**Project Two**

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Describe the required functionality

We were tasked with creating a functioning user dashboard for Grazioso Salvare (our client). Filtering options have been created to help identify dogs for training for search-and-rescue missions. This dashboard builds upon a previously developed python module for CRUD operations on the AAC database (Austin, TX).

Describe the tools used to achieve this functionality and a rationale for why these tools were used.

Three tools were used to achieve this. First a data table containing information related to the pets. This data is then used to populate a pie chart of the breeds from the selected table. And lastly, a map showing the location of the pet.

These utilize pandas to populate a dataframe. Pymongo to integrate with the mongoDB server. Dash is used to build the application. This entire application relies on a custom python module called animal\_shelter.py.

Be sure to explain why MongoDB was used as the model component of the development, including what specific qualities or capabilities it provides for interfacing with Python.

MongoDB is used for the model for a few reasons. Open source means it is free to use and distribute. Another aspect is how Mongo stores information as a series of JSON-like documents. Because of the key/value pair structure of Mongo it allows us to easily write python code that integrates with our database.

Be sure to explain the Dash framework that provides the view and controller structure for the web application.

The Dash framework provides us with many important components we use to build the client software. One of the major components of Dash is the app callback. App callbacks are how we integrate on click functions that update our dashboard. Dash also gives us the tools to create our visualizations and create a dynamic map.

Be sure to include links to any resources or software applications that were accessed or used.

Python: <https://www.python.org/downloads/>

<https://wiki.python.org/moin/BeginnersGuide/Download>

7zip(Or another similar archive manager):

<https://www.7-zip.org/>

MongoDB:

<https://www.mongodb.com/>

Dash:

<https://dash.plotly.com/>

Explain the steps that were taken to complete the project.

The first step was creating the python module to handle CRUD operations. After this we were required to develop our client dashboard. The first step was to create our data table. For this our app needed to query our AAC database and provide filtering options which used dash app callbacks to dynamically update our table (this is done by calling if/else logic to determine which radio button is selected). The graphs must then be developed by using pandas to convert our dataframe to a pie chart. Finally, we use dash to create a map when rows from our data table are selected.

Identify any challenges that were encountered and explain how those challenges were overcome.

In previous assignments I had some difficulties creating the map in the dashboard. Some minor issues occurred from the way my CRUD module was designed as well. I decided this week to refactor my CRUD module and do more research into dash. After spending some time trying different implementations, I was able to work out the required app callbacks.

Graphical user interface, application, table

Description automatically generated

Chart, pie chart

Description automatically generated

Map

Description automatically generated