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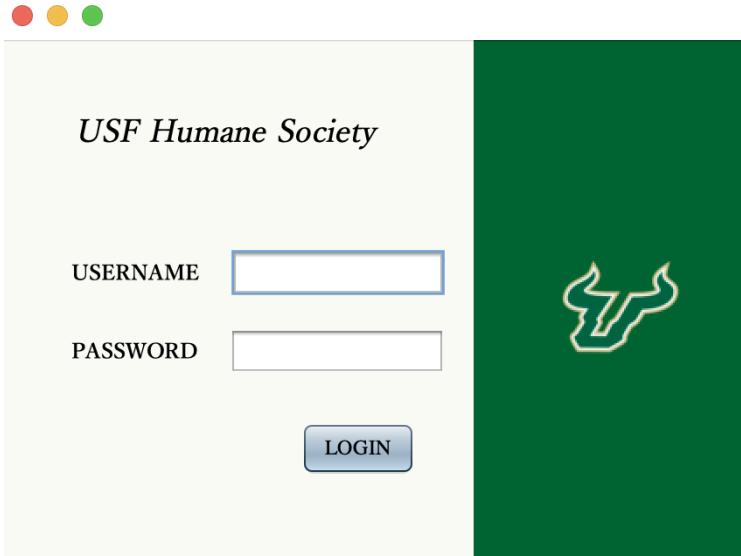
## COP4710 Final Project

### I. Topic

For this project we decided to base our enterprise management system off of an animal shelter. We chose this topic because we are passionate about animals and the set up of an animal shelter is common and well understood. Some of our group members have worked with animals as volunteers at shelters or employees at vet clinics, so this topic is very familiar for us. Our planned approach involves use of a standalone machine to host the database system and we plan to code our database in PostgreSQL and our application using Java GUI features.

### II. Project Features

- User Login



- Admin/User view

**MENU**

**Animals**

- New Intake
- Pet Catalog
- Start Adoption

**Applications**

- New Application
- View Applications

**Donations**

- View Donations

**MENU**

**Animals**

- New Intake
- Pet Catalog
- Start Adoption

**Applications**

- New Application
- View Applications

**Management Tools**

- All Users
- Employees

**Donations**

- View Donations

- User/Employee Management (only from Admin view)
- View/Modify users:**

Username	Password	Role	SSN
jdoe	pass1234	Admin	123456789
jsmith	pass5678	User	987654321
jbrown	passabcd	User	456789123
edavis	passwxyz	Admin	789123456
smiller	pass5678	User	654321789
manderson	passabcd	User	789456123
bcrocker	pass9999	Admin	999999999
mannylop	lopez33	User	898989898

**Old Username:** bcrocker

**New Username:** brocker

**New Password:** \*\*\*\*\*

**Confirm**

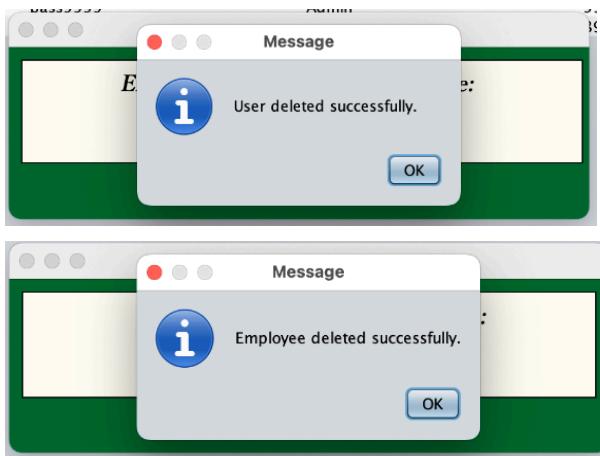
**Remove User**   **Refresh**   **Modify User**   **Add User**

**View Employees:**

First Name	Last Name	SSN	Position	Salary	Gender	DOB	Availability
John	Doe	123456789	Manager	80000.00	Male	1980-05-10	Mon-Fri 9am-5pm
Jane	Smith	987654321	Developer	75000.00	Female	1985-08-20	Mon-Fri 9am-5pm
James	Brown	456789123	Designer	70000.00	Male	1990-12-01	Mon-Fri 10am-6pm
Emily	Davis	789123456	HR Specialist	65000.00	Female	1975-03-15	Mon-Fri 8am-4pm
Sophia	Miller	654321789	Support	50000.00	Female	1995-07-25	Mon-Fri 9am-5pm
Michael	Anderson	789456123	Sales	60000.00	Male	1988-01-10	Mon-Fri 9am-5pm
William	Moore	456123789	IT Specialist	75000.00	Male	1978-02-22	Mon-Fri 9am-5pm
Betty	Crocker	999999999	Manager	100000.00	Female	1970-05-01	Mon-Fri 9am-5pm
Manny	Lopez	898989898	Staff	20000.00	Male	1990-02-02	Mon-Fri 10am-6pm
Lenard	Piazza	988766785	Staff	2000.00	Male	1990-02-01	Mon-Wed 9am-4pm

### Create users/employees:

### Remove Users/employees:



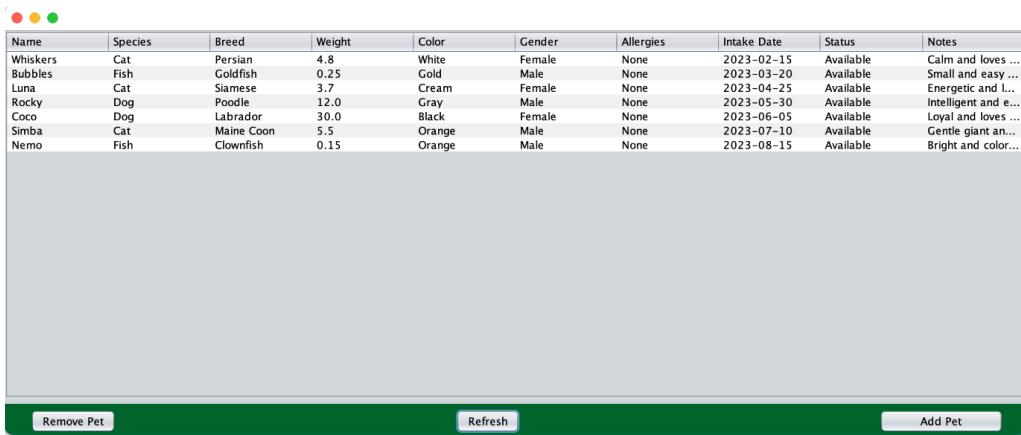
- Pet intake

**Please Enter:**

Name	<input type="text" value="I"/>
Species	<input type="text"/>
Breed	<input type="text"/>
Weight	<input type="text"/>
Gender	<input type="text"/>
Color	<input type="text"/>
Allergies	<input type="text"/>
Intake Date	<input type="text"/>
Status	<input type="text"/>
Notes	<input type="text"/>
Food	<input type="text"/>

**Add**

- Display pets available for adoption

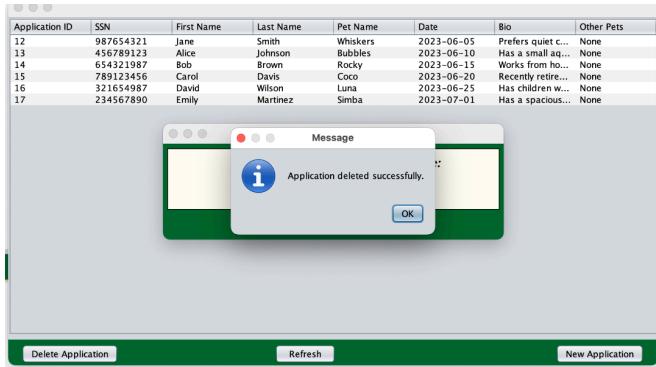


The screenshot shows a table of available pets with the following data:

Name	Species	Breed	Weight	Color	Gender	Allergies	Intake Date	Status	Notes
Whiskers	Cat	Persian	4.8	White	Female	None	2023-02-15	Available	Calm and loves ...
Bubbles	Fish	Goldfish	0.25	Gold	Male	None	2023-03-20	Available	Small and easy ...
Luna	Cat	Siamese	3.7	Cream	Female	None	2023-04-25	Available	Energetic and l...
Rocky	Dog	Poodle	12.0	Gray	Male	None	2023-05-30	Available	Intelligent and e...
Coco	Dog	Labrador	30.0	Black	Female	None	2023-06-05	Available	Loyal and loves ...
Simba	Cat	Maine Coon	5.5	Orange	Male	None	2023-07-10	Available	Gentle giant an...
Nemo	Fish	Clownfish	0.15	Orange	Male	None	2023-08-15	Available	Bright and color...

- Application processing  
*Delete/View/Create Applications*



A screenshot of a form titled "Please Enter:". The form has six input fields: "Pet Name", "First Name", "Last Name", "SSN", "Brief Bio", and "Any Other Pets". Below the input fields is an "Apply" button.

- Adoption processing

A screenshot of a form titled "Please Enter:". The form has three input fields: "Application Id", "Pet to Be Adopted", and "Approving Employee SSN". Below the input fields is an "Adopt" button. The background of the form is dark green.

This form allows one to add a pet to the Adopt table, signaling it has been adopted out, which will lead to the corresponding pet and any applications referencing it being deleted from other parts of the database.

- Donations view

- Add new Donations

### *III. SQL Queries and Tables*

Some Distinct Queries Used:

1. "INSERT INTO adopt(applicationid, petname, adoption\_date, ssn);"
2. "SELECT \* from Applications";
3. "DELETE from employees where ssn = ?";
4. "SELECT password, role FROM users WHERE username = ?;"
5. "SELECT MAX(applicationid) AS max\_id FROM applications";
6. "UPDATE users SET username = ?, password = ? WHERE username = ?"
7. "SELECT first\_name, last\_name, SUM(amount) AS Total FROM Donations NATURAL JOIN Donators GROUP BY DonatorID, first\_name, last\_name ORDER BY Total DESC LIMIT 10";
8. "SELECT SUM(amount) FROM Donations";
9. "SELECT donatorid FROM donators WHERE first\_name = ? AND last\_name = ?";

Some Additional queries:

1. "insert into employees ssn, first\_name, last\_name, dob, gender, position, salary, availability"
2. "insert into users username, password, role, ssn"
3. "delete from pets where petname = ?";
4. "delete from users where username = ?";
5. "select \* from employees";

### **Tables Used:**

#### **Employees**

```
CREATE TABLE employees(SSN VARCHAR(9) PRIMARY KEY, position VARCHAR(50), salary  
NUMERIC(8,2), gender VARCHAR(10), DOB DATE, availability VARCHAR(100), first_name  
VARCHAR(30), last_name VARCHAR(30));
```

## Users

```
CREATE TABLE users(SSN VARCHAR(9), position VARCHAR(10) REFERENCES employees, username  
VARCHAR(15) PRIMARY KEY, password VARCHAR(8), role VARCHAR(10), constraint user_fk  
FOREIGN KEY(SSN) REFERENCES employees ON DELETE CASCADE);
```

```
|humane_society=#  
|humane_society=# select * from users;  
+-----+-----+-----+-----+  
| ssn      | username | password | role   |  
+-----+-----+-----+-----+  
| 123456789 | jdoe     | pass1234 | Admin  |  
| 987654321 | jsmith   | pass5678 | User   |  
| 456789123 | jbrown   | passabcd | User   |  
| 789123456 | edavis   | passwxyz | Admin  |  
| 654321789 | smiller  | pass5678 | User   |  
| 789456123 | manderson | passabcd | User   |  
| 898989898 | mannylop | lopez33  | User   |  
| 777766666 | davechapelle | dave36  | Admin  |  
(8 rows)
```

Pets

```
CREATE TABLE pets(petname VARCHAR(30) PRIMARY KEY, species VARCHAR(20), type  
VARCHAR(20), food VARCHAR(100), weight NUMERIC(5, 2), color VARCHAR(10), gender  
VARCHAR(10), allergies VARCHAR(100), intake_date DATE, status VARCHAR(30), notes  
VARCHAR(200));
```

## Applications

```
CREATE TABLE Applications(ApplicationID INTEGER PRIMARY KEY, SSN VARCHAR(9),
first_name VARCHAR(30), last_name VARCHAR(30), petname VARCHAR(30)
REFERENCES Pets, date DATE, bio VARCHAR(500), other_pets VARCHAR(200)
CONSTRAINT applications_petname_fkey FOREIGN KEY (petname) REFERENCES
pets(petname) ON DELETE CASCADE;
```

applicationid	ssn	first_name	last_name	petname	date	bio	other_pets
1	111111111	Alice	Johnson	Buddy	2024-01-01	Looking to adopt a friendly dog.	None
2	222222222	Bob	Martinez	Max	2024-02-01	Wants a hiking companion.	None
3	333333333	Carol	Williams	Bella	2024-03-01	Has a large backyard for a dog.	None
4	444444444	David	Jones	Charlie	2024-04-01	Experienced pet owner.	Cat
5	555555555	Eve	Taylor	Lucy	2024-05-01	Works from home, lots of time for a pet.	None
6	666666666	Frank	Garcia	Molly	2024-06-01	Long-time pet owner.	Dog
7	777777777	Grace	Miller	Rocky	2024-07-01	Moved to a pet-friendly area.	None
8	888888888	Hank	Davis	Daisy	2024-08-01	Frequently travels and rarely at home.	Dog
9	999999999	Ivy	Rodriguez	Sophie	2024-09-01	Loves outdoor activities.	None
10	101010101	Jack	Martinez	Jack	2024-10-01	Has a history of abandoning pets.	None

(10 rows)

## Adopt

```
CREATE TABLE Adopt(ApplicationID INTEGER, petname VARCHAR(30), SSN
VARCHAR(9) REFERENCES Employees, adoption_date DATE, CONSTRAINT pk PRIMARY
KEY(petname));
```

```
humane_society=# select * from adopt;
[ applicationid | petname | ssn | adoption_date
-----+-----+-----+
      34 | Max   | 123456789 | 2024-07-18
(1 row)

humane_society=#

```

## Donators

```
CREATE TABLE Donators(DonatorID INTEGER PRIMARY KEY, first_name VARCHAR(30), last_name
VARCHAR(30));
```

## Donations

```
CREATE TABLE Donations(DonationID INTEGER PRIMARY KEY, amount NUMERIC(8,2), date DATE,
DonatorID INTEGER REFERENCES Donators);
```

```

humane_society=# SELECT * from donations
humane_society-# ;
donationid | amount | date      | donatorid
-----+-----+-----+-----
DN001    | 100.00 | 2024-01-15 | D001
DN002    | 150.50 | 2024-02-20 | D001
DN003    | 75.75  | 2024-03-10 | D002
DN004    | 200.00 | 2024-01-05 | D003
DN005    | 50.00  | 2024-04-25 | D004
DN006    | 120.00 | 2024-05-15 | D005
DN007    | 180.00 | 2024-06-30 | D001
DN008    | 95.00  | 2024-07-10 | D002
(8 rows)

```

```

humane_society=# select * from donators;
donatorid | first_name | last_name
-----+-----+-----
D001    | John        | Doe
D002    | Jane        | Smith
D003    | Emily       | Johnson
D004    | Michael     | Brown
D005    | Sarah        | Davis
(5 rows)

```

### Triggers used:

```

CREATE OR REPLACE FUNCTION drop_pet_from_pets() RETURNS TRIGGER AS $$

BEGIN
    -- Delete the corresponding pet from the pets table

    DELETE FROM pets WHERE petname = NEW.petname;
    RETURN NEW;
END;
$$ LANGUAGE plpgsql;

```

```

CREATE OR REPLACE TRIGGER trigger_drop_pet_from_pets AFTER INSERT OR
UPDATE ON adopt FOR EACH ROW EXECUTE FUNCTION drop_pet_from_pets();

```

### Check Constraints Used:

-ALTER TABLE employees ADD CONSTRAINT checkssn CHECK (LENGTH(ssn) = 9);  
-ALTER TABLE users ADD CONSTRAINT checkssn CHECK (LENGTH(ssn) = 9);

*\*ensures SSNs = 9 digits*

#### *IV. Reflection*

Our final project for COP4710 involved creating a comprehensive database management system for an animal shelter, a topic close to our hearts. As a team we were able to successfully implement a variety of essential features, including:

- User login system
- Admin and user-specific views
- User and employee management (view, modify, create, remove)
- Pet intake management
- Display of pets available for adoption
- Adoption application processing (create, view, delete)
- Adoption processing to update records
- Donation tracking and management

We utilized PostgreSQL for the database and developed the application's GUI using Java and NetBeans. We are particularly proud of our ability to implement all planned features and create a user-friendly graphical interface. This project not only enhanced our technical skills but also reinforced our ability to work effectively as a team, tackling challenges and delivering a functional and valuable system for managing an animal shelter.