

## Case study: Pawsome Pets

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Q3.

- Database schema based on the logical data model and incorporating all the constraints was created in SQLite Python using Jupyter Notebook. The code **SQLproject.ipynb** (Jupyter notebook) or **SQLproject.py** (Python file) and all related documentation have been uploaded to Github.
- Create at least 5 tuples for each relation in your database.

```
In [6]: # Insert row into table Clinic
query_clinic = """
INSERT INTO Clinic
VALUES
("c001", "Pethealth", "123 Baker St", "3051234567"),
("c002", "Petsrus", "119 Douglas Ave", "3051237890"),
("c003", "Paws", "200 Bark Lane", "3054567899"),
("c004", "Howlclinic", "650 Forest Ave", "3054442345"),
("c005", "Healthypets", "300 Woodland Drive", "3051234789")
;
"""
cursor.execute(query_clinic)
```

Out[6]: <sqlite3.Cursor at 0x2a89a584570>

```
In [7]: # Insert row into table Staff
query_staff = """
INSERT INTO Staff
VALUES
("emp001", "John Smith", "233 Vail Rd", "7862344567", "12-Dec-1970", "Manager", "37000", "c001"),
("emp002", "Jane Doe", "445 Colorado St", "3053337890", "14-Jun-1978", "Sr. Medical Assistant", "36000", "c002"),
("emp003", "Tom Hanks", "601 Utah Ave", "3054422899", "04-Jul-1965", "Sr. Technician", "42000", "c003"),
("emp004", "Jane Austen", "9875 Foothill Dr", "3051214445", "03-Feb-1980", "Technician", "36000", "c003"),
("emp005", "Enid Blyton", "112 Iowa St", "7861234890", "08-Aug-1985", "Surgeon", "75000", "c004"),
("emp006", "David Blake", "100 Pearson St", "3051112222", "18-Aug-1965", "Manager", "78000", "c005")
;
"""
cursor.execute(query_staff)
```

Out[7]: <sqlite3.Cursor at 0x2a89a584570>

```
In [8]: # Insert row into table PetOwner
query_owner = """
INSERT INTO PetOwner
VALUES
("own1", "Jack Smith", "410 Park St", "7861245600", "c001"),
("own2", "Thomas Jefferson", "325 Minorca Ave", "7865557890", "c002"),
("own3", "Teddy Roosevelt", "546 Gables Lane", "3051112222", "c002"),
("own4", "John Marshall", "980 Miami Ave", "3053337777", "c003"),
("own5", "Hilary Clinton", "311 Lewis Rd", "3054446666", "c005"),
("own6", "Elena Monsoon", "555 Privet Rd", "3052340990", "c004")
;
"""
cursor.execute(query_owner)
```

Out[8]: <sqlite3.Cursor at 0x2a89a584570>

```
In [9]: # Insert row into table Pet
query_pet = """
INSERT INTO Pet
VALUES
("p1", "Tim", "09-Feb-2021", "Dog", "Labrador", "white", "own1", "c001"),
("p2", "Bella", "10-Mar-2022", "Cat", "Mix", "black", "own6", "c002"),
("p3", "Rufus", "03-Apr-2021", "Dog", "Labrador", "black", "own2", "c002"),
("p4", "Topsy", "09-May-2020", "Dog", "Labrador", "brown", "own4", "c003"),
("p5", "Barky", "07-May-2019", "Dog", "Poodle", "white", "own3", "c005"),
("p6", "Maggie", "06-Jun-2022", "Parrot", "Tropical", "red", "own5", "c004")
;
"""
cursor.execute(query_pet)
```

Out[9]: <sqlite3.Cursor at 0x2a89a584570>

```
In [10]: # Insert row into table Examination
query_exam = """
INSERT INTO Examination
VALUES
("ex01", "fleas", "moderate", "05-Nov-2022", "oral medicine", "p1", "emp003"),
("ex02", "fleas", "mild", "05-Dec-2022", "oral medicine", "p2", "emp002"),
("ex03", "fleas", "mild", "07-Nov-2022", "oral medicine", "p3", "emp002"),
("ex04", "fracture", "right paw", "08-Nov-2022", "cast", "p4", "emp003"),
("ex05", "fracture", "right paw", "09-Nov-2022", "cast", "p5", "emp003"),
("ex06", "winginjury", "left wing", "01-Dec-2022", "surgery", "p6", "emp004")
;
"""
cursor.execute(query_exam)
```

Out[10]: <sqlite3.Cursor at 0x2a89a584570>

```
In [11]: #Steps to select data from tables and read into a Pandas dataframe
# Select data
query = """
SELECT *
FROM Clinic
"""

cursor.execute(query)

# Extract column names from cursor
column_names = [row[0] for row in cursor.description]

# Fetch data and load into a pandas dataframe
clinic_data = cursor.fetchall()
df1 = pd.DataFrame(clinic_data, columns=column_names)

# Examine dataframe
print(df1)
print(df1.columns)
```

	clinicNo	cName	cAddress	cPhone
0	c001	Pethealth	123 Baker St	3051234567
1	c002	Petsrus	119 Douglas Ave	3051237890
2	c003	Paws	200 Bark Lane	3054567899
3	c004	Howlclinic	650 Forest Ave	3054442345
4	c005	Healthypets	300 Woodland Drive	3051234789

Index(['clinicNo', 'cName', 'cAddress', 'cPhone'], dtype='object')

```
In [12]: # Select data
query = """
SELECT *
FROM Staff
"""

cursor.execute(query)

# Extract column names from cursor
column_names = [row[0] for row in cursor.description]

# Fetch data and load into a pandas dataframe
staff_data = cursor.fetchall()
df2 = pd.DataFrame(staff_data, columns=column_names)

# Examine dataframe
print(df2)
print(df2.columns)
```

	staffNo	sName	sAddress	sPhone	sDOB	\
0	emp001	John Smith	233 Vail Rd	7862344567	12-Dec-1970	
1	emp002	Jane Doe	445 Colorado St	3053337890	14-Jun-1978	
2	emp003	Tom Hanks	601 Utah Ave	3054422899	04-Jul-1965	
3	emp004	Jane Austen	9875 Foothill Dr	3051214445	03-Feb-1980	
4	emp005	Enid Blyton	112 Iowa St	7861234890	08-Aug-1985	
5	emp006	David Blake	100 Pearson St	3051112222	18-Aug-1965	

  

	sPosition	salary	clinicNo
0	Manager	37000	c001
1	Sr. Medical Assistant	36000	c002
2	Sr. Technician	42000	c003
3	Technician	36000	c003
4	Surgeon	75000	c004
5	Manager	78000	c005

Index(['staffNo', 'sName', 'sAddress', 'sPhone', 'sDOB', 'sPosition', 'salary', 'clinicNo'], dtype='object')

```
In [13]: # Select data
query = """
SELECT *
FROM PetOwner
"""

cursor.execute(query)

# Extract column names from cursor
column_names = [row[0] for row in cursor.description]

# Fetch data and load into a pandas dataframe
owner_data = cursor.fetchall()
df3 = pd.DataFrame(owner_data, columns=column_names)

# Examine dataframe
print(df3)
print(df3.columns)
```

	ownerNo	oName	oAddress	oPhone	clinicNo
0	own1	Jack Smith	410 Park St	7861245600	c001
1	own2	Thomas Jefferson	325 Minorca Ave	7865557890	c002
2	own3	Teddy Roosevelt	546 Gables Lane	3051112222	c002
3	own4	John Marshall	980 Miami Ave	3053337777	c003
4	own5	Hilary Clinton	311 Lewis Rd	3054446666	c005
5	own6	Elena Monsoon	555 Privet Rd	3052340990	c004

Index(['ownerNo', 'oName', 'oAddress', 'oPhone', 'clinicNo'], dtype='object')

```
In [14]: # Select data
query = """
SELECT *
FROM Pet
"""

cursor.execute(query)

# Extract column names from cursor
column_names = [row[0] for row in cursor.description]

# Fetch data and load into a pandas dataframe
pet_data = cursor.fetchall()
df4 = pd.DataFrame(pet_data, columns=column_names)

# Examine dataframe
print(df4)
print(df4.columns)
```

	petNo	pName	pDOB	pSpecies	pBreed	pColor	ownerNo	clinicNo
0	p1	Tim	09-Feb-2021	Dog	Labrador	white	own1	c001
1	p2	Bella	10-Mar-2022	Cat	Mix	black	own6	c002
2	p3	Rufus	03-Apr-2021	Dog	Labrador	black	own2	c002
3	p4	Tipsy	09-May-2020	Dog	Labrador	brown	own4	c003
4	p5	Barky	07-May-2019	Dog	Poodle	white	own3	c005
5	p6	Maggie	06-Jun-2022	Parrot	Tropical	red	own5	c004

Index(['petNo', 'pName', 'pDOB', 'pSpecies', 'pBreed', 'pColor', 'ownerNo', 'clinicNo'], dtype='object')

```
In [15]: # Select data
query = """
SELECT *
FROM Examination
"""

cursor.execute(query)

# Extract column names from cursor
column_names = [row[0] for row in cursor.description]

# Fetch data and load into a pandas dataframe
exam_data = cursor.fetchall()
df5 = pd.DataFrame(exam_data, columns=column_names)

# Examine dataframe
print(df5)
print(df5.columns)
```

	examNo	complaint	description	date	action	petNo	staffNo
0	ex01	fleas	moderate	05-Nov-2022	oral medicine	p1	emp003
1	ex02	fleas	mild	05-Dec-2022	oral medicine	p2	emp002
2	ex03	fleas	mild	07-Nov-2022	oral medicine	p3	emp002
3	ex04	fracture	right paw	08-Nov-2022	cast	p4	emp003
4	ex05	fracture	right paw	09-Nov-2022	cast	p5	emp003
5	ex06	wing injury	left wing	01-Dec-2022	surgery	p6	emp004

Index(['examNo', 'complaint', 'description', 'date', 'action', 'petNo', 'staffNo'], dtype='object')

c. Develop 5 SQL queries using embedded SQL.

In [17]: *#Execute five SQL queries from data in petsclinic database*

*#Example Query 1: List all staff who work at clinic c003*

```
query1 = """
SELECT *
FROM Staff
WHERE clinicNo = "c003"
"""

cursor.execute(query1)
column_names = [row[0] for row in cursor.description]
result = cursor.fetchall()
df1 = pd.DataFrame(result, columns=column_names)
print(df1)
```

	staffNo	sName	sAddress	sPhone	sDOB	\
0	emp003	Tom Hanks	601 Utah Ave	3054422899	04-Jul-1965	
1	emp004	Jane Austen	9875 Foothill Dr	3051214445	03-Feb-1980	

  

	sPosition	salary	clinicNo
0	Sr. Technician	42000	c003
1	Technician	36000	c003

In [18]: *#Example Query 2: List details of the examination performed by a staff member*

```
query2 = """
SELECT *
FROM Examination
WHERE staffNo = "emp002"
"""

cursor.execute(query2)
column_names = [row[0] for row in cursor.description]
result = cursor.fetchall()
df2 = pd.DataFrame(result, columns=column_names)
print(df2)
```

	examNo	complaint	description	date	action	petNo	staffNo
0	ex02	fleas	mild	05-Dec-2022	oral medicine	p2	emp002
1	ex03	fleas	mild	07-Nov-2022	oral medicine	p3	emp002

In [19]: *#Example Query 3: List the pet species and breeds by clinic*

```
query3 = """
SELECT pSpecies, pBreed
FROM Pet
WHERE clinicNo = "c002"
"""

cursor.execute(query3)
column_names = [row[0] for row in cursor.description]
result = cursor.fetchall()
df3 = pd.DataFrame(result, columns=column_names)
print(df3)
```

	pSpecies	pBreed
0	Cat	Mix
1	Dog	Labrador

In [20]: *#Example Query 4: List exam details performed on pet p1*

```
query4 = """
SELECT *
FROM Examination
WHERE petNo = "p1"
"""

cursor.execute(query4)
column_names = [row[0] for row in cursor.description]
result = cursor.fetchall()
df4 = pd.DataFrame(result, columns=column_names)
print(df4)
```

	examNo	complaint	description	date	action	petNo	staffNo
0	ex01	fleas	moderate	05-Nov-2022	oral medicine	p1	emp003

In [21]: *#Example Query 5: List details of all the clinic managers*

```
query5 = """
SELECT *
FROM Staff
WHERE sPosition = "Manager"
"""

cursor.execute(query5)
column_names = [row[0] for row in cursor.description]
result = cursor.fetchall()
df5 = pd.DataFrame(result, columns=column_names)
print(df5)
```

	staffNo	sName	sAddress	sPhone	sDOB	sPosition	\
0	emp001	John Smith	233 Vail Rd	7862344567	12-Dec-1970	Manager	
1	emp006	David Blake	100 Pearson St	3051112222	18-Aug-1965	Manager	

  

	salary	clinicNo
0	37000	c001
1	78000	c005

- d. Code and documentation have been uploaded to Github and can be accessed using the following link:

[https://github.com/rosalinadas/CSC623\\_Project.git](https://github.com/rosalinadas/CSC623_Project.git)