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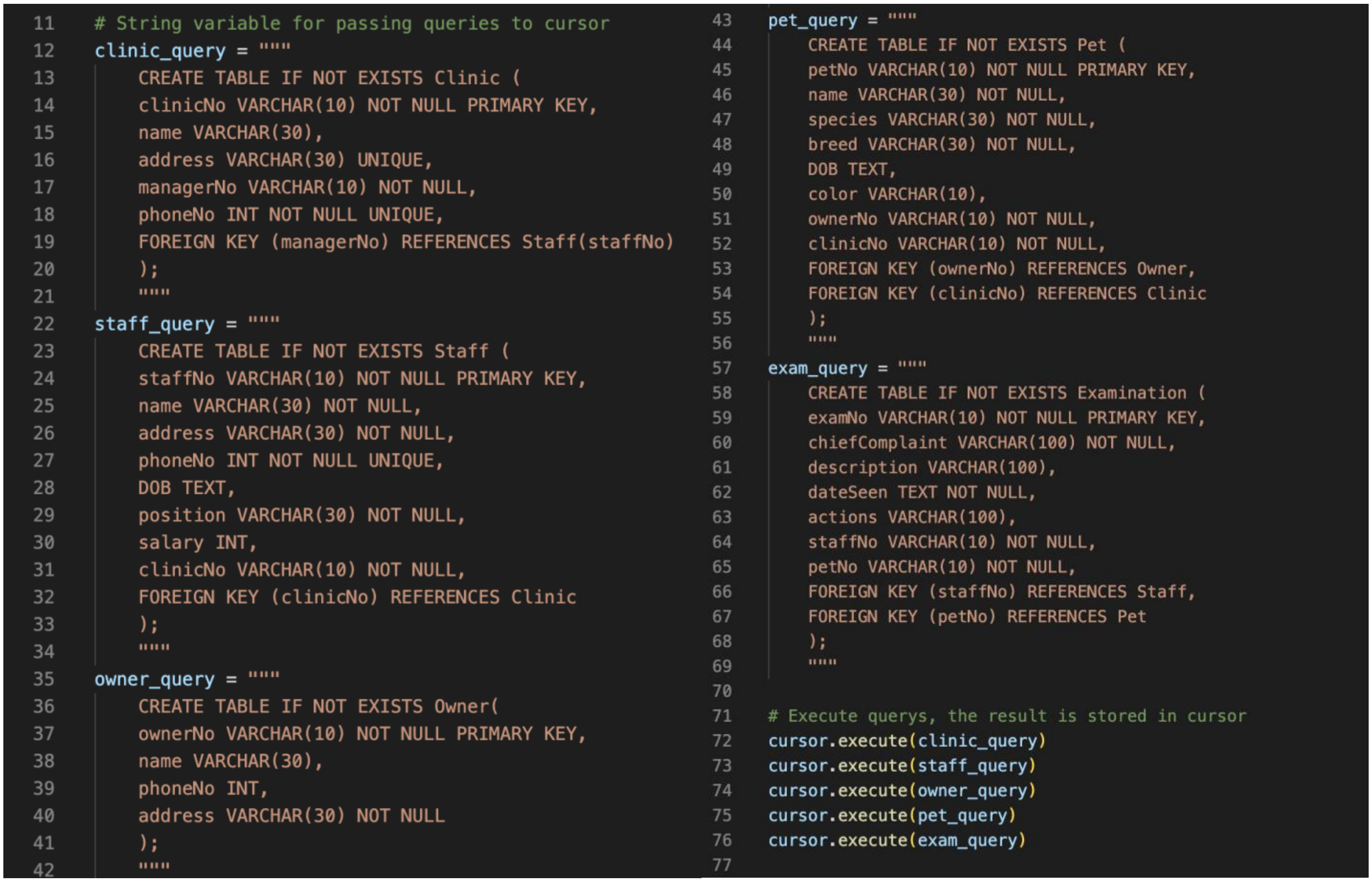
CSC423 Proj Pt3

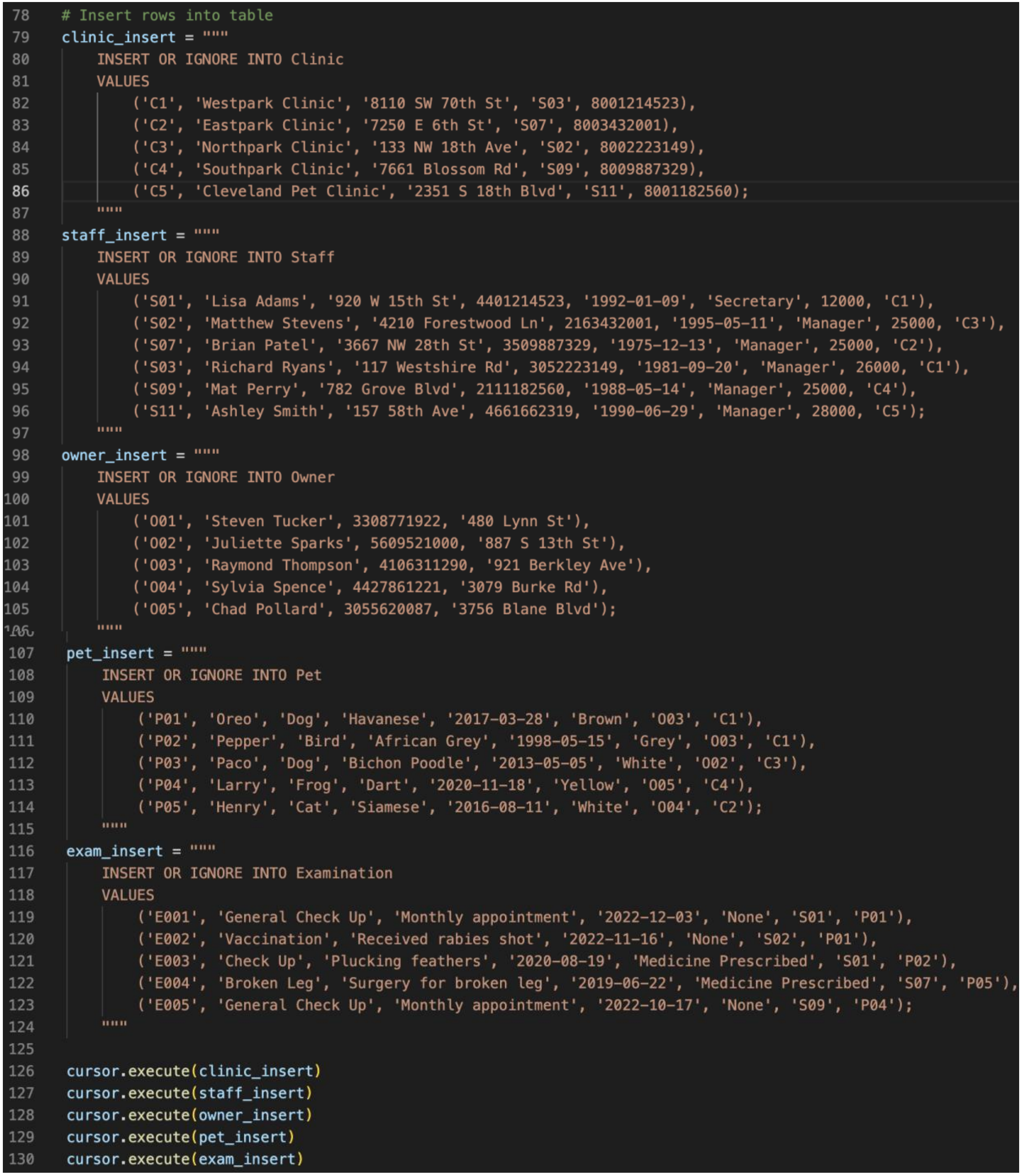
Translate the logical data model for the Oracle Enterprise DBMS. (12/08/22)

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

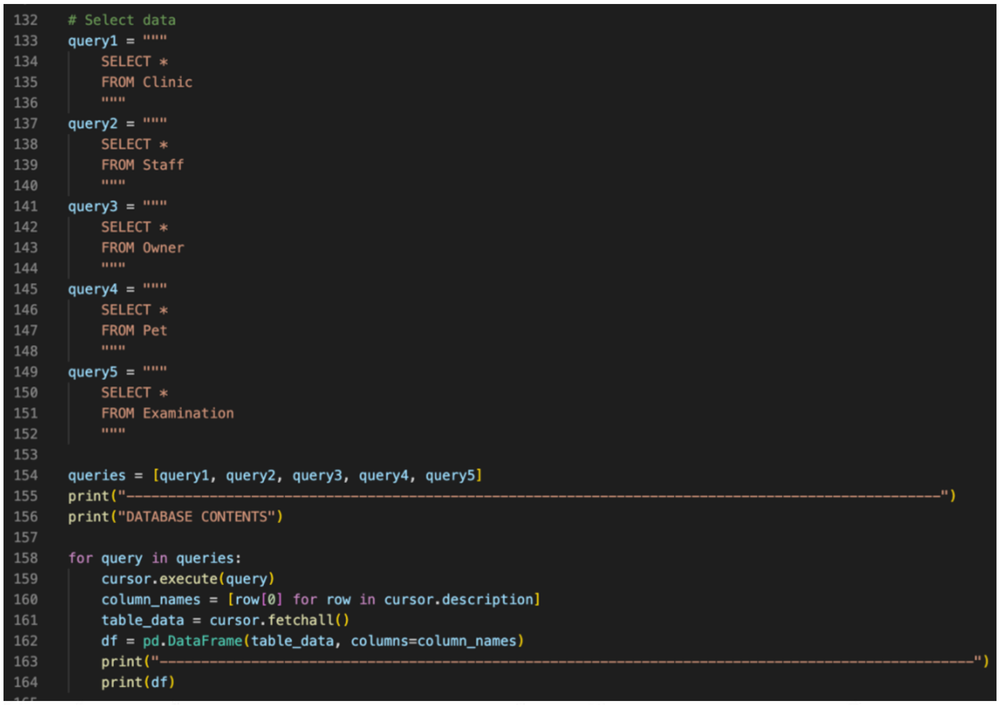


```
# String variable for passing queries to cursor
clinic_query = """
    CREATE TABLE IF NOT EXISTS Clinic (
    clinicNo VARCHAR(10) NOT NULL PRIMARY KEY,
    name VARCHAR(30),
    address VARCHAR(30) UNIQUE,
    managerNo VARCHAR(10) NOT NULL,
    phoneNo INT NOT NULL UNIQUE,
    FOREIGN KEY (managerNo) REFERENCES Staff(staffNo)
    );
    """
staff_query = """
    CREATE TABLE IF NOT EXISTS Staff (
    staffNo VARCHAR(10) NOT NULL PRIMARY KEY,
    name VARCHAR(30) NOT NULL,
    address VARCHAR(30) NOT NULL,
    phoneNo INT NOT NULL UNIQUE,
    DOB TEXT,
    position VARCHAR(30) NOT NULL,
    salary INT,
    clinicNo VARCHAR(10) NOT NULL,
    FOREIGN KEY (clinicNo) REFERENCES Clinic
    );
    """
owner_query = """
    CREATE TABLE IF NOT EXISTS Owner(
    ownerNo VARCHAR(10) NOT NULL PRIMARY KEY,
    name VARCHAR(30),
    phoneNo INT,
    address VARCHAR(30) NOT NULL
    );
    """
pet_query = """
    CREATE TABLE IF NOT EXISTS Pet (
    petNo VARCHAR(10) NOT NULL PRIMARY KEY,
    name VARCHAR(30) NOT NULL,
    species VARCHAR(30) NOT NULL,
    breed VARCHAR(30) NOT NULL,
    DOB TEXT,
    color VARCHAR(10),
    ownerNo VARCHAR(10) NOT NULL,
    clinicNo VARCHAR(10) NOT NULL,
    FOREIGN KEY (ownerNo) REFERENCES Owner,
    FOREIGN KEY (clinicNo) REFERENCES Clinic
    );
    """
exam_query = """
    CREATE TABLE IF NOT EXISTS Examination (
    examNo VARCHAR(10) NOT NULL PRIMARY KEY,
    chiefComplaint VARCHAR(100) NOT NULL,
    description VARCHAR(100),
    dateSeen TEXT NOT NULL,
    actions VARCHAR(100),
    staffNo VARCHAR(10) NOT NULL,
    petNo VARCHAR(10) NOT NULL,
    FOREIGN KEY (staffNo) REFERENCES Staff,
    FOREIGN KEY (petNo) REFERENCES Pet
    );
    """

# Execute querys, the result is stored in cursor
cursor.execute(clinic_query)
cursor.execute(staff_query)
cursor.execute(owner_query)
cursor.execute(pet_query)
cursor.execute(exam_query)
```

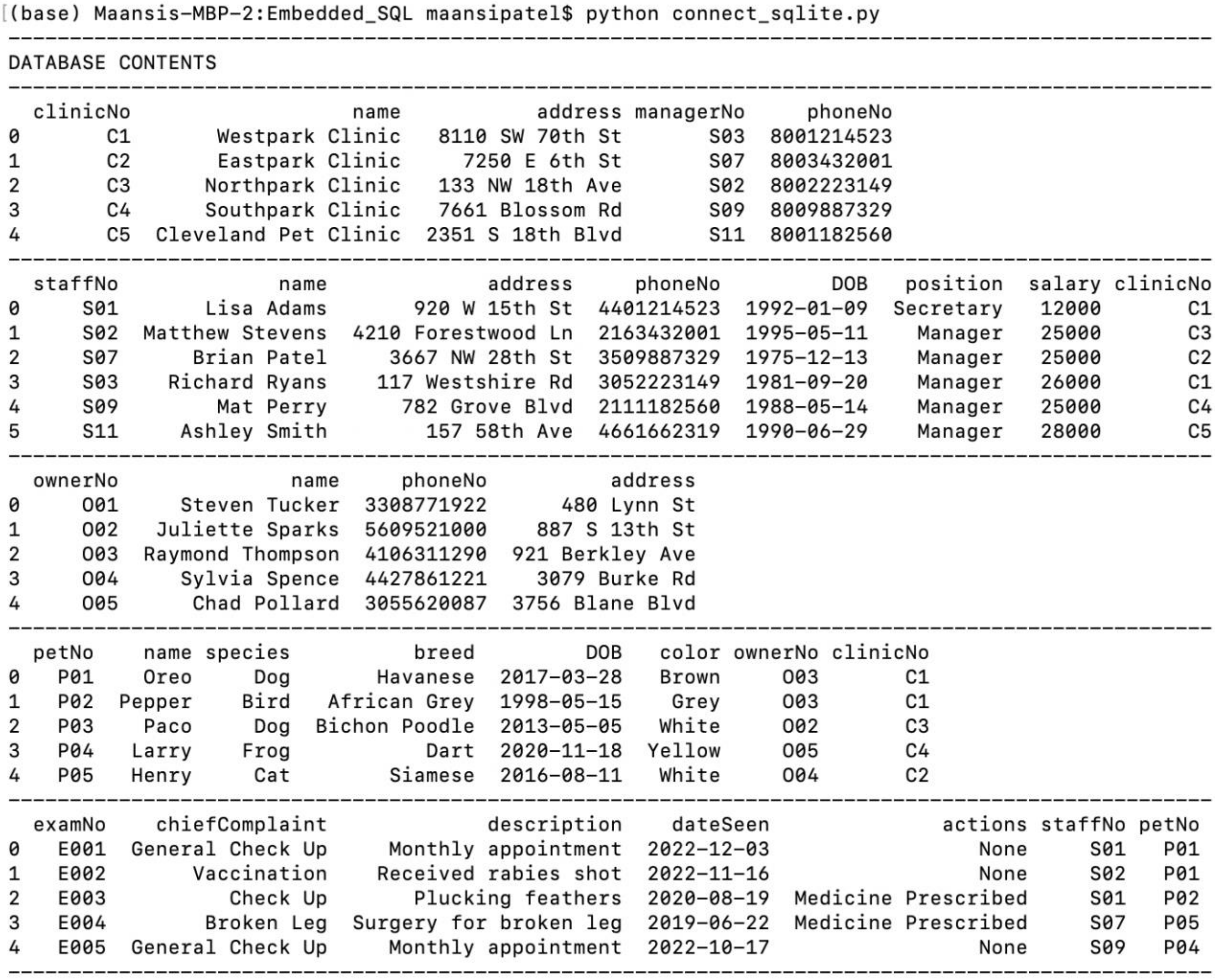
b. Create at least 5 tuples for each relation in your database.



```
# Insert rows into table
clinic_insert = """
    INSERT OR IGNORE INTO Clinic
    VALUES
        ('C1', 'Westpark Clinic', '8110 SW 70th St', 'S03', 8001214523),
        ('C2', 'Eastpark Clinic', '7250 E 6th St', 'S07', 8003432001),
        ('C3', 'Northpark Clinic', '133 NW 18th Ave', 'S02', 8002223149),
        ('C4', 'Southpark Clinic', '7661 Blossom Rd', 'S09', 8009887329),
        ('C5', 'Cleveland Pet Clinic', '2351 S 18th Blvd', 'S11', 8001182560);
    """
staff_insert = """
    INSERT OR IGNORE INTO Staff
    VALUES
        ('S01', 'Lisa Adams', '920 W 15th St', 4401214523, '1992-01-09', 'Secretary', 12000, 'C1'),
        ('S02', 'Matthew Stevens', '4210 Forestwood Ln', 2163432001, '1995-05-11', 'Manager', 25000, 'C3'),
        ('S07', 'Brian Patel', '3667 NW 28th St', 3509887329, '1975-12-13', 'Manager', 25000, 'C2'),
        ('S03', 'Richard Ryans', '117 Westshire Rd', 3052223149, '1981-09-20', 'Manager', 26000, 'C1'),
        ('S09', 'Mat Perry', '782 Grove Blvd', 2111182560, '1988-05-14', 'Manager', 25000, 'C4'),
        ('S11', 'Ashley Smith', '157 58th Ave', 4661662319, '1990-06-29', 'Manager', 28000, 'C5');
    """
owner_insert = """
    INSERT OR IGNORE INTO Owner
    VALUES
        ('O01', 'Steven Tucker', 3308771922, '480 Lynn St'),
        ('O02', 'Juliette Sparks', 5609521000, '887 S 13th St'),
        ('O03', 'Raymond Thompson', 4106311290, '921 Berkley Ave'),
        ('O04', 'Sylvia Spence', 4427861221, '3079 Burke Rd'),
        ('O05', 'Chad Pollard', 3055620087, '3756 Blane Blvd');
    """
 pet_insert = """
     INSERT OR IGNORE INTO Pet
     VALUES
         ('P01', 'Oreo', 'Dog', 'Havanese', '2017-03-28', 'Brown', 'O03', 'C1'),
         ('P02', 'Pepper', 'Bird', 'African Grey', '1998-05-15', 'Grey', 'O03', 'C1'),
         ('P03', 'Paco', 'Dog', 'Bichon Poodle', '2013-05-05', 'White', 'O02', 'C3'),
         ('P04', 'Larry', 'Frog', 'Dart', '2020-11-18', 'Yellow', 'O05', 'C4'),
         ('P05', 'Henry', 'Cat', 'Siamese', '2016-08-11', 'White', 'O04', 'C2');
     """
 exam_insert = """
     INSERT OR IGNORE INTO Examination
     VALUES
         ('E001', 'General Check Up', 'Monthly appointment', '2022-12-03', 'None', 'S01', 'P01'),
         ('E002', 'Vaccination', 'Received rabies shot', '2022-11-16', 'None', 'S02', 'P01'),
         ('E003', 'Check Up', 'Plucking feathers', '2020-08-19', 'Medicine Prescribed', 'S01', 'P02'),
         ('E004', 'Broken Leg', 'Surgery for broken leg', '2019-06-22', 'Medicine Prescribed', 'S07', 'P05'),
         ('E005', 'General Check Up', 'Monthly appointment', '2022-10-17', 'None', 'S09', 'P04');
     """

 cursor.execute(clinic_insert)
 cursor.execute(staff_insert)
 cursor.execute(owner_insert)
 cursor.execute(pet_insert)
 cursor.execute(exam_insert)
```

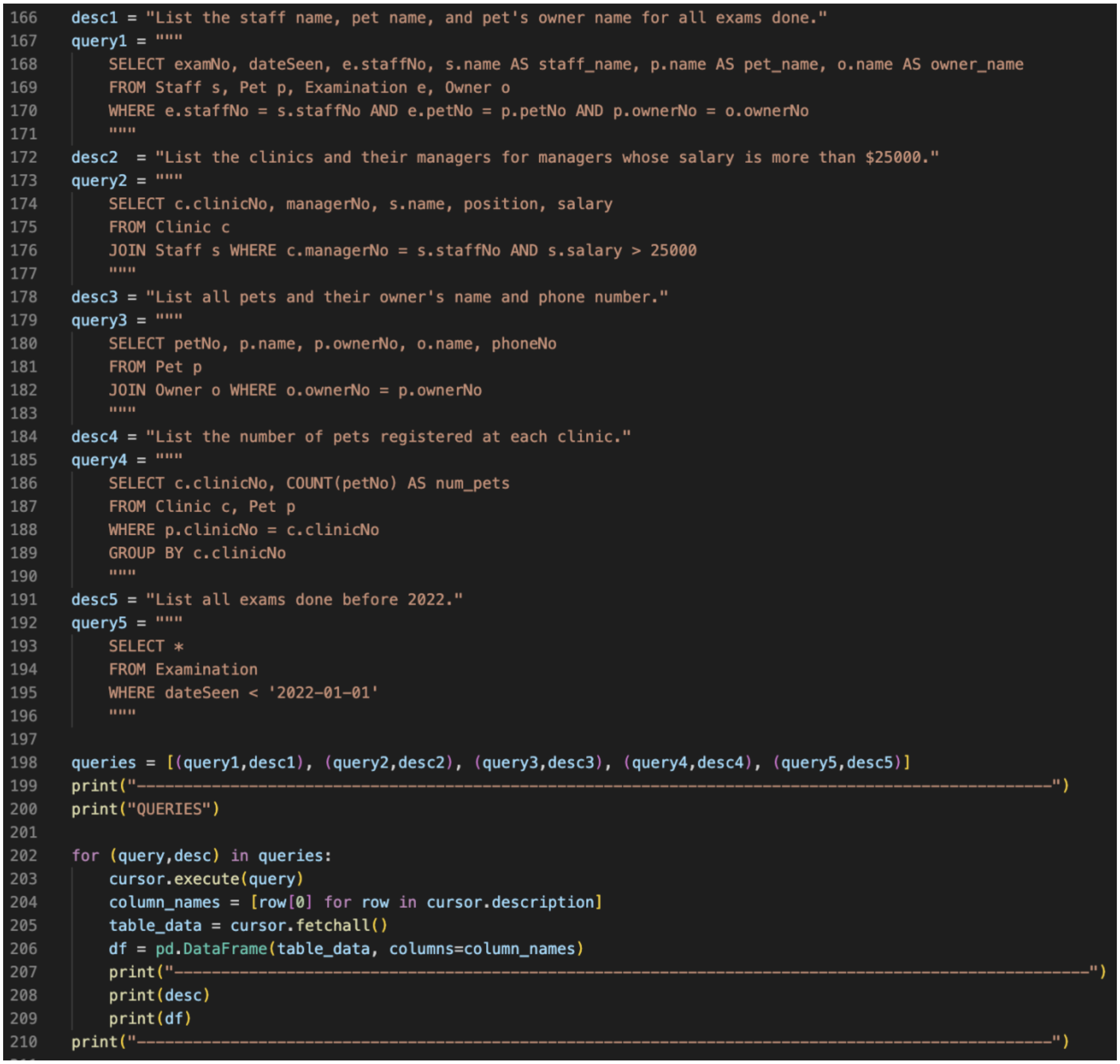


```python
# Select data
query1 = """
    SELECT *
    FROM Clinic
    """
query2 = """
    SELECT *
    FROM Staff
    """
query3 = """
    SELECT *
    FROM Owner
    """
query4 = """
    SELECT *
    FROM Pet
    """
query5 = """
    SELECT *
    FROM Examination
    """

queries = [query1, query2, query3, query4, query5]
print("------------------------------------------------------------------------------------------------")
print("DATABASE CONTENTS")

for query in queries:
    cursor.execute(query)
    column_names = [row[0] for row in cursor.description]
    table_data = cursor.fetchall()
    df = pd.DataFrame(table_data, columns=column_names)
    print("------------------------------------------------------------------------------------------------")
    print(df)
```

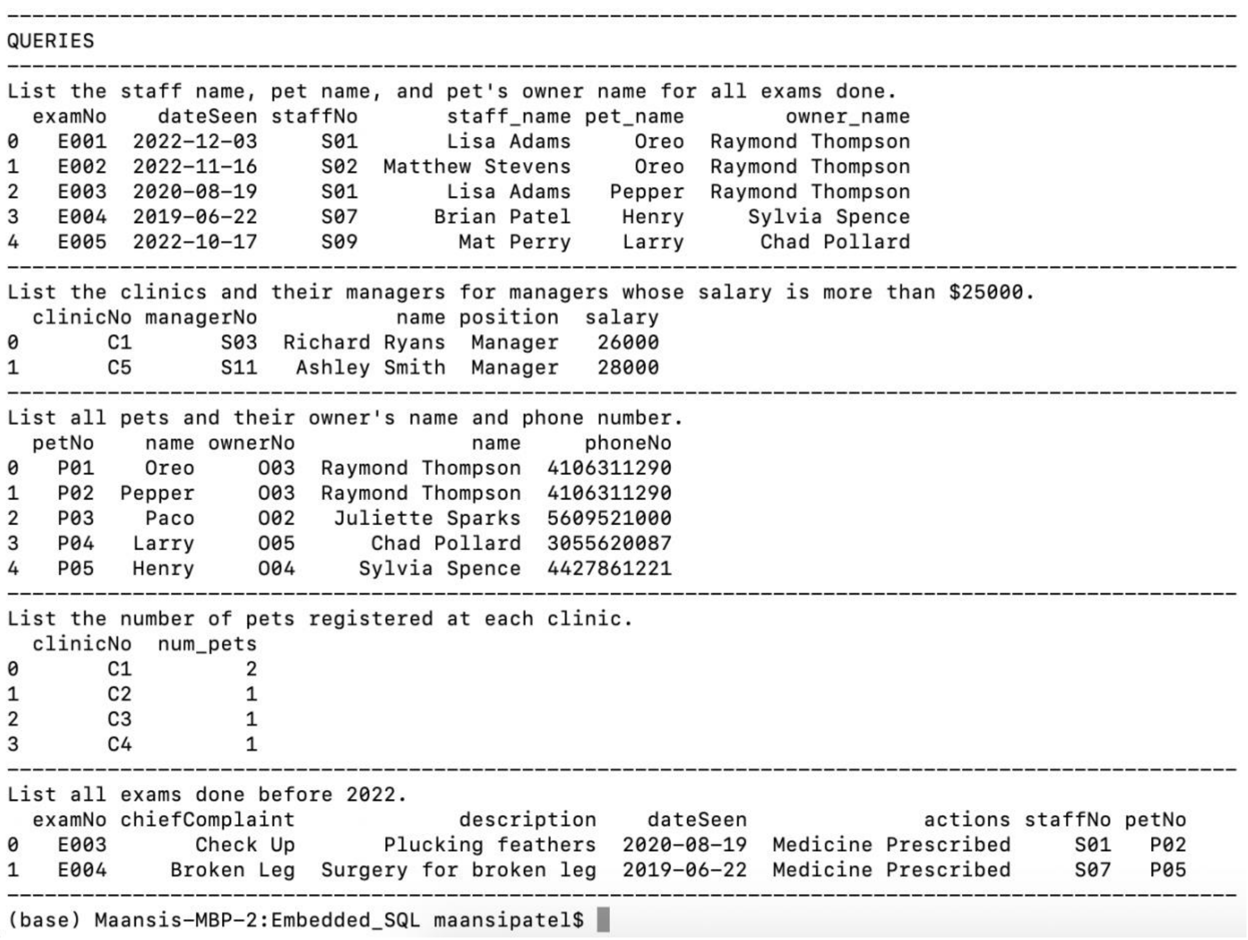


```
(base) Maansis-MBP-2:Embedded_SQL maansipatel$ python connect_sqlite.py
------------------------------------------------------------------------------------------------
DATABASE CONTENTS
------------------------------------------------------------------------------------------------
  clinicNo                  name           address managerNo     phoneNo
0       C1       Westpark Clinic    8110 SW 70th St       S03  8001214523
1       C2       Eastpark Clinic      7250 E 6th St       S07  8003432001
2       C3      Northpark Clinic    133 NW 18th Ave       S02  8002223149
3       C4      Southpark Clinic    7661 Blossom Rd       S09  8009887329
4       C5  Cleveland Pet Clinic  2351 S 18th Blvd       S11  8001182560
------------------------------------------------------------------------------------------------
  staffNo             name            address     phoneNo         DOB   position  salary clinicNo
0     S01       Lisa Adams      920 W 15th St  4401214523  1992-01-09  Secretary   12000       C1
1     S02  Matthew Stevens  4210 Forestwood Ln  2163432001  1995-05-11    Manager   25000       C3
2     S07      Brian Patel     3667 NW 28th St  3509887329  1975-12-13    Manager   25000       C2
3     S03    Richard Ryans    117 Westshire Rd  3052223149  1981-09-20    Manager   26000       C1
4     S09        Mat Perry      782 Grove Blvd  2111182560  1988-05-14    Manager   25000       C4
5     S11     Ashley Smith        157 58th Ave  4661662319  1990-06-29    Manager   28000       C5
------------------------------------------------------------------------------------------------
  ownerNo              name     phoneNo           address
0     O01     Steven Tucker  3308771922       480 Lynn St
1     O02  Juliette Sparks  5609521000     887 S 13th St
2     O03  Raymond Thompson  4106311290  921 Berkley Ave
3     O04     Sylvia Spence  4427861221     3079 Burke Rd
4     O05      Chad Pollard  3055620087  3756 Blane Blvd
------------------------------------------------------------------------------------------------
  petNo    name species          breed         DOB   color ownerNo clinicNo
0   P01    Oreo     Dog       Havanese  2017-03-28   Brown     O03       C1
1   P02  Pepper    Bird   African Grey  1998-05-15    Grey     O03       C1
2   P03    Paco     Dog  Bichon Poodle  2013-05-05   White     O02       C3
3   P04   Larry    Frog           Dart  2020-11-18  Yellow     O05       C4
4   P05   Henry     Cat        Siamese  2016-08-11   White     O04       C2
------------------------------------------------------------------------------------------------
  examNo    chiefComplaint           description    dateSeen              actions staffNo petNo
0   E001  General Check Up    Monthly appointment  2022-12-03                 None     S01   P01
1   E002       Vaccination   Received rabies shot  2022-11-16                 None     S02   P01
2   E003          Check Up      Plucking feathers  2020-08-19  Medicine Prescribed     S01   P02
3   E004        Broken Leg  Surgery for broken leg  2019-06-22  Medicine Prescribed     S07   P05
4   E005  General Check Up    Monthly appointment  2022-10-17                 None     S09   P04
------------------------------------------------------------------------------------------------
```

c. Develop 5 SQL queries using embedded SQL (see Python tutorial).



```
desc1 = "List the staff name, pet name, and pet's owner name for all exams done."
query1 = """
    SELECT examNo, dateSeen, e.staffNo, s.name AS staff_name, p.name AS pet_name, o.name AS owner_name
    FROM Staff s, Pet p, Examination e, Owner o
    WHERE e.staffNo = s.staffNo AND e.petNo = p.petNo AND p.ownerNo = o.ownerNo
    """
desc2  = "List the clinics and their managers for managers whose salary is more than $25000."
query2 = """
    SELECT c.clinicNo, managerNo, s.name, position, salary
    FROM Clinic c
    JOIN Staff s WHERE c.managerNo = s.staffNo AND s.salary > 25000
    """
desc3 = "List all pets and their owner's name and phone number."
query3 = """
    SELECT petNo, p.name, p.ownerNo, o.name, phoneNo
    FROM Pet p
    JOIN Owner o WHERE o.ownerNo = p.ownerNo
    """
desc4 = "List the number of pets registered at each clinic."
query4 = """
    SELECT c.clinicNo, COUNT(petNo) AS num_pets
    FROM Clinic c, Pet p
    WHERE p.clinicNo = c.clinicNo
    GROUP BY c.clinicNo
    """
desc5 = "List all exams done before 2022."
query5 = """
    SELECT *
    FROM Examination
    WHERE dateSeen < '2022-01-01'
    """

queries = [(query1,desc1), (query2,desc2), (query3,desc3), (query4,desc4), (query5,desc5)]
print("--------------------------------------------------------------------------------------------------")
print("QUERIES")

for (query,desc) in queries:
    cursor.execute(query)
    column_names = [row[0] for row in cursor.description]
    table_data = cursor.fetchall()
    df = pd.DataFrame(table_data, columns=column_names)
    print("--------------------------------------------------------------------------------------------------")
    print(desc)
    print(df)
print("--------------------------------------------------------------------------------------------------")
```



```
-------------------------------------------------------------------------------------------------
QUERIES
-------------------------------------------------------------------------------------------------
List the staff name, pet name, and pet's owner name for all exams done.
  examNo    dateSeen staffNo       staff_name pet_name        owner_name
0   E001  2022-12-03     S01       Lisa Adams     Oreo  Raymond Thompson
1   E002  2022-11-16     S02  Matthew Stevens     Oreo  Raymond Thompson
2   E003  2020-08-19     S01       Lisa Adams   Pepper  Raymond Thompson
3   E004  2019-06-22     S07      Brian Patel    Henry     Sylvia Spence
4   E005  2022-10-17     S09        Mat Perry    Larry      Chad Pollard
-------------------------------------------------------------------------------------------------
List the clinics and their managers for managers whose salary is more than $25000.
  clinicNo managerNo           name position  salary
0       C1       S03  Richard Ryans  Manager   26000
1       C5       S11   Ashley Smith  Manager   28000
-------------------------------------------------------------------------------------------------
List all pets and their owner's name and phone number.
  petNo    name ownerNo              name     phoneNo
0   P01    Oreo     003  Raymond Thompson  4106311290
1   P02  Pepper     003  Raymond Thompson  4106311290
2   P03    Paco     002   Juliette Sparks  5609521000
3   P04   Larry     005      Chad Pollard  3055620087
4   P05   Henry     004     Sylvia Spence  4427861221
-------------------------------------------------------------------------------------------------
List the number of pets registered at each clinic.
  clinicNo  num_pets
0       C1         2
1       C2         1
2       C3         1
3       C4         1
-------------------------------------------------------------------------------------------------
List all exams done before 2022.
  examNo chiefComplaint             description    dateSeen             actions staffNo petNo
0   E003       Check Up       Plucking feathers  2020-08-19  Medicine Prescribed     S01   P02
1   E004     Broken Leg  Surgery for broken leg  2019-06-22  Medicine Prescribed     S07   P05
-------------------------------------------------------------------------------------------------
(base) Maansis-MBP-2:Embedded_SQL maansipatel$ ▌
```

d. Upload all the code and documentation to GitHub.

GitHub: https://github.com/maansisp/CSC423-Project.git