SDV602 Assessment 1

Application description & Storyboards

NMIT

SDV602

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# Application Description

## Base Idea

My SDV602 application will be a data analysis GUI program, that takes data from a CSV that I have selected and creates 3 different data entry screens (DES). The application will be coded with Python, along with several different libraries available.

The purpose of this application is to provide the users with a useful application that will allow them to search through different data screens and refine the data displayed to gain more knowledge, while keeping the application light weight and efficient.

## GUI

The GUI aspect of the application will be created with ‘TKinter’, I have decided to use Tkinter as I have found it the most user-friendly and efficient approach to creating this kind of application, as it has built in functionality to work with the plot library (MatPlotLib) using functions such as FigureCanvasTkAgg, that will allow me to bind MatPlotLib’s Figure object onto TKinter’s Canvas widget allowing me to display plots inside the GUI.

## Data Cleaning

For the data cleaning aspect of the application, I will be using ‘Pandas’. Pandas offers me many data sorting functions, such as sorting column data, counting data entries, adding new columns etc. This is very important as the plots in the application require organised data, and sometimes the data from CSV files can be messy. Pandas allows me to clean the data and make sure it is formatted correctly for the plot, so all data displayed is accurately.

## Plots

The plot aspect of this application will be created using the ‘MatPlotLib’ library, this library seems to be the most popular when it comes to plotting data using Python. I will be creating 2 pie charts and 1 bar chart, I wanted to use 3 different charts, but I could not find a 3rd chart that would be useful for this csv file.

## Login / Account creation

The user will also be able to create an account and log into the system, for this, I will use ‘SQLite3’ as Python comes packaged with SQLite3. This will allow me to create functions that contain different query’s, such as inserting new user data into the database, or checking if the username and password are correct. It is also a lightweight database that does not require the use of API’s.

## Live Chat

The application will also support a live chat, allowing users to chat and discuss about the information being displayed on a DES. This will be created using Python’s ‘socket’ and ‘threads’ importable library, this will allow me to create chat rooms that send and receive messages in real-time. The username for the chatroom will be the username that the user has added to their account.

## Data Source

The data source I have selected is a CSV file, containing information of crime in Atlanta from 2009-2017. Using this CSV file, I will be able to create plots depicting different statistics, such as the highest crime rate areas, most common crimes etc.

# Storyboards

## Storyboard 1 – App login

1.4

1.3

1.2

1.1

Graphical user interface, application

Description automatically generated

* 1. Username input. The user will put the username for their account here.
  2. Password input. The user will put the password for their account here.
  3. Login button. Used to check entered credentials. If the credentials are correct, this window will be closed, and Storyboard 3 will display. If the entered credentials are wrong, the window will be closed, and Storyboard 6 will show and direct the user to create a new account using ‘1.4’.
  4. Register button. This allows a user to create a new account, once clicked, this window will close, and Storyboard 3 will show.

## Graphical user interface, application Description automatically generatedStoryboard 2 – Main window

2.3

2.2

2.1

2.1 Username input. The user will type their desired username here.

2.2 Password input. The user will type their desired password here.

2.3 Register button. This will send the data to the database, allowing the user to login using the credentials provided. Storyboard 7 will also be displayed.

## Graphical user interface, application Description automatically generatedStoryboard 3 – Main window

3.4

3.1

3.5

3.3

3.2

3.1 Graph widget. Area where plot will be displayed on which option has been selected.

3.2 Change plot drop-down menu. This is where the user will select which plot they want to see. Once a user selects an option that they are not currently on, their current window will close, and a new window will be displayed containing the new plot.

3.3 Open chat button. This will allow a user to open a new window, where another user can join, and discuss the data currently being displayed. Once the button is pressed the current window will remain and a new window will be displayed on the side (Storyboard 4).

3.4 Refine plot data. This will allow users to input values that will change the data results being displayed.

3.5 Exit button. This allows the user to exit the application.

## Storyboard 4 – Live chat

Text

Description automatically generated with low confidence

4.1

4.2

4.3

4.1 Username display. This will display the username of the other person.

4.2 Message box. This will display sent and received messages.

4.3 Message input & send button. This is where the user will type the message they wish to send. Once they have finished typing their message, they will press ‘Enter’ on their keyboard or press the send button to send the message to the other person. Once they have sent the message the message will be displayed in the message box.

# Storyboards - Messages

## Graphical user interface Description automatically generatedStoryboard 5 – Login successful

5 Login successful. This is the message that will be displayed to the user when the entered credentials match credentials in the database.

## Graphical user interface, application Description automatically generatedStoryboard 6 – Account not found

6 Account not found. This is the message that will be displayed to the user when they have entered incorrect credentials.

## Storyboard 7 – Account created

Graphical user interface, application

Description automatically generated

7 Account created. This is the message that will be displayed after the user has created an account. They will return to the login screen.

## Graphical user interface, table Description automatically generated with medium confidenceStoryboard 8 – Exit question

8 Exit question. This is the question that will be displayed to the user once the exit button is press. If they select no, the message box will close, and they can resume their activities. If they select yes, the application will close.