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. <u>For the Clinic Table</u>

        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

	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. <u>For the Staff Table</u>
    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. <u>For the Pet Table</u>
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. <u>For the Examination Table</u>
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);

```
"""
```

5) cursor.execute(query)
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