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Project "Pawsome Pets" – Part 3

Link to GitHub Repository: https://github.com/nickgammal/DSC623_Final_Project_NickGammal

a) Develop SQL code to create the entire database schema, reflecting constraints from previous steps.

I began by loading SQLite and Pandas into a jupyter notebook, then creating a database, a connection to that database, and a cursor for that connection.

Next, I wrote a series of CREATE TABLE statements, using NOT NULL and UNIQUE constraints in attribute definitions as dictated by the logical model from part 2. I also added primary and foreign key constraints in each table definition as well as constraints to the characters and lengths allowed in phone number and id variables.

Here are the empty tables:

```
        );
        """
    )

Out[9]: <sqlite3.Cursor at 0x115a29d40>

In [12]: cur.execute("SELECT * FROM Owner")
         show()
```

ownerNo	oNameFirst	oNameLast	oAddress	oPhone

```
In [13]: cur.execute("SELECT * FROM Pet")
         show()
```

petNo	clinicNo	ownerNo	pName	DOB	species	breed	color

```
In [14]: cur.execute("SELECT * FROM Staff")
         show()
```

staffNo	clinicNo	sNameFirst	sNameLast	sAddress	sPhone	DOB	position	salary

```
In [15]: cur.execute("SELECT * FROM Clinic")
         show()
```

clinicNo	managerNo	cName	cAddress	cPhone

```
In [16]: cur.execute("SELECT * FROM Examination")
         show()
```

examNo	staffNo	petNo	chiefComplaint	description	dateSeen	actionsTaken

Create Data

```
In [22]: # input 5 rows for each table
```

b) Create at least 5 tuples for each relation in your database.

For this step, I pulled ideas from a mix of family and friends, star trek, harry potter, history, and a bit of imagination. I started by creating 5 tuples for each table, then added extra tuples as needed to make sure my queries for part c were not empty.

Here are the filled tables:

```
cur.execute("SELECT * FROM Examination")
show()
```

	examNo	staffNo	petNo	chiefComplaint	description	dateSeen	actionsTaken
0	00000000000	10000000000	10100000000	Attacking people, frothing at the mouth, speak...	Lung medication and breathing therapy to remov...	2021-04-23	treatment administered, breathing therapist re...
1	10000000000	00100000000	01000000000	Itchy spot on hind leg, excessive licking unti...	cone of shame to stop licking, antibiotic oinm...	2024-09-16	cone attached to dog, ointment given to owner
2	01000000000	01000000000	10000000000	indigestion	dietary restrictions including food supplement	2023-05-15	recommended new diet and sold supplement to owner
3	11000000000	10000000000	11100000000	violently stealing and consuming all milk on t...	send to rehabilitation center for one week	2024-12-07	cat sent to addiction rehabilitation center
4	00100000000	00100000000	00000000000	morbidly obese	more exercise needed, dietary changes also rec...	2023-04-30	wrote workout plan and taught to owner, also r...
5	10100000000	00100000000	01100000000	broken leg	set bones correctly, apply splint	2022-10-31	bones set, splint applied and brace for future...

```
cur.execute("SELECT * FROM Clinic")
show()
```

	clinicNo	managerNo	cName	cAddress	cPhone
0	00000000000	10000000000	Miami Pawsome Hospital	1 Vetrinarian Way, Miami FL	3052342345
1	10000000000	00010000000	San Antonio Pawsome Clinic	22 Bulldog Blvd, San Antonio TX	2102349393
2	01000000000	01000000000	UMiami Pet Clinic	6100 Red Road, Coral Gables FL	3052348671
3	11000000000	11000000000	Homestead Pawsome Hospital	2573 Verde Ave, Homestead FL	3052340027
4	00100000000	00000101000	South Beach Dolphin Care	17 Embaracero Road, Miami Beach FL	3052341526

```
cur.execute("SELECT * FROM Staff")
show()
```

	staffNo	clinicNo	sNameFirst	sNameLast	sAddress	sPhone	DOB	position	salary
0	00000000000	00000000000	Andrei	Gronkowski	5172 Grand Ave, Miami FL	3058863253	1982-07-02	Animal Dietician	120000
1	10000000000	00000000000	Sarah	Gronkowski	5172 Grand Ave, Miami FL	3058861937	1983-12-22	Senior Veterinarian	135000
2	01000000000	01000000000	Marcus	Aurelius	1 Roman Blvd, South Miami FL	3052365940	1967-05-15	Senior Veterinarian	135000
3	11000000000	11000000000	Elizabeth	Vanderstein	36 Blanco Street, Homestead FL	6452985783	1991-08-05	Senior Veterinarian	125000
4	00100000000	01000000000	Hannah	Hall	52 Sextant Way, Coral Gables FL	3053647592	1979-10-10	Assistant Veterinarian	78000

```
cur.execute("SELECT * FROM Pet")
show()
```

	petNo	clinicNo	ownerNo	pName	DOB	species	breed	color
0	00000000000	01000000000	10000000000	Mr. Pickles	2022-08-05	Felis catus	American Shorthair	gray
1	10000000000	01000000000	01000000000	Kiva	2014-06-27	Canis lupus familiaris	Australian Labradoodle	caramel
2	01000000000	01000000000	00000000000	Bubble	2024-01-13	Canis lupus familiaris	Pitbull	brown
3	11000000000	00000000000	00100000000	Fox	2018-10-12	Canis lupus familiaris	Shiba	red
4	00100000000	00000000000	11000000000	Hestia	2015-03-30	Felis catus	Siamese	white
5	10100000000	00000000000	10100000000	Butler	2019-02-15	Canis lupus familiaris	Great Dane	tan
6	11100000000	00000000000	10100000000	Mr. Spock	2010-11-17	Felis catus	Orange Tabby	orange
7	01100000000	00000000000	10100000000	Snuggles	2018-06-28	Canis lupus familiaris	Poodle	white
8	00010000000	10000000000	01100000000	Hedwig	2001-11-16	Bubo scandiacus	None	white

```
cur.execute("SELECT * FROM Owner")
show()
```

	ownerNo	oNameFirst	oNameLast	oAddress	oPhone
0	00000000000	Nicholas	Gammal	16 Rioja Way, Miami FL	3051234567
1	10000000000	Anabelle	Sweeney	4200 Baker St, Miami FL	3050987654
2	01000000000	Denise	Gammal	37 Largo Ave, Homestead FL	6451234567
3	11000000000	Jen	Borenstein	51 Area Blvd, Coral Gables FL	3052749673
4	00100000000	Sharon	Lohrey	6280 Blue Road, South Miami FL	3058362637
5	10100000000	James T.	Kirk	NCC-1701, Space	3236345667
6	01100000000	Harry	Potter	4 Privet Drive, Cupboard Under the Stairs	6927496873

c) Develop the 5 SQL queries that correspond to 2c using embedded SQL.

This step is self-explanatory, but it is important to note that I used pandas to write a "show" function that displays the result of the most recent cursor execution as a data frame.

Here are the queries:

```python
# Q1 — Show the records of all examinations performed on pets owned by James T. Kirk

cur.execute(
    """
    SELECT *
    FROM Examination
    WHERE petNo IN (
        SELECT petNo
        FROM Pet p
        JOIN Owner o ON o.ownerNo = p.ownerNo
        WHERE (oNameFirst = 'James T.') AND (oNameLast = 'Kirk')
    )
    """
)

show()
```

	examNo	staffNo	petNo	chiefComplaint	description	dateSeen	actionsTaken
0	00000000000	10000000000	10100000000	Attacking people, frothing at the mouth, speak...	Lung medication and breathing therapy to remov...	2021-04-23	treatment administered, breathing therapist re...
1	11000000000	10000000000	11100000000	violently stealing and consuming all milk on t...	send to rehabilitation center for one week	2024-12-07	cat sent to addiction rehabilitation center
2	10100000000	00100000000	01100000000	broken leg	set bones correctly, apply splint	2022-10-31	bones set, splint applied and brace for future...

```
# Q2 — Show the list of all staff who manage clinics, the name of
#       the clinic they manage, and their salary

cur.execute(
    """
    SELECT staffNo, c.clinicNo, sNameFirst, sNameLast, cName, salary
    FROM Staff s
    JOIN Clinic c ON managerNo = staffNo
    """
)

show()
```

	staffNo	clinicNo	sNameFirst	sNameLast	cName	salary
0	10000000000	00000000000	Sarah	Gronkowski	Miami Pawsome Hospital	135000
1	01000000000	01000000000	Marcus	Aurelius	UMiami Pet Clinic	135000
2	11000000000	11000000000	Elizabeth	Vanderstein	Homestead Pawsome Hospital	125000

```
# Q3 — Show the list of all Poodles examined by staff member Hannah Hall

cur.execute(
    """
    SELECT p.petNo, p.pName, examNo
    FROM Examination e
    JOIN Pet p ON p.petNo = e.petNo
    JOIN Staff s ON s.staffNo = e.staffNo
    WHERE (s.sNameFirst = 'Hannah') AND (s.sNameLast = 'Hall') AND breed = 'Poodle'
    """
)

show()
```

	petNo	pName	examNo
0	01100000000	Snuggles	10100000000

```
# Q4 — List all pet owners who have a pet registered
#     with Pawsome Pets clinics in San Antonio, TX

cur.execute(
    """
    SELECT *
    FROM Owner
    WHERE ownerNo IN (
        SELECT ownerNo
        FROM Pet p
        JOIN clinic c ON c.clinicNo = p.clinicNo
        WHERE cAddress LIKE '%San Antonio TX'
    )
    """
)

show()
```

	ownerNo	oNameFirst	oNameLast	oAddress	oPhone
0	01100000000	Harry	Potter	4 Privet Drive, Cupboard Under the Stairs	6927496873

```
# Q5 — Show all pets registered at UMiami Pet Clinic

cur.execute(
    """
    SELECT *
    FROM Pet
    WHERE clinicNo IN (
        SELECT clinicNo
        FROM Clinic
        WHERE cName = 'UMiami Pet Clinic'
    )
    """
)

show()
```

	petNo	clinicNo	ownerNo	pName	DOB	species	breed	color
0	00000000000	01000000000	10000000000	Mr. Pickles	2022-08-05	Felis catus	American Shorthair	gray
1	10000000000	01000000000	01000000000	Kiva	2014-06-27	Canis lupus familiaris	Australian Labradoodle	caramel
2	01000000000	01000000000	00000000000	Bubble	2024-01-13	Canis lupus familiaris	Pitbull	brown