Setting Up a PostgreSQL Database for Sterling Vet Services

You are a freelance developer who has accepted a job to develop a database for a veterinarian company. They have given you a small CSV file and asked you to populate the database with a single table holding the data in the file. There are notes attached asking for you to add a weight for Petra of 12.5lbs and to add a new pet Esmerelda who is a 2.5 yr old female Angus cow that weighs 1250 lbs, has no health issues, is vaccinated and is owned by the Garcia Ranch.

Setup PostgreSQL for cloud_user Access

Create a cloud_user database and a cloud_user user with a password. Grant all priveleges to database cloud_user by user cloud_user.

Start psql

- `sudo -u postgres psql`

Create Database

- `CREATE DATABASE cloud_user;`

Create User

- `CREATE USER cloud_user WITH ENCRYPTED PASSWORD 'cloud_user';`

Grant Access to Database by User

- `GRANT ALL PRIVILEGES ON DATABASE cloud_user TO cloud_user;`

Leave psql

- `\q`

Imports and database connection string. The PostgreSQL standard port is 5432.

```
import pandas as pd
import psycopg2

CONNECT_DB = "host=localhost port=5432 dbname=cloud_user user=cloud_user password=cloud_user"
```

Create Table

Create a table with columns matching the vets.csv file.

```python
create_table_query = '''CREATE TABLE customers (
    id SERIAL PRIMARY KEY,
    name varchar (25),
    owner varchar (25),
    type varchar (25),
    breed varchar (25),
    color varchar (25),
    age smallint,
    weight float4,
    gender varchar (1),
    health_issues boolean,
    indoor_outdoor varchar(10),
    vaccinated boolean
); '''

try:
    # Make connection to db
    cxn = psycopg2.connect(CONNECT_DB)

    # Create a cursor to db
    cur = cxn.cursor()

    # Send sql query to request
    cur.execute(create_table_query)
    records = cxn.commit()

except (Exception, psycopg2.Error) as error :
    print ("Error while connecting to PostgreSQL", error)

finally:
    #closing database connection.
    if(cxn):
        cur.close()
        cxn.close()
        print("PostgreSQL connection is closed")

    print(f'Records: {records}')
```

Add the Data to Table

Use a try..except..finally block to load the data from vet.csv into the table just created.

```python
try:
    # Make connection to db
    cxn = psycopg2.connect(CONNECT_DB)

    # Create a cursor to db
    cur = cxn.cursor()

    # read file, copy to db
    with open('./vet.csv', 'r') as f:
        # skip first row, header row
        next(f)
        cur.copy_from(f, 'customers', sep=",")
        cxn.commit()

except (Exception, psycopg2.Error) as error :
    print ("Error while connecting to PostgreSQL", error)

finally:
    #closing database connection.
    if(cxn):
        cur.close()
        cxn.close()
        print("PostgreSQL connection is closed")
        print("customers table populated")
```

Selecting Data From a Server

Create a function to execute a SQL statement to fetch records from the database. Use try..except..finally and .fetchall(). The user should use LIMIT or TOP() to limit their results.

```python
def db_server_fetch(sql_query):
    try:
        # Make connection to db
        cxn = psycopg2.connect(CONNECT_DB)

        # Create a cursor to db
        cur = cxn.cursor()

        # Send sql query to request
        cur.execute(sql_query)
        records = cur.fetchall()

    except (Exception, psycopg2.Error) as error :
        print ("Error while connecting to PostgreSQL", error)

    finally:
```

```
            #closing database connection.
            if(cxn):
                cur.close()
                cxn.close()
                print("PostgreSQL connection is closed")
            return records
```

Get all data from the database.

```
select_query = '''SELECT * FROM customers;'''

records = db_server_fetch(select_query)
print(records)
```

Change Data in Database

Create a function to execute a SQL statement to update records in the database. Use try..except..finally.

```
def db_server_change(sql_query):
    try:
        # Make connection to db
        cxn = psycopg2.connect(CONNECT_DB)

        # Create a cursor to db
        cur = cxn.cursor()

        # Send sql query to request
        cur.execute(sql_query)
        records = cxn.commit()

    except (Exception, psycopg2.Error) as error :
        print ("Error while connecting to PostgreSQL", error)

    finally:
        #closing database connection.
        if(cxn):
            cur.close()
            cxn.close()
            print("PostgreSQL connection is closed")
        return records
```

Add a new record with the following data:

Esmerelda is a 2.5 yr old female Angus cow that weighs 1250 lbs, has no health issues, and is vaccinated and

owned by the Garcia Ranch.

```python
add_data = '''INSERT INTO customers
    (id, name, owner, type, breed, color, age, weight, gender, health_issues,
indoor_outdoor, vaccinated)
    VALUES
    (7, 'Esmerelda', 'Garcia Ranch', 'Cattle', 'Angus', 'black', 2.5, 1250,
'f', false, 'outdoor', true);'''

db_server_change(add_data)
```

Check Record Added

```python
select_query = '''SELECT * FROM customers WHERE name = 'Esmerelda';'''

records = db_server_fetch(select_query)
print(records)
```

Update Petra's weight.

Make Petra's weight 12.5.

```python
update_data = '''UPDATE customers SET weight = 12.5 WHERE name = 'Petra';'''

db_server_change(update_data)
```

Check Record

```python
select_query = '''SELECT * FROM customers WHERE name = 'Petra';'''

records = db_server_fetch(select_query)
print(records)
```