

LINK TO GITHUB REPOSITORY: <https://github.com/vpat28/CSC423Project>

A) Develop SQL code to create the entire database schema, reflecting the constraints identified in previous steps (contains modified python code).

a. For the Clinic Table:

```
query = """
CREATE TABLE Clinic(
    clinicNo INT CHECK(clinicNo>0),
    clinicName TEXT,
    address TEXT NOT NULL UNIQUE,
    phoneNum TEXT CHECK(length(phoneNum)==10) NOT NULL UNIQUE,
    managerStaffNo INT CHECK(managerStaffNo>0),
    PRIMARY KEY(clinicNo),
    FOREIGN KEY (managerStaffNo) REFERENCES staff(staffNo)ON DELETE CASCADE
);
"""

cursor.execute(query)
```

b. For the Owner Table

```
query = """
CREATE TABLE Owner(
    ownerNo INT CHECK(ownerNo >0),
    name TEXT,
    address TEXT,
    ownerPhone TEXT CHECK(length(ownerPhone)=10) UNIQUE,
    clinicNo INT,
    PRIMARY KEY(ownerNo),
    FOREIGN KEY (clinicNo) REFERENCES Clinic(clinicNo) ON DELETE CASCADE
);
"""

cursor.execute(query)
```

c. For the Staff Table

```
query = """
CREATE TABLE Staff(
    staffNo INT CHECK (staffNo > 0),
    clinicNo INT,
    name TEXT,
    address TEXT,
    staffPhone TEXT CHECK(length(staffPhone)=10) NOT NULL UNIQUE,
    DOB TEXT CHECK(DOB < "2004-01-01"),
    position TEXT,
    salary INT CHECK(salary>0),

```

```

PRIMARY KEY(staffNo),
FOREIGN KEY(clinicNo) REFERENCES Clinic(clinicNo) ON DELETE CASCADE
);
"""

cursor.execute(query)

```

- d. For the Pet Table

```

query = """
CREATE TABLE PET(
petNo INT CHECK(petNo >0),
ownerNo INT,
clinicNo INT,
name TEXT,
DOB TEXT CHECK(DOB < "2022-12-08"),
species TEXT,
breed TEXT,
color TEXT,
PRIMARY KEY(petNo)
FOREIGN KEY(ownerNo) REFERENCES Owner(ownerNo) ON DELETE CASCADE,
FOREIGN KEY(clinicNo) REFERENCES Clinic(clinicNo) ON DELETE CASCADE
);
"""

cursor.execute(query)

```

- e. For the Examination Table

```

query = """
CREATE TABLE Examination(
examNo INT CHECK(examNo >0),
chiefComplaint TEXT,
date TEXT CHECK(date <= "2022-12-08"),
actionTaken TEXT,
petNo INT,
staffNo INT,
PRIMARY KEY(examNo)
FOREIGN KEY(petNo) REFERENCES Pet(petNo),
FOREIGN KEY(staffNo) REFERENCES Staff(staffNo)
ON DELETE CASCADE
);
"""

cursor.execute(query)

```

- B) Create at least 5 tuples for each relation in your database (contains modified python code)

- a. For the Clinic Table

```

1) query = """
INSERT INTO Clinic (clinicNo,clinicName,address,phoneNum,managerStaffNo)

```

```
VALUES (62,"Barry Bonds Pet Care", "6253 Park Avenue","5615366410",31);
''''
```

```
cursor.execute(query)
```

```
2) query = ''''
```

```
INSERT INTO Clinic (clinicNo,clinicName,address,phoneNum,managerStaffNo)
VALUES (89,"Dr.G's Clinic for Critters", "1800 Martin Luther King
Blvd", "9542638957",NULL);
''''
```

```
cursor.execute(query)
```

```
3) query = ''''
```

```
INSERT INTO Clinic (clinicNo,clinicName,address,phoneNum,managerStaffNo)
VALUES (13,"Unlucky Pet Health Services", "96 Carlyle Rd", "7623916578",56);
''''
```

```
cursor.execute(query)
```

```
4) query = ''''
```

```
INSERT INTO Clinic (clinicNo,clinicName,address,phoneNum,managerStaffNo)
VALUES (106,"South Side Veterinarian Center", "8971 Lake Shore
Dr", "9021013365",NULL);
''''
```

```
cursor.execute(query)
```

```
5) query = ''''
```

```
INSERT INTO Clinic (clinicNo,clinicName,address,phoneNum,managerStaffNo)
VALUES (33,"Adler Animal Hospital", "9856 San Marino Circle", "3056650819",63);
''''
```

```
cursor.execute(query)
```

	clinicNo	clinicName	address	phoneNum	managerStaffNo
0	62	Barry Bonds Pet Care	6253 Park Avenue	5615366410	31.0
1	89	Dr.G's Clinic for Critters	1800 Martin Luther King Blvd	9542638957	NaN
2	13	Unlucky Pet Health Services	96 Carlyle Rd	7623916578	56.0
3	106	South Side Veterinarian Center	8971 Lake Shore Dr	9021013365	NaN
4	33	Adler Animal Hospital	9856 San Marino Circle	3056650819	63.0

b. For the Staff Table

```
1) query = ''''
```

```
INSERT INTO Staff(staffNo,clinicNo,name,address,staffPhone,DOB,position,salary)
VALUES (56,13,"Benjamin Chodry", "56 Kimberly Estates",5506959506,1998-03-
28,"Chief Technician",112000);
''''
```

```
cursor.execute(query)
```

```

2) query = ""
INSERT INTO Staff(staffNo,clinicNo,name,address,staffPhone,DOB,position,salary)
VALUES (63,33,"Dwayne Carter", "001 Holly Grove Street",4109505899,1982-09-
27,"Veterinarian",260000);
""

cursor.execute(query)

3) query = ""
INSERT INTO Staff(staffNo,clinicNo,name,address,staffPhone,DOB,position,salary)
VALUES (12,106,"Amy Greenberg", "22 Melrose Point",5286934578,2002-11-
08,"Receptionist",16000);
""

cursor.execute(query)

4) query = ""
INSERT INTO Staff(staffNo,clinicNo,name,address,staffPhone,DOB,position,salary)
VALUES (31,62,"Mike Chambers", "783 Palmetto Park Rd",8923672103,1976-06-
15,"Office Manager",29500);
""

cursor.execute(query)

5) query = ""
INSERT INTO Staff(staffNo,clinicNo,name,address,staffPhone,DOB,position,salary)
VALUES (115,89,"Jan Levinson", "21 Scranton Blvd",1569876521,1963-04-30,"Head
Veterinarian",220000);
""

cursor.execute(query)

```

	staffNo	clinicNo	name	address	staffPhone	DOB	position	salary
0	56	13	Benjamin Chodry	56 Kimberly Estates	5506959506	1967	Chief Technician	112000
1	63	33	Dwayne Carter	001 Holly Grove Street	4109505899	1946	Veterinarian	260000
2	12	106	Amy Greenberg	22 Melrose Point	5286934578	1983	Receptionist	16000
3	31	62	Mike Chambers	783 Palmetto Park Rd	8923672103	1955	Office Manager	29500
4	115	89	Jan Levinson	21 Scranton Blvd	1569876521	1929	Head Veterinarian	220000

c. For the Owner Table

```

1) query = ""
INSERT INTO Owner(ownerNo,clinicNo,name,address,ownerPhone)
VALUES (233,106, "Kirsnick Ball", "52 Nawfside Rd", 9875623358);
""

cursor.execute(query)

2) query = ""
INSERT INTO Owner(ownerNo,clinicNo,name,address,ownerPhone)
VALUES (211,33, "John Snow", "6842 Hillside Lane", 5552106838);
""

cursor.execute(query)

```

```

3) query = ""
INSERT INTO Owner(ownerNo,clinicNo,name,address,ownerPhone)
VALUES (154,62, "Alena Gleeman", "2318 Mountain Hill Drive", 3736912387);
""

cursor.execute(query)

4) query = ""
INSERT INTO Owner(ownerNo,clinicNo,name,address,ownerPhone)
VALUES (93,89, "Rashida Bluestrike", "64 Cherry Red Rd", 1475623251);
""

cursor.execute(query)

5) query = ""
INSERT INTO Owner(ownerNo,clinicNo,name,address,ownerPhone)
VALUES (110,13, "Miguel Gonzalez", "1165 Oceanic Plaza", 2326587769);
""

cursor.execute(query)

```

	ownerNo	name	address	ownerPhone	clinicNo
0	233	Kirsnick Ball	52 Nawfside Rd	9875623358	106
1	211	John Snow	6842 Hillside Lane	5552106838	33
2	154	Alena Gleeman	2318 Mountain Hill Drive	3736912387	62
3	93	Rashida Bluestrike	64 Cherry Red Rd	1475623251	89
4	110	Miguel Gonzalez	1165 Oceanic Plaza	2326587769	13

d. For the Pet Table

```

1) query = ""
INSERT INTO Pet(petNo,name,DOB,species,breed,color,ownerNo,clinicNo)
VALUES (1164, "Rex","2016-03-14","dog","pitbull","brown",233,106);
""

cursor.execute(query)

2) query = ""
INSERT INTO Pet(petNo,name,DOB,species,breed,color,ownerNo,clinicNo)
VALUES (1258,"Domino","2022-02-10","dog","dalmation","white",211,33);
""

cursor.execute(query)

3) query = ""
INSERT INTO Pet(petNo,name,DOB,species,breed,color,ownerNo,clinicNo)
VALUES (958, "Timothy","2018-10-06","parrot","macaw","green",211,33);
""

cursor.execute(query)

```

```

4) query = ""
INSERT INTO Pet(petNo,name,DOB,species,breed,color,ownerNo,clinicNo)
VALUES (753, "Cristoff","2017-01-19","cat","shorthair","grey",154,62);
""

```

```

cursor.execute(query)

```

```

5) query = ""
INSERT INTO Pet(petNo,name,DOB,species,breed,color,ownerNo,clinicNo)
VALUES (432, "Kobe","2019-05-26","snake","mamba","black",93,89);
""

```

```

cursor.execute(query)

```

	petNo	ownerNo	clinicNo	name	DOB	species	breed	color
0	1164	233	106	Rex	2016-03-14	dog	pitbull	brown
1	1258	211	33	Domino	2022-02-10	dog	dalmation	white
2	958	211	33	Timothy	2018-10-06	parrot	macaw	green
3	753	154	62	Cristoff	2017-01-19	cat	shorthair	grey
4	432	93	89	Kobe	2019-05-26	snake	mamba	black

e. For the Examination Table

```

1) query = ""
INSERT INTO Examination(examNo,chiefComplaint,date,actionTaken,petNo,staffNo)
VALUES(3651,"Broken Bone","2022-12-05","Metal screw inserted",1164,115);
""

```

```

cursor.execute(query)

```

```

2) query = ""
INSERT INTO Examination(examNo,chiefComplaint,date,actionTaken,petNo,staffNo)
VALUES(2193,"Broken Bone","2019-03-20","Surgery",1258,63);
""

```

```

cursor.execute(query)

```

```

3) query = ""
INSERT INTO Examination(examNo,chiefComplaint,date,actionTaken,petNo,staffNo)
VALUES(1967,"Broken Bone","2018-11-30","Metal plate inserted",753,56);
""

```

```

cursor.execute(query)

```

```

4) query = ""
INSERT INTO Examination(examNo,chiefComplaint,date,actionTaken,petNo,staffNo)
VALUES(3111,"Avian Flu","2022-11-18","Perscribed antibiotics",958,63);

```

```

"""
cursor.execute(query)
5) query = """
INSERT INTO Examination(examNo,chiefComplaint,date,actionTaken,petNo,staffNo)
VALUES(2831,"Parasitic infection","2021-08-30","De-worming injection given",432,115);
"""
cursor.execute(query)

```

	examNo	chiefComplaint	date	actionTaken	petNo	staffNo
0	3651	Broken Bone	2022-12-05	Metal screw inserted	1164	115
1	2193	Broken Bone	2019-03-20	Surgery	1258	63
2	1967	Broken Bone	2018-11-30	Metal plate inserted	753	56
3	3111	Avian Flu	2022-11-18	Perscribed antibiotics	958	63
4	2831	Parasitic infection	2021-08-30	De-worming injection given	432	115

C) Develop 5 SQL queries using embedded SQL (SQL queries with python syntax is shown)

1. What are the StaffNo, names, and positions of staff members who earn more than \$30,000 a year?

```

query = """
SELECT staffNo, name, position
FROM Staff
WHERE salary > 30000
"""

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
table_data = cursor.fetchall()
df = pd.DataFrame(table_data, columns=column_names)
# Examine dataframe
print(df)
print(df.columns)

```

	staffNo	name	position
0	56	Benjamin Chodry	Chief Technician
1	63	Dwayne Carter	Veterinarian
2	115	Jan Levinson	Head Veterinarian

Index(['staffNo', 'name', 'position'], dtype='object')

2. How many pets does the owner with the ownerNo 211 have?

```

query = """
SELECT count(petNo)as numOfPets
FROM Owner o, Pet p
WHERE p.ownerNo = o.ownerNo AND p.ownerNo = 211
"""

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

```

```

table_data = cursor.fetchall()
df = pd.DataFrame(table_data, columns=column_names)
# Examine dataframe
print(df)
print(df.columns)

```

```

      numOfPets
0             2
Index(['numOfPets'], dtype='object')

```

3. What are the clinic numbers and names of clinic with no staff members as managers?

```

query = """
SELECT c.clinicNo,c.clinicName
FROM Clinic c
WHERE c.managerStaffNo IS NULL
"""

cursor.execute(query)
column_names = [row[0] for row in cursor.description]
# Fetch data and load into a pandas dataframe
table_data = cursor.fetchall()
df = pd.DataFrame(table_data, columns=column_names)
# Examine dataframe
print(df)
print(df.columns)

```

```

      clinicNo      clinicName
0           89  Dr.G's Clinic for Critters
1          106  South Side Veterinarian Center
Index(['clinicNo', 'clinicName'], dtype='object')

```

4. What are the names of pets that were examined for a broken bone?

```

query = """
SELECT p.name
FROM Pet p, Examination e
WHERE e.petNo = p.petNo AND e.chiefComplaint = "Broken Bone"
"""

cursor.execute(query)
column_names = [row[0] for row in cursor.description]
# Fetch data and load into a pandas dataframe
table_data = cursor.fetchall()
df = pd.DataFrame(table_data, columns=column_names)
# Examine dataframe
print(df)
print(df.columns)

```



```

      name
0      Rex
1    Domino
2  Cristoff
Index(['name'], dtype='object')

```

5. How many examinations were performed on 11/18/2022

```
query = """
```

```
SELECT count(examNo) numOfExams
```

```
FROM Examination
```

```
WHERE date = "2022-11-18"
```

```
"""
```

```
cursor.execute(query)
```

```
column_names = [row[0] for row in cursor.description]
```

```
# Fetch data and load into a pandas dataframe
```

```
table_data = cursor.fetchall()
```

```
df = pd.DataFrame(table_data, columns=column_names)
```

```
# Examine dataframe
```

```
print(df)
```

```
print(df.columns)
```

```

      numOfExams
0              1
Index(['numOfExams'], dtype='object')

```

D) Link to GitHub Repository: <https://github.com/vpat28/CSC423Project>