# CS 340 README CRUD Python Module and Dashboard

## About the Project/Project Title

CRUD Python module – A tool for Creating, Reading, Updating and Deleting a MongoDB database to be used by Grazioso Salvare, an international rescue-animal training company. The company also wanted an accompanying dashboard to go along with the CRUD module that would be able to provide a map location of the dog, filter the types of dogs based upon the preferred traits of the rescue dogs and a chart to identify the percentage of eligible dogs in the shelter.

## Motivation

The Motivation for this project is to provide Grazioso Salvare a method to manage a database of rescue-animals located in five of the animal shelters in the Austin, Texas region. Grazioso Salvare would like to be able to identify the age and breed of the dogs that fit the profile of potential search-and-rescue animals.

## Getting Started

You must first get the MongoDB CRUD utility up and running to use the Dashboard.

To get a local copy of the MongoDB CRUD utility up and running, follow these simple example steps:

1. Install MongoDB, mongoimport utility and pymongo driver
2. Download the animal\_shelter.py file
3. Obtain a copy of the animal\_shelter\_outcomes.csv file
4. Import the animal\_shelter\_outcomes.csv file into a database
5. Start MongoDB

To get a local copy of the accompanying Dashboard, follow these simple steps:

1. Follow the above steps to get the CRUD module working
2. Install dash and pandas
3. Download the Animal Shelter Dashboard.ipynb Jupyter Notebook file
4. Edit the Connection Variables in the Animal Shelter Dashboard.ipynb file

Now you can incorporate the animal\_shelter.py file into your project to use the create, read update and delete functions in the animal\_shelter.py module.

## Installation

To use this software, you will need to install the pymongo, pandas and Dash using the following command:

python -m pip install pymongo

pip install dash

pip install pandas

## Usage of Crud Module

### Code Example

First you need to set up the CRUD module for your database and application. The CRUD module code contains five functions, one each for Create, Read, Update and delete as well as one containing database connection information.

The init function accepts the database connection information from the Dashboard. These variables need to match the variables assigned to the user of the database.

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**C – Create:**

To add a document to the database you need to use the create function:A computer screen with text on it

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This requires data to be passed to the create function in ordered pairs, separated by columns:

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**R – Read:**

To find a document you need to pass an ordered pair query to the read function:

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Example of an ordered pair query:

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**U – Update:**

To update one record you need to pass the number 1 and two ordered pairs. To update all records containing the filter index you pass any number other than 1. The first pair will be the index to find the records/record you want to update and the second ordered pair should be formatted as {“$set” : {“field” : “value to update”}}

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Example of an update query:



**D – Delete:**

The Delete function is like update function in that it has two forks, one for delete one and the other for delete many. It accepts a 1 for delete one or any other integer to delete all records with that filter.

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Example of deletion query:



**Tests**

### To use this module, you need to first Import the class:



Then create an instance of the Animal Shelter class:



Then create a new document to add to the database:

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Use the create function to add the new data to the database:

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To read the document, pass a query and the results will be printed out.

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To update a record, pass a query to find and update the record.

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Or to update more than one you would use a query like the one below.

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For the delete function you would use a query like the one below.

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Or to delete more than one you would use a query like the one below.

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### Screenshots of function test results

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**Animal Shelter Dashboard**

Along with the CRUD module, I also developed a Dashboard for finding the preferred types of rescue dogs to make the search more efficient. There is a map that shows the location of the rescue dog and a pie chart that shows the percentage of each preferred breed of dog for that type of rescue dog.

To use the Dashboard, you can select the three different types of rescue dogs: Water Rescue, Mountain Rescue and Disaster Rescue. There is a reset radio button to remove all filters to see the full list of animals that have passed through the rescue.

**Code Examples**

The first thing you will need to edit in the code are you specific environmental variables that you will pass to the crud module:

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These variables will be based on the specific variables created to access the MongoDB collection that was imported in a database when it was created.

You will also want to edit the image for the logo. You can do that by replacing the image file below.

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For this project I created four radio buttons to change the filtering of the dashboard. To update them to your application you would update the following code to the names desired:

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The dashboard currently has the ability to sort and filter the content. For example you can type in the animal id of the dog you are looking for under animal\_id column header to retrieve the record. To limit the number of records pulled up by an unfiltered query I enable a page size limit of 10 and added the page function traverse between the pages of records. Below is the section that you would be able to add or remove the desired data table design functionality.

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Below is an example query that switched depending on which radio button filter is selected:

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I like pie charts for representing the percentage of things so below is the code needed to print a pie chart of the selected filter: A computer screen shot of text

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To change the code to a different type of graph you can edit the return value to the desire chart type. You could also change the title and names of the chart as desired.

The map functionality is handled by the update map function. For all these functions I incorporated handling for empty data sets to prevent call back errors. You can edit the map century as needed.

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**Screenshots of the Dashboard**

Here are screenshots of the header with the with the company logo with no filters applied:

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Below are screenshots of the Water Rescue dogs:

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Below are screenshots of the Mountain Rescue dogs:

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Below are screenshots of Disaster Rescue dogs:

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