



README

About AnimalShelter and the CRUD Module

The animalShelter program allows users to access a database of rescue animals at a local shelter. Here, users can create an account to create, read, update, or delete animal records in the database. These features make up the computer programming acronym, "CRUD". The CRUD Python module is an effective way to manage information in a client-server database environment.

Motivation

AnimalShelter is a project demonstrating my ability to work with databases and their information.

Completing the Project

1. Access Mongo and import the "aac_shelter_outcomes.csv" file with the **mongoimport** tool.
 - a. Use the database name "AAC".
 - b. Use the collection name "animals".
2. Create simple and complex indices to parse through data in the csv file named above.
3. Create accounts for the AAC database using the **createUser** tool.
 - a. An "Admin" account for read/write permissions across all layers of the program, mainly backend.
 - b. An "aacuser" account for read/write permissions within certain layers of the program, mainly frontend.
4. Verify user account credentials and permissions using the **getUser** tool.
5. Install Python and create the CRUD program in a .py file via Jupyter. Each feature in the CRUD program should have its own function; create(), read(), update(), and delete().
6. Develop tests for each of the CRUD functions in an .ipynb file via Jupyter.
7. Incorporate a working user interface with Grazioso Salvare's logo and data requirements/filters.

Tools

- MongoDB to access the database.
 - MongoDB allows the animal rescue to aggregate information, but also to pinpoint information within their database as needed. MongoDB can store any kinds of files at any kinds of sizes without the stack being affected. This is useful for scaling and ensures data integrity.
- The latest version of Python to support the .py and .ipynb files.
- The latest version of Jupyter to create and run the .py and .ipynb files.
- Dash framework.
 - The Dash framework is an open-source framework that helps visualize databases. This allows data from the AnimalShelter database to be viewed more easily compared to single-line JSON formats.
- Grazioso Animal Rescue logo.

Note: This template has been adapted from the following sample templates: [Make a README](#), [Best README Template](#), and [A Beginners Guide to Writing a Kickass README](#).



Usage

Code Examples

This block of code in animalShelter.py demonstrates the **Create** feature. In this example, users can create simple or complex indices for the database.

```
39
40 # Complete this create method to implement the C in CRUD.
41 def create(self, data):
42     if data is not None:
43         self.database.animals.insert_one(data) # data should be dictionary
44         return True
45     else:
46         raise Exception("Nothing to save, because data parameter is empty")
47
```

This block of code in animalShelter.py demonstrates the **Read** feature. In this example, users can search for animals based on specific fields and details.

```
47
48 # Create method to implement the R in CRUD.
49 def read(self, data):
50     if data is not None:
51         data = self.database.animals.find(data, {"_id": False})
52     else:
53         data = self.database.animals.find({}, {"_id": False})
54     return data
55
```

This block of code in animalShelter.py demonstrates the **Update** feature. In this example, users can update entries of animals based on specific fields and details.

```
54
55 # Create method to implement the U in CRUD.
56 def update(self, initialData, changedData):
57     if initialData is not None:
58         if self.database.animals.count_documents(initialData, limit = 1) != 0:
59             update_result = self.database.animals.update_many(initialData, {"$set": changedData})
60             result = update_result.raw_result
61         else:
62             result = "Document could not be found."
63         return result
64     else:
65         raise Exception("Nothing to update, because data parameter is empty.")
66
```

This block of code in animalShelter.py demonstrates the **Delete** feature. In this example, users can delete entries of animals based on specific fields and details.

```
66
67 # Create method to implement the D in CRUD.
68 def delete(self, remove):
69     if remove is not None:
70         if self.database.animals.count_documents(remove, limit = 1) != 0:
71             delete_result = self.database.animals.delete_many(remove)
72             result = delete_result.raw_result
73         else:
74             result = "Document could not be found."
75         return result
76     else:
77         raise Exception("Nothing to update, because data parameter is empty.")
```

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Tests

This was the test for the **Create** method. We created an “animal type” field with type “dog”.

```
In [3]: created = CRUD.create({"animal_type": "Dog"})
        print(created)

True
```

This was the test for the **Read** method. We searched for animals in the database with the name “Moose”.

```
In [4]: readResult = CRUD.read({"name": "Moose"})
        for r in readResult:
            print(r)

{'rec_num': 1647, 'age_upon_outcome': '6 years', 'animal_id': 'A586033', 'animal_type': 'Dog', 'breed': 'Beagle/Labrador Retriever', 'color': 'White', 'date_of_birth': '2018-01-02', 'datetime': '2016-03-06 17:56:00', 'monthyear': '2016-03-06T17:56:00', 'name': 'Moose', 'outcome_subtype': '', 'outcome_type': 'Adoption', 'sex_upon_outcome': 'Neutered Male', 'location_lat': 30.4481264417081, 'location_long': -97.449422720167, 'age_upon_outcome_in_weeks': 322.249603174603}
{'rec_num': 2213, 'age_upon_outcome': '6 years', 'animal_id': 'A586033', 'animal_type': 'Dog', 'breed': 'Beagle/Labrador Retriever', 'color': 'White', 'date_of_birth': '2018-01-02', 'datetime': '2016-02-21 19:17:00', 'monthyear': '2016-02-21T19:17:00', 'name': 'Moose', 'outcome_subtype': '', 'outcome_type': 'Adoption', 'sex_upon_outcome': 'Neutered Male', 'location_lat': 30.7607628821204, 'location_long': -97.540094408076, 'age_upon_outcome_in_weeks': 320.257638888889}
{'rec_num': 3460, 'age_upon_outcome': '3 months', 'animal_id': 'A681348', 'animal_type': 'Cat', 'breed': 'Domestic Shorthair Mix', 'color': 'Brown Tabby/White', 'date_of_birth': '2014-03-24', 'datetime': '2014-06-28 17:11:00', 'monthyear': '2014-06-28T17:11:00', 'name': 'Moose', 'outcome_subtype': '', 'outcome_type': 'Adoption', 'sex_upon_outcome': 'Spayed Female', 'location_lat': 30.5605916759449, 'location_long': -97.6581172285255, 'age_upon_outcome_in_weeks': 13.8165674603175}
{'rec_num': 4032, 'age_upon_outcome': '1 year', 'animal_id': 'A691463', 'animal_type': 'Dog', 'breed': 'German Shepherd Mix', 'color': 'Tan/Black', 'date_of_birth': '2013-11-04', 'datetime': '2014-11-05 16:13:00', 'monthyear': '2014-11-05T16:13:00', 'name': 'Moose', 'outcome_subtype': '', 'outcome_type': 'Return to Owner', 'sex_upon_outcome': 'Neutered Male', 'location_lat': 30.5863370809376, 'location_long': -97.7004659726529, 'age_upon_outcome_in_weeks': 52.3822420634921}
{'rec_num': 5642, 'age_upon_outcome': '3 months', 'animal_id': 'A765387', 'animal_type': 'Dog', 'breed': 'Labrador Retriever Mix', 'color': 'Chocolate/White', 'date_of_birth': '2017-10-04', 'datetime': '2018-01-22 19:01:00', 'monthyear': '2018-01-22T19:01:00', 'name': 'Moose', 'outcome_subtype': '', 'outcome_type': 'Adoption', 'sex_upon_outcome': 'Spayed Female', 'location_lat': 30.558007764267, 'location_long': -97.6356438422187, 'age_upon_outcome_in_weeks': 15.8274801587302}
{'rec_num': 6048, 'age_upon_outcome': '2 months', 'animal_id': 'A680796', 'animal_type': 'Cat', 'breed': 'Domestic Shorthair Mix', 'color': 'Black/White', 'date_of_birth': '2014-04-20', 'datetime': '2014-07-14 18:38:00', 'monthyear': '2014-07-14T18:38:00', 'name': 'Moose', 'outcome_subtype': '', 'outcome_type': 'Adoption', 'sex_upon_outcome': 'Neutered Male', 'location_lat': 30.4663361702729, 'location_long': -97.7264277963487, 'age_upon_outcome_in_weeks': 12.2537690412698}
{'rec_num': 8605, 'age_upon_outcome': '3 months', 'animal_id': 'A709750', 'animal_type': 'Cat', 'breed': 'Domestic Medium Hair Mix', 'color': 'Orange Tabby/White', 'date_of_birth': '2015-07-21', 'datetime': '2015-11-10 15:58:00', 'monthyear': '2015-11-10T15:58:00', 'name': 'Moose', 'outcome_subtype': 'Foster', 'outcome_type': 'Adoption', 'sex_upon_outcome': 'Intact Male', 'location_lat': 30.449215112687, 'location_long': -97.657196197171, 'age_upon_outcome_in_weeks': 16.0950396825397}
```

This was the test for the **Update** method. We updated adoption statuses to “Adopted” for animals in the database with the name “Moose”.

```
In [6]: # View updated entries from Test U in CRUD

readResult = CRUD.read({"name": "Moose"})
for r in readResult:
    print(r)

{'rec_num': 1647, 'age_upon_outcome': '6 years', 'animal_id': 'A586033', 'animal_type': 'Dog', 'breed': 'Beagle/Labrador Retriever', 'color': 'White', 'date_of_birth': '2018-01-02', 'datetime': '2016-03-06 17:56:00', 'monthyear': '2016-03-06T17:56:00', 'name': 'Moose', 'outcome_subtype': '', 'outcome_type': 'Adopted', 'sex_upon_outcome': 'Neutered Male', 'location_lat': 30.4481264417081, 'location_long': -97.449422720167, 'age_upon_outcome_in_weeks': 322.249603174603}
{'rec_num': 2213, 'age_upon_outcome': '6 years', 'animal_id': 'A586033', 'animal_type': 'Dog', 'breed': 'Beagle/Labrador Retriever', 'color': 'White', 'date_of_birth': '2018-01-02', 'datetime': '2016-02-21 19:17:00', 'monthyear': '2016-02-21T19:17:00', 'name': 'Moose', 'outcome_subtype': '', 'outcome_type': 'Adopted', 'sex_upon_outcome': 'Neutered Male', 'location_lat': 30.7607628821204, 'location_long': -97.540094408076, 'age_upon_outcome_in_weeks': 320.257638888889}
{'rec_num': 3460, 'age_upon_outcome': '3 months', 'animal_id': 'A681348', 'animal_type': 'Cat', 'breed': 'Domestic Shorthair Mix', 'color': 'Brown Tabby/White', 'date_of_birth': '2014-03-24', 'datetime': '2014-06-28 17:11:00', 'monthyear': '2014-06-28T17:11:00', 'name': 'Moose', 'outcome_subtype': '', 'outcome_type': 'Adopted', 'sex_upon_outcome': 'Spayed Female', 'location_lat': 30.5605916759449, 'location_long': -97.6581172285255, 'age_upon_outcome_in_weeks': 13.8165674603175}
{'rec_num': 4032, 'age_upon_outcome': '1 year', 'animal_id': 'A691463', 'animal_type': 'Dog', 'breed': 'German Shepherd Mix', 'color': 'Tan/Black', 'date_of_birth': '2013-11-04', 'datetime': '2014-11-05 16:13:00', 'monthyear': '2014-11-05T16:13:00', 'name': 'Moose', 'outcome_subtype': '', 'outcome_type': 'Adopted', 'sex_upon_outcome': 'Neutered Male', 'location_lat': 30.5863370809376, 'location_long': -97.7004659726529, 'age_upon_outcome_in_weeks': 52.3822420634921}
{'rec_num': 5642, 'age_upon_outcome': '3 months', 'animal_id': 'A765387', 'animal_type': 'Dog', 'breed': 'Labrador Retriever Mix', 'color': 'Chocolate/White', 'date_of_birth': '2017-10-04', 'datetime': '2018-01-22 19:01:00', 'monthyear': '2018-01-22T19:01:00', 'name': 'Moose', 'outcome_subtype': '', 'outcome_type': 'Adopted', 'sex_upon_outcome': 'Spayed Female', 'location_lat': 30.558007764267, 'location_long': -97.6356438422187, 'age_upon_outcome_in_weeks': 15.8274801587302}
{'rec_num': 6048, 'age_upon_outcome': '2 months', 'animal_id': 'A680796', 'animal_type': 'Cat', 'breed': 'Domestic Shorthair Mix', 'color': 'Black/White', 'date_of_birth': '2014-04-20', 'datetime': '2014-07-14 18:38:00', 'monthyear': '2014-07-14T18:38:00', 'name': 'Moose', 'outcome_subtype': '', 'outcome_type': 'Adopted', 'sex_upon_outcome': 'Neutered Male', 'location_lat': 30.4663361702729, 'location_long': -97.7264277963487, 'age_upon_outcome_in_weeks': 12.2537690412698}
{'rec_num': 8605, 'age_upon_outcome': '3 months', 'animal_id': 'A709750', 'animal_type': 'Cat', 'breed': 'Domestic Medium Hair Mix', 'color': 'Orange Tabby/White', 'date_of_birth': '2015-07-21', 'datetime': '2015-11-10 15:58:00', 'monthyear': '2015-11-10T15:58:00', 'name': 'Moose', 'outcome_subtype': 'Foster', 'outcome_type': 'Adopted', 'sex_upon_outcome': 'Intact Male', 'location_lat': 30.449215112687, 'location_long': -97.657196197171, 'age_upon_outcome_in_weeks': 16.0950396825397}
```

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This was the test for the **Delete** method. We deleted entries animals in the database with the name “Moose”.

```
In [7]: # Test D in CRUD

deleteAnimal = CRUD.delete({"name": "Moose"})
print(deleteAnimal)

{'n': 7, 'ok': 1.0}
```

```
In [8]: # View updated entries from Test D in CRUD

readResult = CRUD.read({"name": "Moose"})

for r in readResult:
    print (r)
```

Required Functionality

The deliverable requires the following:

- Grazioso Salvare logo and unique identifier.
- Database filters for the following kinds of rescues:
 - Water Rescue.
 - Mountain or Wilderness Rescue.
 - Disaster or Individual Tracking.
 - Reset.
- Correlating pie chart for each rescue filter.
- Correlating map for each rescue filter.

The screenshots below represent each rescue filter and their correlating data in the respective order.

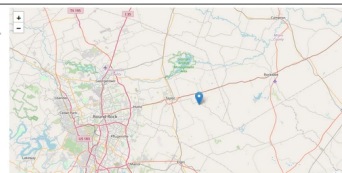
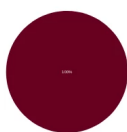
Water Rescue



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Please select from the following choices on the table.

	id	age	age_unit	animal_id	animal_type	breed	color	date_of_birth	date_lost	month_lost	name	outcome_address	outcome_type	last_update	location_lat	location_long	age_unit_outcome_or_years
	70	5 months		476053	dog	Labrador Retriever Mix	Yellow	2014-03-06	2015-07-06 13:33:00	2015-07-06T13:33:00			Missing	Returned	47.348888260571	-87.268888888889	30.354444444444
	702	2 years		474952	dog	Labrador Retriever Mix	Yellow	2013-05-08	2015-07-26 14:33:00	2015-07-26T14:33:00	Yellow	Return to Owner	Direct Find	47.370222222222	-87.270222222222	114.88888888889	
	1233	1 year		475130	dog	Labrador Retriever Mix	Black/White	2014-06-06	2015-08-14 14:33:00	2015-08-14T14:33:00	Pinkie	Return to Owner	Direct Find	48.333333333333	-87.333333333333	52.333333333333	
	8420	8 months		474953	dog	Labrador Retriever Mix	Yellow	2014-03-27	2014-12-17 17:33:00	2014-12-17T17:33:00	Miss	Missing	Direct Find	48.788888888889	-87.788888888889	88.333333333333	
	1597	7 months		474787	dog	Labrador Retriever Mix	Black	2014-06-27	2015-01-14 15:33:00	2015-01-14T15:33:00	Barney	Return to Owner	Direct Find	48.488888888889	-87.488888888889	35.333333333333	
	1680	1 year		474786	dog	Labrador Retriever Mix	Black/White	2014-03-27	2015-12-15 15:33:00	2015-12-15T15:33:00	Barney	Trapped	Direct Find	48.266666666667	-87.266666666667	51.666666666667	
	2841	2 years		474785	dog	Labrador Retriever Mix	Black	2013-05-22	2015-05-11 15:45:00	2015-05-11T15:45:00	Missy	Return to Owner	Direct Find	48.733333333333	-87.455555555556	144.33333333333	
	3203	2 years		475134	dog	Labrador Retriever Mix	Black/White	2013-06-02	2015-10-12 17:33:00	2015-10-12T17:33:00	SR	Trapped	Direct Find	48.364444444444	-87.733333333333	188.67444444444	
	4820	8 months		468748	dog	Labrador Retriever Mix	Yellow	2013-03-06	2014-06-05 17:33:00	2014-06-05T17:33:00	Barney	Returned	Direct Find	48.733333333333	-87.455555555556	50.333333333333	
	6022	1 year		475051	dog	Labrador Retriever Mix	Black	2013-06-26	2014-06-27 14:33:00	2014-06-27T14:33:00	Barney	Return to Owner	Direct Find	48.116666666667	-87.888888888889	52.444444444444	



Note: This template has been adapted from the following sample templates: [Make a README](#), [Best README Template](#), and [A Beginners Guide to Writing a Kickass README](#).



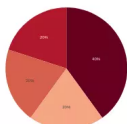
Mountain or Wilderness Rescue



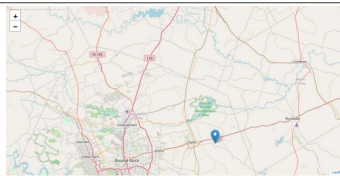
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Please select from the following clusters on the table.

Water Rescue Mountain/Wilderness Rescue Disaster Rescue/Individual Tracking Reset returns unfiltered state															
i	id	idc	age	age	age	age	age	age	age	age	age	age	age	age	age
1	1000	1000	2 years	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
2	1001	1001	2 years	1001	1001	1001	1001	1001	1001	1001	1001	1001	1001	1001	1001
3	1002	1002	2 years	1002	1002	1002	1002	1002	1002	1002	1002	1002	1002	1002	1002
4	1003	1003	2 years	1003	1003	1003	1003	1003	1003	1003	1003	1003	1003	1003	1003
5	1004	1004	2 years	1004	1004	1004	1004	1004	1004	1004	1004	1004	1004	1004	1004
6	1005	1005	2 years	1005	1005	1005	1005	1005	1005	1005	1005	1005	1005	1005	1005
7	1006	1006	2 years	1006	1006	1006	1006	1006	1006	1006	1006	1006	1006	1006	1006
8	1007	1007	2 years	1007	1007	1007	1007	1007	1007	1007	1007	1007	1007	1007	1007



Water Rescue
Mountain/Wilderness Rescue
Disaster Rescue
Individual Tracking



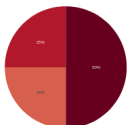
Disaster or Individual Tracking



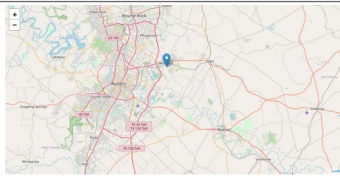
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Please select from the following clusters on the table.

Water Rescue Mountain/Wilderness Rescue Disaster Rescue/Individual Tracking Reset returns unfiltered state															
i	id	idc	age	age	age	age	age	age	age	age	age	age	age	age	age
1	1000	1000	2 years	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
2	1001	1001	2 years	1001	1001	1001	1001	1001	1001	1001	1001	1001	1001	1001	1001
3	1002	1002	2 years	1002	1002	1002	1002	1002	1002	1002	1002	1002	1002	1002	1002
4	1003	1003	2 years	1003	1003	1003	1003	1003	1003	1003	1003	1003	1003	1003	1003
5	1004	1004	2 years	1004	1004	1004	1004	1004	1004	1004	1004	1004	1004	1004	1004
6	1005	1005	2 years	1005	1005	1005	1005	1005	1005	1005	1005	1005	1005	1005	1005
7	1006	1006	2 years	1006	1006	1006	1006	1006	1006	1006	1006	1006	1006	1006	1006
8	1007	1007	2 years	1007	1007	1007	1007	1007	1007	1007	1007	1007	1007	1007	1007



Water Rescue
Mountain/Wilderness Rescue
Disaster Rescue
Individual Tracking



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Reset

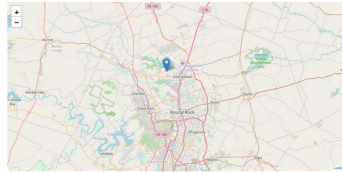
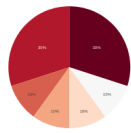


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Water Rescue | Missing/Endangered Rescues | Disaster Rescues/Individual Tracking | Reset - returns unfiltered state

Please select rows the following elements on the table:

ID	Age (days)	Age (years)	Weight (kg)	Weight (lbs)	Gender	Color	Markings	Microchip	Adoption	Adoption Date	Adoption Time	Adoption Location	Adoption Status	Adoption Date	Adoption Time	Adoption Location	Adoption Status
1	1	1 year	10.0	22.0	Male	Black	White	123456789	Adopted	2023-01-01	10:00	123456789	Adopted	2023-01-01	10:00	123456789	Adopted
2	2	2 years	15.0	33.0	Female	White	Black	987654321	Adopted	2023-01-02	11:00	987654321	Adopted	2023-01-02	11:00	987654321	Adopted
3	3	3 years	20.0	44.0	Male	Black	White	567890123	Adopted	2023-01-03	12:00	567890123	Adopted	2023-01-03	12:00	567890123	Adopted
4	4	4 years	25.0	55.0	Female	White	Black	345678901	Adopted	2023-01-04	13:00	345678901	Adopted	2023-01-04	13:00	345678901	Adopted
5	5	5 years	30.0	66.0	Male	Black	White	234567890	Adopted	2023-01-05	14:00	234567890	Adopted	2023-01-05	14:00	234567890	Adopted
6	6	6 years	35.0	77.0	Female	White	Black	123456789	Adopted	2023-01-06	15:00	123456789	Adopted	2023-01-06	15:00	123456789	Adopted
7	7	7 years	40.0	88.0	Male	Black	White	012345678	Adopted	2023-01-07	16:00	012345678	Adopted	2023-01-07	16:00	012345678	Adopted
8	8	8 years	45.0	99.0	Female	White	Black	901234567	Adopted	2023-01-08	17:00	901234567	Adopted	2023-01-08	17:00	901234567	Adopted
9	9	9 years	50.0	110.0	Male	Black	White	890123456	Adopted	2023-01-09	18:00	890123456	Adopted	2023-01-09	18:00	890123456	Adopted
10	10	10 years	55.0	121.0	Female	White	Black	789012345	Adopted	2023-01-10	19:00	789012345	Adopted	2023-01-10	19:00	789012345	Adopted



Challenges

One major challenge of the Animal Shelter project was ensuring the connection between the interface and the server. We addressed this by using MongoDB to provide stable and secure access to the databases. Paying attention to Python syntax is essential as well. To simplify the programming experience, it is recommended that developers assign account credentials and port information to variables in order to avoid code redundancy.

Contact

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