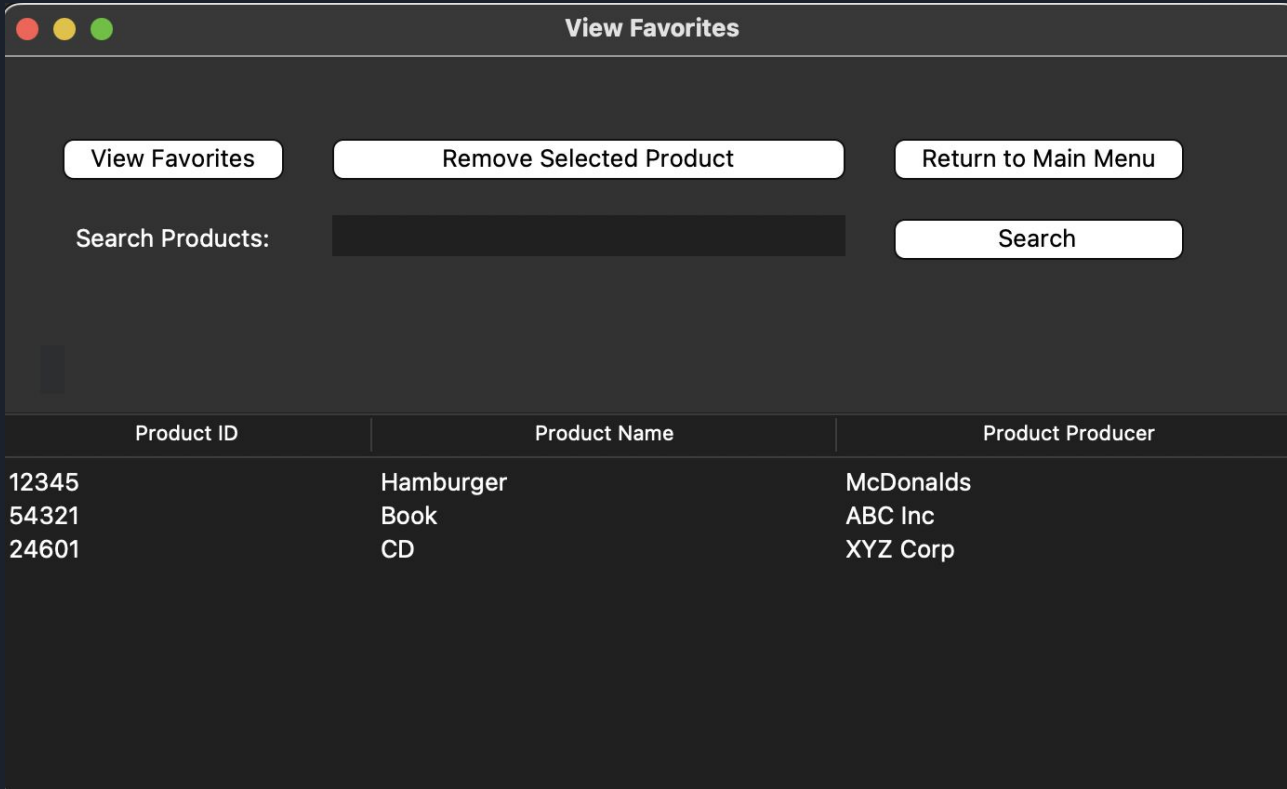
Regular User Search

Search By: ☐ ID ☒ Name ☒ Producer

Enter Search Query:

ID	Name	Producer
1	Apple	Farm
2	Book	Barnes & Noble
3	Car	Ford

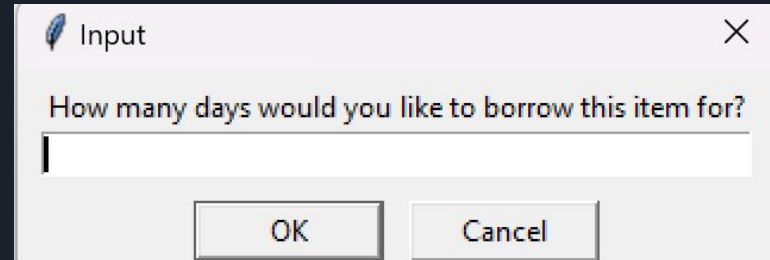
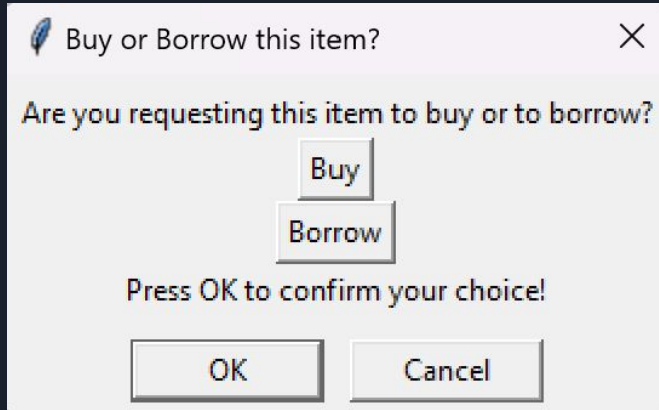
User Interface Design – View Favorites



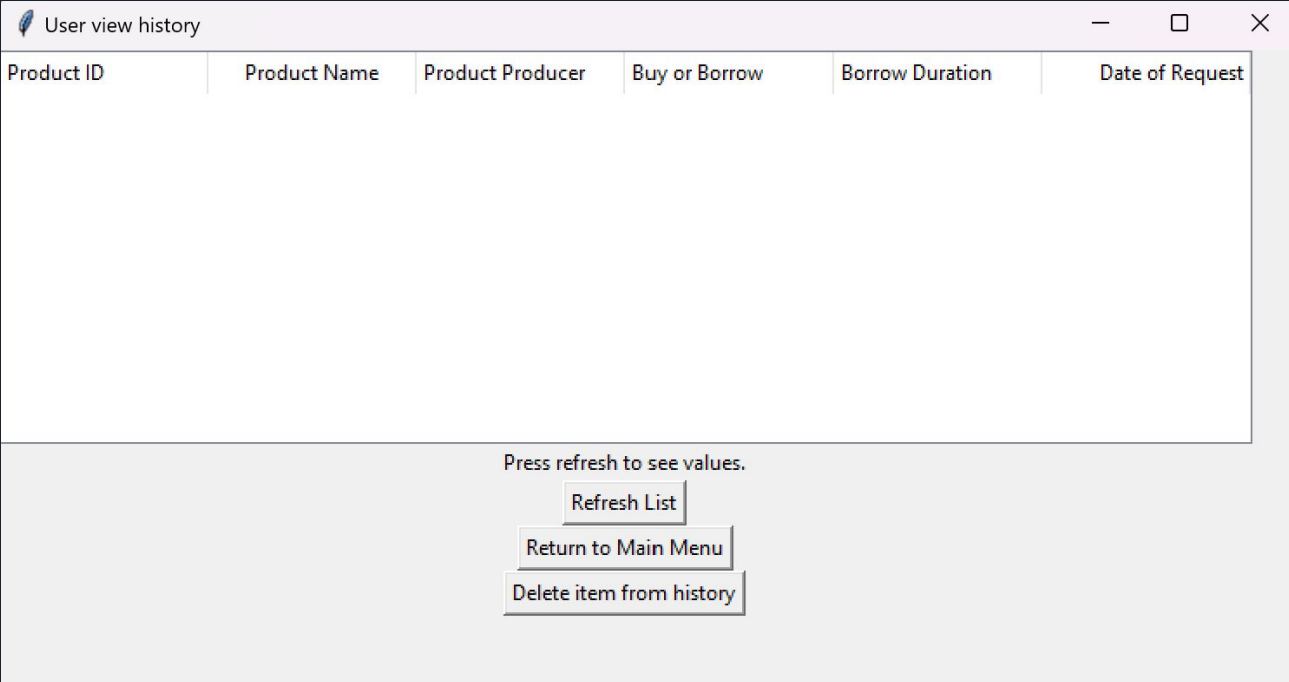
The image shows a user interface for a 'View Favorites' window. The window has a dark gray background and a title bar with three colored buttons (red, yellow, green) on the left. The title 'View Favorites' is centered in the title bar. Below the title bar, there are three buttons: 'View Favorites', 'Remove Selected Product', and 'Return to Main Menu'. Below these buttons, there is a search section with the label 'Search Products:', a dark gray input field, and a 'Search' button. Below the search section, there is a table with three columns: 'Product ID', 'Product Name', and 'Product Producer'. The table contains three rows of data.

Product ID	Product Name	Product Producer
12345	Hamburger	McDonalds
54321	Book	ABC Inc
24601	CD	XYZ Corp

User Interface Design – Request to Buy/Borrow



User Interface Design – View History



A screenshot of a software window titled "User view history". The window has a standard title bar with a minimize button, a maximize button, and a close button. The main content area is a table with six columns: "Product ID", "Product Name", "Product Producer", "Buy or Borrow", "Borrow Duration", and "Date of Request". The table is currently empty. Below the table, there is a text prompt "Press refresh to see values." followed by three buttons: "Refresh List", "Return to Main Menu", and "Delete item from history".

Product ID	Product Name	Product Producer	Buy or Borrow	Borrow Duration	Date of Request
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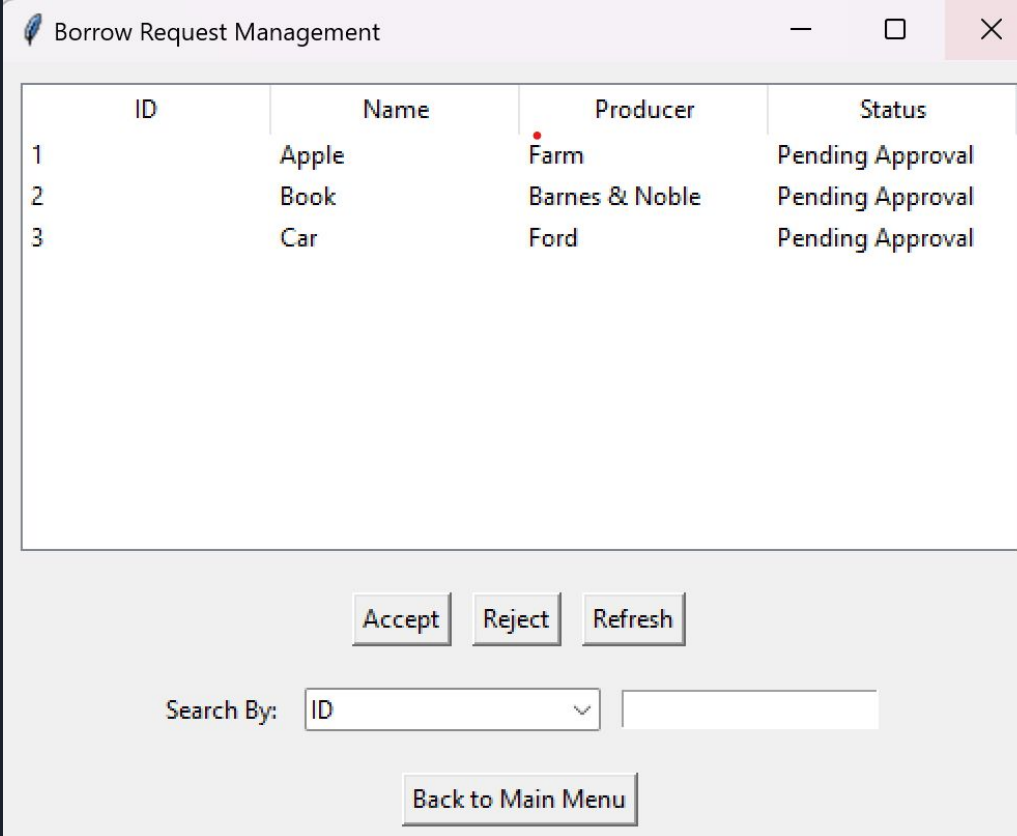
Press refresh to see values.

[Refresh List](#)

[Return to Main Menu](#)

[Delete item from history](#)

User Interface Design – View Borrow Requests



A screenshot of a web application window titled "Borrow Request Management". The window has a light pink header bar with a feather icon on the left and standard window controls (minimize, maximize, close) on the right. The main content area contains a table with four columns: ID, Name, Producer, and Status. The table lists three items: 1. Apple from Farm, 2. Book from Barnes & Noble, and 3. Car from Ford, all with a status of "Pending Approval". Below the table are three buttons: "Accept", "Reject", and "Refresh". At the bottom, there is a "Search By:" label, a dropdown menu currently showing "ID", and an empty text input field. A "Back to Main Menu" button is located at the very bottom center.

ID	Name	Producer	Status
1	Apple	Farm	Pending Approval
2	Book	Barnes & Noble	Pending Approval
3	Car	Ford	Pending Approval

Accept Reject Refresh

Search By: ID

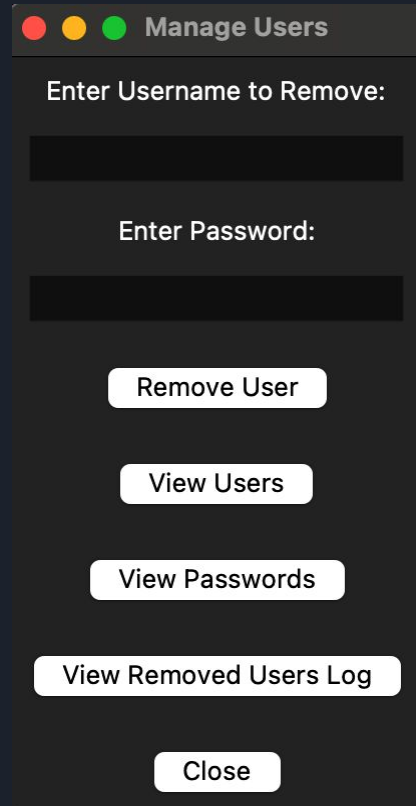
Back to Main Menu

User Interface Design – Manage Warehouse

The image displays four overlapping window mockups for a 'Manage Warehouse' application, arranged in a 2x2 grid. Each window has a title bar with standard macOS window controls (red, yellow, green buttons).

- Main Menu:** Contains three buttons: 'Manage Products', 'View Products', and 'View Action History'.
- Manage Products:** Contains four text input fields labeled 'Product Name:', 'Product ID:', 'Producer:', and 'New Product ID (for edit):'. Below the inputs are three buttons: 'Add Item', 'Delete Item', and 'Edit Item', followed by a 'Close' button.
- View Products:** Displays a list of product entries, each with 'Name', 'ID', and 'Producer' information. The entries are: 'Name: aple, ID: 1, Producer: adl', 'Name: product, ID: 7, Producer: ptac', 'Name: 17, ID: 9, Producer: feoiaj', 'Name: donuaeiurf24t98, ID: 98, Producer: jfhs09nuefghb80ysefgh', and 'Name: dq3fq3fj;, ID: 23, Producer: qf3o8y7geyg'. A 'Close' button is at the bottom.
- View Action History:** Displays a log of actions with timestamps and details. The entries are: '2024-12-04 17:04:33 - Added: add (ID: 123341) by awdewaf', '2024-12-04 17:28:03 - Added: aple (ID: 1) by adl', '2024-12-04 17:35:49 - Added: product (ID: 7) by ptac', '2024-12-04 17:47:01 - Added: 17 (ID: 9) by feoiaj', '2024-12-04 17:47:27 - Added: donuaeiurf24t98 (ID: 98) by jfhs09nuefghb80ysefgh', and '2024-12-04 17:49:17 - Added: dq3fq3fj; (ID: 23) by qf3o8y7geyg'. A 'Close' button is at the bottom.

User Interface Design – Remove User



A user interface window titled "Manage Users" with a dark gray background. It features a title bar with three colored buttons (red, yellow, green) and the text "Manage Users". The main content area contains five input fields and five buttons. The first two input fields are for "Enter Username to Remove:" and "Enter Password:". The remaining three buttons are "Remove User", "View Users", and "View Passwords". The last button is "View Removed Users Log". The "Close" button is at the bottom.

Manage Users

Enter Username to Remove:

Enter Password:

Remove User

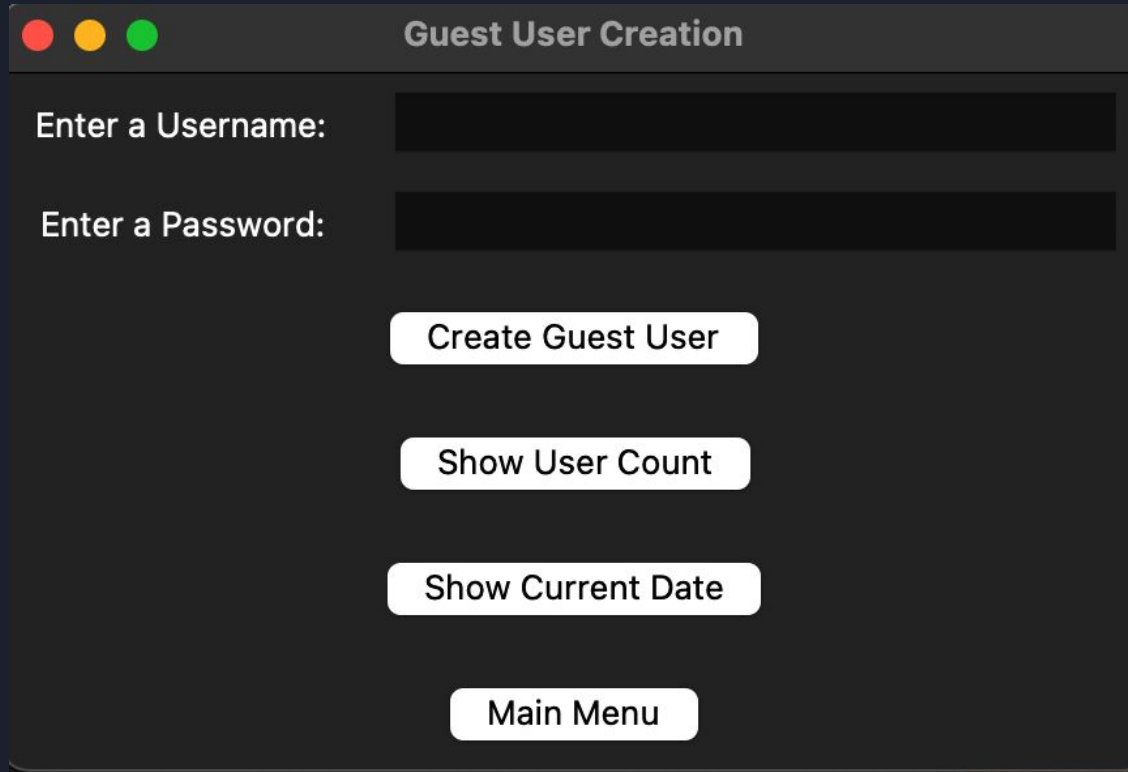
View Users

View Passwords

View Removed Users Log

Close

User Interface Design – Create Guest User



A user interface design for a 'Guest User Creation' window. The window has a dark gray title bar with three colored window control buttons (red, yellow, green) on the left and the title 'Guest User Creation' in the center. The main content area is dark gray and contains two input fields with labels 'Enter a Username:' and 'Enter a Password:'. Below the input fields are four white buttons with black text, stacked vertically: 'Create Guest User', 'Show User Count', 'Show Current Date', and 'Main Menu'.

Guest User Creation

Enter a Username:

Enter a Password:

Create Guest User

Show User Count

Show Current Date

Main Menu

Improvements

Various improvements were made to each page after the initial creation of our code




Improvements – Log In

- Reset Password Function
 - Allows users to reset their password if they choose or need to
- Login attempt counter
 - Prevents more than 3 login attempts for any user.
- Login log
 - Makes a note of all users who login for admin purposes



Improvements – Main Menu

- Log Out Function added
 - Allows any user to log out without closing the program
- Display Profile Function added
 - Displays profile information, including permissions.
- Account Log Function
 - Allows the admin user to view who has logged in and out of the system



Improvements – View Favorites

- Remove Function
 - Allows the user to remove an item from their favorites list.
- Search function
 - Allows the user to search for a specific item in their favorites list
- Sort function
 - Allows the user to view their favorites list based on various parameters



Improvements – Buy/Borrow

- Buy/Borrow commands merged to one button
 - To provide a better user experience, they are condensed for easier access
- Easier to enter the duration of borrow
 - The user is prompted with a pop-up window, which is easier than the previous version which could have been mistaken for another search box
- More information noted for each request
 - The date, whether the request is to buy or borrow, and the duration of the borrow, are recorded in the request.



Improvements – View History

- More information added
 - The user can now view more information about each of their requests including the date of request, whether they bought or borrowed the item, and the duration of their borrow.
- A manual refresh button
 - This helps to confront possible loading issues in real time, and allows the user to update the list without closing the page
- A delete button
 - Allows users to delete selected items from their history.



Improvements - Admin View Borrow Request

- Live refresh in the search box and removed the search bar
 - The search functionality now updates results dynamically, improving usability and removing the need for a search bar.
- Dynamically refreshing the CSV file when a request is rejected or accepted
 - Ensures real-time updates to the CSV file based on user actions for better data accuracy.
- Added more error checking and a rejected requests CSV file
 - Introduced improved error validation and a dedicated CSV file to track rejected requests for better management.



Improvements - User Search

- Added a refresh button and improved search results layout
 - Search results are now displayed vertically instead of horizontally, and a refresh button has been added for better usability.
- Introduced a pop-up for adding to favorites
 - A pop-up notification now appears when items are added to favorites, enhancing user feedback.
- Made the GUI layout more organized and added a dynamic search bar
 - Improved the GUI by placing elements in more visually appealing areas and implemented a dynamic search bar that updates results in real-time as you type.



Improvements – Create Guest User

- Display User Count
 - Utilizes the length function to show the total number of users who have access to the system
- Display Date
 - Shows the current date for assistance in creating user information
- Main Menu
 - Allows the user to quickly access the main menu from the application window.




Improvements – Manage Warehouse

- **Converted data to CSV**
 - For consistency, data previously stored in lists was corrected to be stored in CSV files.
- **View History**
 - Allows the admin user to view a history of what has been edited and when.
- **Deletion confirmation**
 - To prevent user error, a confirmation window is added whenever the user requests to delete an item



Improvements – Remove User

- View all passwords
 - The admin user can now view all the passwords of the users in the system.
- Log
 - A log is kept to view which users were deleted, and the time/date they were removed
- Data storage
 - Data storage was switched from a list to a CSV file for better compatibility with the rest of the system.

A decorative graphic on the left side of the slide consisting of two overlapping parallelograms. The front one is blue and the back one is a light green color. They are positioned diagonally, with the blue one partially covering the green one.

Thank you for your consideration

CMPT120_Cache Us If You Can