SDV602 – Milestone One Project

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Contents

Introduction

The purpose of this application is to develop an application that provides live and interactive graphical displays, that include charts, to enable presentation of different graphical views of data sources for business solutions and or scientific analysis.

Each live interactive graphical display allows exploration of data from a data source – these are Data Explorer Screens (DES). Each DES presents charts and a summary or comparative analytical information. At each DES the app accepts input, mouse clicks and displays a brief description of the situation that relates to the information being displayed.

The application is to provide console text-based input to control and display at least three different DESs. The final system is to provide a chat system for analysts viewing the current DES, that is accessed using a remote http-based API through a remote data service. The application is to retrieve data from a shared remote data source. The screens are to include several options for views of the data at each display.

The final application is to allow more than one analyst to view the same DES at the same time and upload and retrieve data on a shared remote server. Two or more analysts can communicate with each other using a text chat system (this is to be included as part of each DES) when they are viewing the same screen. The final application is to also include user login and logout.

For this application I have chosen New Zealand property titles data source.

Link here: https://koordinates.com/from/data.linz.govt.nz/layer/50804/data/

This is a large data store that defines New Zealand properties, it gives data that relates to the types of property ownership, current property statuses, the land district the property belongs to, issue dates, estate descriptions and current number of owners. Being that NZ property titles data source is very large, covering 2million plus properties, this app will shrink the data down to a specific land district such as the Nelson/Tasman area. This covers 4000 plus titles and is a good sample size.

This data source allows for the examination of property titles and comparison. As part of the requirements, the application could also have the capacity to upload and add titles in the Nelson area as they become available. For example, new subdivisions in developing areas of nelson. This application could be used for business solutions such as a business/organisation looking to zone new build areas and add new properties to a data base for analysis at any given time.

Milestone one overview

Design concepts:

Create a storyboard depicting all the screens and interaction in the application. Include a description of the app and narrative descriptions of the interactions depicted on each storyboard. Create a first prototype of the app that implements prototypes for three interactive DESs for the application (user login and logout not needed to be functional for milestone one).

Milestone two overview

Starting with the previous three DES implementations, complete local data reading, uploading, and merging, that is immediately displayed for each DES. Build application architecture using suitable abstractions. (In Python, use Modules, and possibly Classes). Implement "local" upload.

Milestone three overview

Implement, multi-user aspects of your App. Comparison of python and another programming language.

Implementation different aspects include:

- Log in functionality
- Create a chat system, that displays the analysts
- Implement remote storage and retrieval of data sources

Requirements

The project will provide live and interactive graphical displays to enable the presentation of different graphical views of data sources. This can used for business solutions or scientific analysis.
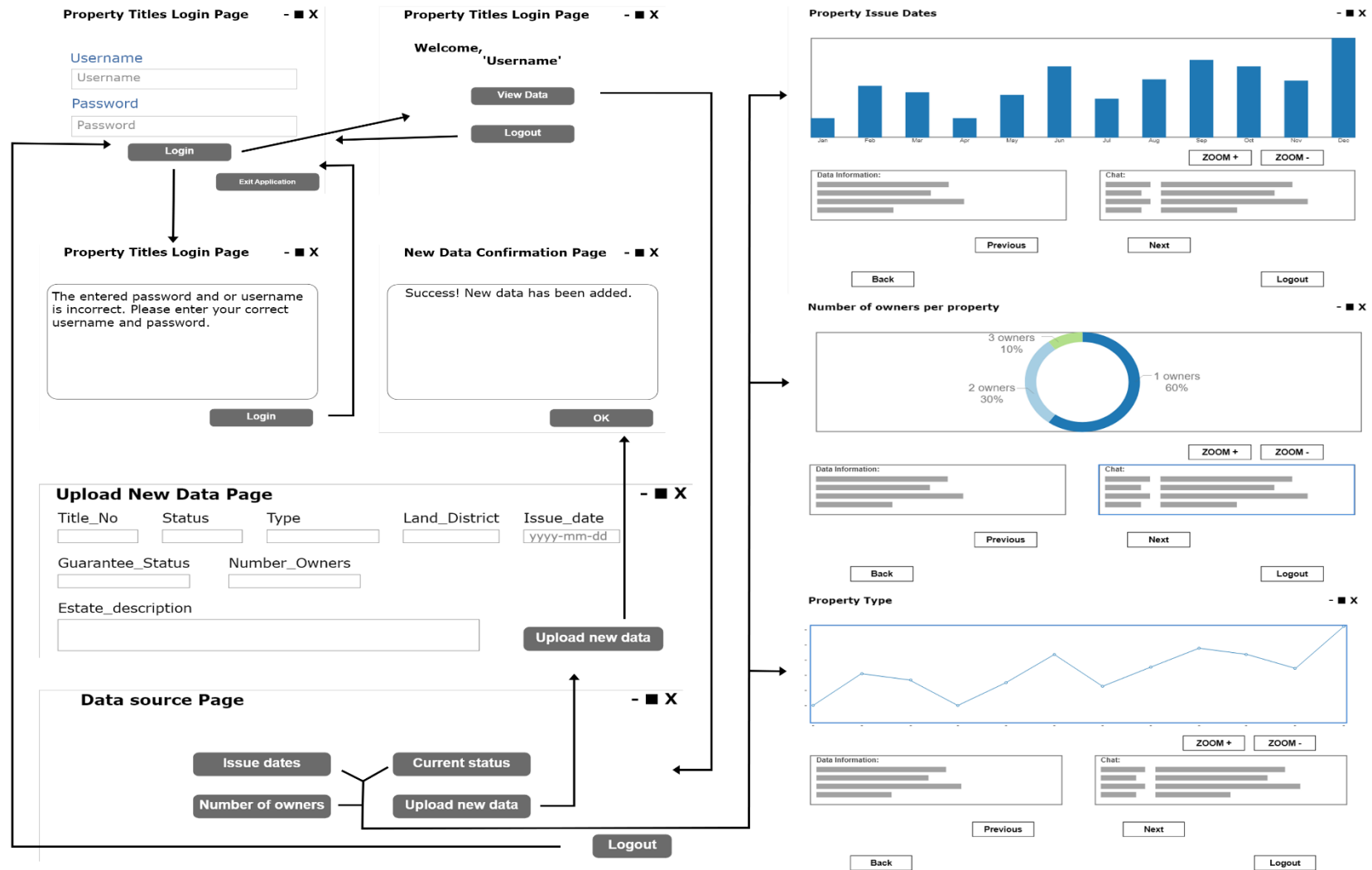
The project will offer the following services and functionality:

- Login with username and password
- Data Explorer screens
- Data information, analytical information summarising the charts/ graphical information
- Chat system for multiple users to use simultaneously
- Retrieve/upload data from a shared remote data source (using an API)

The project will have 4 major screens and other sub screens. These screens/ interfaces enable the user to interact with them to retrieve, view and or upload data. These screens will be:

- **Initial login** – The first screen the user will be shown when the application is started is the initial login screen. A username and password input area is shown for users to write in a username and password. Depending on those credentials if they are correct or not will dictate which screen shows next. (See more on the login process in the storyboard section below)
- **Data source page** – This is the main option screen where the user can access five different areas 3 of which are data screen explorers, another that can upload data and a logout button.
- **Data Explorer Screens (DES)** – Three screens that graphically display different information based on the data source.
- **Upload new data** – This screen allows input from the user to upload to the current data source.

Storyboards

Property Titles Login Page   - ■ X

Username
[Username]

Password
[Password]

[Login]

[Exit Application]

Property Titles Login Page   - ■ X

Welcome,
'Username'

[View Data]

[Logout]

Property Titles Login Page   - ■ X

The entered password and or username is incorrect. Please enter your correct username and password.

[Login]

New Data Confirmation Page   - ■ X

Success! New data has been added.

[OK]

Upload New Data Page   - ■ X

Title_No   Status   Type   Land_District   Issue_date
[   ]   [   ]   [   ]   [   ]   [yyyy-mm-dd]

Guarantee_Status   Number_Owners
[   ]   [   ]

Estate_description
[   ]

[Upload new data]

Data source Page   - ■ X

[Issue dates]   [Current status]

[Number of owners]   [Upload new data]

[Logout]

Property Issue Dates   - ■ X

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec

[ZOOM +] [ZOOM -]

Data Information:

Chat:

[Previous]   [Next]

[Back]   [Logout]

Number of owners per property   - ■ X

3 owners
10%

1 owners
60%

2 owners
30%

[ZOOM +] [ZOOM -]

Data Information:

Chat:

[Previous]   [Next]

[Back]   [Logout]

Property Type   - ■ X

[ZOOM +] [ZOOM -]

Data Information:

Chat:

[Previous]   [Next]

[Back]   [Logout]

Storyboard descriptions

Login Screens

Property Titles Login Page   - ■ X

Username

Username

Password

Password

[Login]

[Exit Application]

Property Titles Login Page   - ■ X

The entered password and or username is incorrect. Please enter your correct username and password.

[Login]

Property Titles Login Page   - ■ X

Welcome,
     'Username'

[View Data]
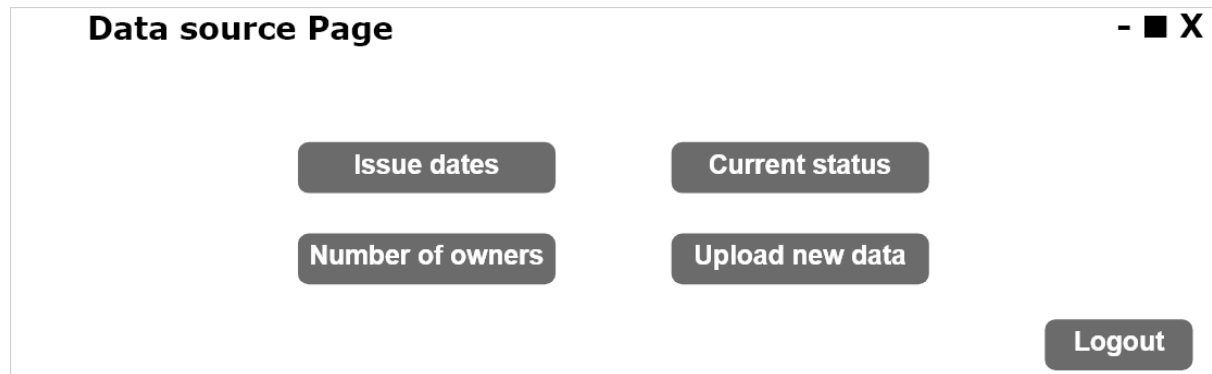
[Logout]
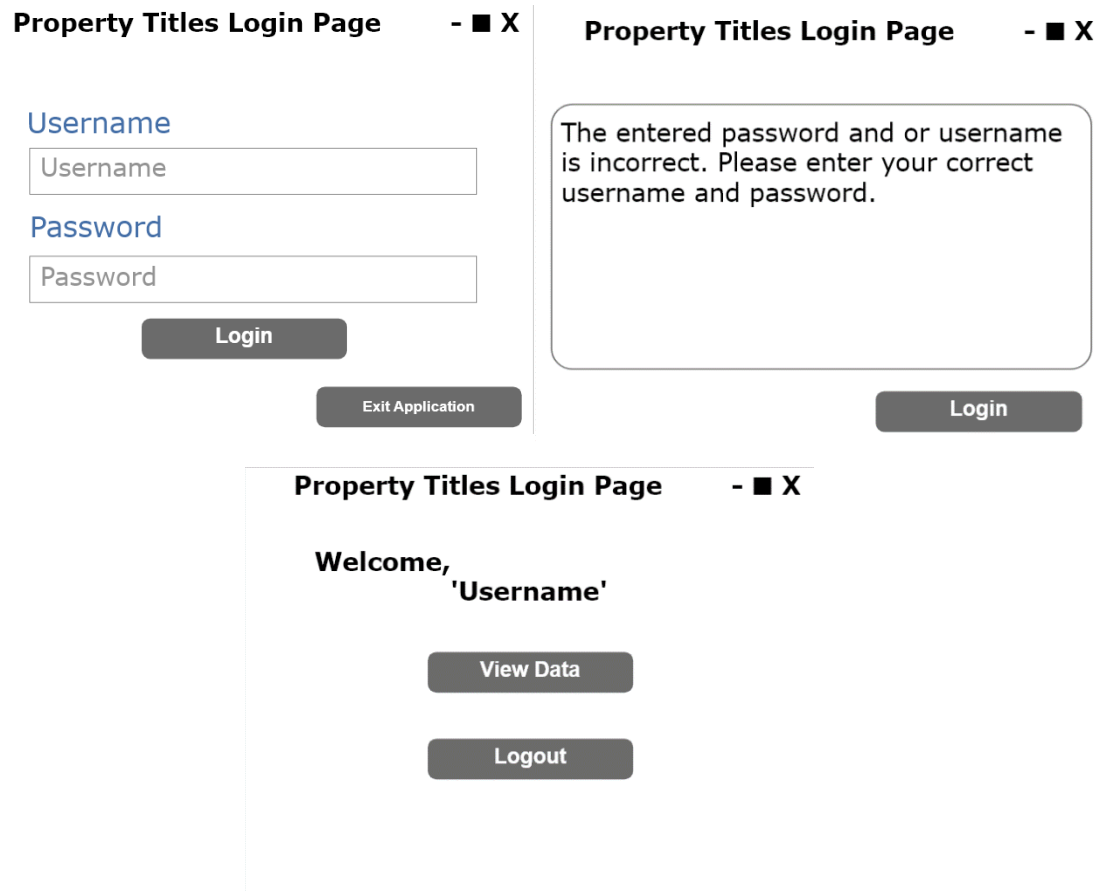
This is the first set of screens the user will come to upon launching the application. The top left screen will be shown first, the screen has multiple input fields. The user will input their username and password and the following scenarios will play out:

- The username does not already exist, and a new account is created with the newly input credentials. This moves to the (bottom) "Welcome, Username" screen. From there the user can access and view data, log out or exit the application.
- The username already exists but the password is incorrect. The top right screen will display with a username and or password incorrect error message. This prompts the user to attempt to login again.
- The username and password are correctly matching, so the user is directed to the (bottom) "welcome, Username" screen.
- **View Data button** – when pressed directs the user to the data source navigation page to view data explorer screens.

Data source screen

Data source Page   **- ■ X**

Issue dates   Current status

Number of owners   Upload new data

Logout

After the user selects the "View Data" button from the previous "welcome, Username" login screen they will be redirected here to the Data source page. This will be one of the main points of navigation for this application.

There are Five main options for the user, they are as follows:

- **Issue dates button** – When pressed this will redirect the user to one of three different data explorer screens (DES). These DES will graphically display, and outline information based on the data source.
- **Number of owners button** – When pressed this will redirect the user to one of three different data explorer screens (DES). These DES will graphically display, and outline information based on the data source.
- **Current status button** – When pressed this will redirect the user to one of three different data explorer screens (DES). These DES will graphically display, and outline information based on the data source.
- **Upload new data button** – When pressed the user will directed to another interface that will allow them to input data to upload to the pre-existing data source.
- **Logout button** – When pressed this will log the user out of the application and re-direct them to the original login screen.

Data Explorer Screens (DES)

Property Issue Dates   - ■ X

ZOOM +   ZOOM -

Data Information:

Chat:

Previous   Next

Back   Logout

Property Type   - ■ X

ZOOM +   ZOOM -

Data Information:

Chat:

Previous   Next

Back   Logout

Number of owners per property   - ■ X

3 owners
10%

1 owners
60%

2 owners
30%

ZOOM +   ZOOM -

Data Information:

Chat:

Previous   Next

Back   Logout

When the user clicks on one of DES type buttons from the previous data source selection page, they are directed here to the data explorer screens. The DES layouts are copies from one another. The only difference is the charts/ graph data being shown to the user. The core features of a DES are:

- **Charts and graphs** – Each DES displays different data differently relating to the data source.

- **Zoom buttons** – These buttons allow the users to scroll via mouse input to zoom in and out of the charts and graphs for detailed or a broad range of information.
- **Data info** – A summary of detailed/technical information relating to what is shown on the chart or graph.
- **Chat system** – Multiple users simultaneously viewing the same DES can use the chat system to discuss relevant data. As the user logs in their username appears in the chat (depending on the data screen they are on) notifying other users also using the same screen that they are active/online. Users will be able to type and send messages through the chat box
- **Next / Previous buttons** – When pressed this is a shortcut for allowing users to quickly move back and forth between different DES. This is marked as a nice to have feature to speed up the process of switching between DES rather than using a slower method of using the back button. This feature may not be present in the prototype build.
- **Back button** – When pressed the back button directs the user back to the data source screen allowing the user to navigate to other interfaces and screens. This is also intended to allow the user to switch between DES and other interfaces as needed. If the next / previous button functionality is enabled, this method will take longer than the next / previous buttons.
- **Logout button** – When pressed this will log the user out of the application and re-direct them to the original login screen.

Upload new data screen

Upload New Data Page   **- ■ X**

Title_No   Status   Type   Land_District   Issue_date

[   ]   [   ] [   ]   [   ]   [yyyy-mm-dd]

Guarantee_Status   Number_Owners

[   ]   [   ]

Estate_description

[   ]   **Upload new data**

New Data Confirmation Page   - ■ X

Success! New data has been added.

OK

This screen allows the user to input data and upload to the existing data store. Once the upload new data button has been pressed a confirmation message will pop up prompting the user that their upload of the new data was successful. All data input formats are to be followed and all input fields will be required/ must be filled out by the user.

Note: A back button is missing here and will be implemented in the prototype and or final build allowing the user to go back instead of having no choice but either exit the application or upload data.

Storyboard interactions

User Path	Function being tested	Initial app state	Input	Expected output
Login/create/check credentials	Application checks user credentials The username does not already exist, and a new account/user is created The username already exists but the password is incorrect display error message.	Login screen is displayed upon app start	User inputs username and password then selects the "Login" button	Login successful: Display welcome username page Username created Welcome username screen displayed Login unsuccessful: Login unsuccessful error message displayed
Logout	Logs out user from multiple interfaces and application	User is currently logged in	User selects the "Logout" button on various interfaces available	User logged out of the app. Directed back to main login page
Exit application	Currently in application. Stop application running	Application is currently running	User selects the "Exit application" button or the "X" on any interface tab	Application exits and stops completely
Data navigation	Gain access to data source navigation	User logged in on welcome screen	User selects the "View Data" button	Data source page opens
Data Explorer Screens (DES)	Access and display data explorer screen information	User on data source page interface	User selects one of the following buttons "Issue dates" or "Current status" or "Number of owners"	Open DES screens and displays relevant information
Upload new data	User able to upload new data to existing data source	User on data source page interface	User selects "Upload new data" button	Opens Upload New Data Page. Allowing user to input data to upload

				Successful input shows new data confirmation message
Zoom	Adjust zoom in and out of the currently displayed chart or graph	User on DES, Zoom at default levels	User selects "Zoom" buttons or uses scroll wheel	Moves chart or graph in or out depending on option chosen to allow user to focus in on a section of data
Chat system	Users able to chat to one another while viewing same DES	DES open, Username active on chat screen	User types a message in chat window next to their username	Message displays on chat window for all current active users on the same DES to see
Change DES	Able to switch back and forth between DESs	DES open	User can select the following buttons to change or navigate to different DES "Next" "Previous" "Back"	The "Next" and "Previous" buttons redirect immediately to the next or previous DES in order The "Back" button opens the data source navigation page/menu

References

NZ property titles. (2011, May 31). Koordinates.com.

https://koordinates.com/from/data.linz.govt.nz/layer/50804/data/

Tools used:

Adobe XD
Photoshop
Visual Studio Code
Microsoft Word