Stage V-A: Construction: Tables in PostgreSQL, Queries in SQL

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Create_Tables:

```
CREATE TABLE TOWN
   (Tcode varchar(5) NOT NULL UNIQUE PRIMARY KEY,
   Tname text NOT NULL,
   County text,
   Sustain_rating text NOT NULL);


CREATE TABLE RESTAURANT
   (Rname text NOT NULL UNIQUE PRIMARY KEY,
   Tcode varchar(5) NOT NULL,
   Vegan_friendly boolean,
   Rest_sustain_rating text NOT NULL,
         Address text NOT NULL,
         FOREIGN KEY (Tcode) REFERENCES TOWN (Tcode));


CREATE TABLE VEGAN_OPTIONS
   (Rname text NOT NULL PRIMARY KEY,
   Options text,
   FOREIGN KEY (Rname) REFERENCES RESTAURANT (Rname));


CREATE TABLE SUSTAINABILITY
   (Tcode varchar(5) NOT NULL PRIMARY KEY,
   CO2_Emissions decimal NOT NULL,
   Energy_per_acre integer NOT NULL,
   Sustain_rating text NOT NULL,
   Perc_renew_energy integer NOT NULL,
   FOREIGN KEY (Tcode) REFERENCES TOWN (Tcode));
```

Python Script to Read in, Format, and Load in

```
# Script to read in data from 4 files and then write them into 4 tables in our database

#! /usr/bin/python2

import psycopg2
from config import config

if __name__ == '__main__':
```

```
# Iniatlize connection
conn = None
	# read connection parameters
params = config()

	# connect to the PostgreSQL server
print('Connecting to the %s database...' % params['database'])
conn = psycopg2.connect(**params)
print('Connected.\n')
conn.autocommit = True

# create a cursor
cur = conn.cursor()

print('Loading in town data...')

# Open file with town data
f = open("town.txt")

# Go through line by line
for y in f:
	# Format and get each part of the line
	x = (y.split('; '))
	one = str(x[0].strip())
	two = str(x[1].strip())
	three = str(x[2].strip())
	four = str(x[3].strip())
	# Insert into town table in form of a psql query
	cur.execute("INSERT INTO TOWN VALUES('%s', '%s', '%s', '%s');" %(one, two, three, four))
# Close file
f.close()

print('Loading in restaurant data...')

# Open file with restaurants data
f = open("restaurants.txt")

# Go through line by line
for y in f:
	# Format and get each part of the line
	x = (y.split('; '))
	one = str(x[0].strip())
	two = str(x[1].strip())
```

```
            three = str(x[2].strip())
            four = str(x[3].strip())
            five = str(x[4].strip())
            # Insert into restaurant table in form of a psql query
            cur.execute("INSERT INTO RESTAURANT VALUES('%s', '%s', '%s', '%s', '%s');" %(one, two,
three, four, five))
    # Close file
    f.close()

    print('Loading in vegan options data...')

    # Open file with vegan options data
    f = open("vegan_options.txt")

    # Go through line by line
    for y in f:
            # Format and get each part of the line
            x = (y.split('; '))
            one = str(x[0].strip())
            two = str(x[1].strip())
            # Insert into vegan options table in form of a psql query
            cur.execute("INSERT INTO VEGAN_OPTIONS VALUES('%s', '%s');" %(one, two))
    # Close file
    f.close()

    print('Loading in sustainability data...')

    # Open file with sustainability data
    f = open("sustainability.txt")

    # Go through line by line
    for y in f:
            # Format and get each part of the line
            x = (y.split('; '))
            one = str(x[0].strip())
            two = str(x[1].strip())
            three = str(x[2].strip())
            four = str(x[3].strip())
            five = str(x[4].strip())
            # Insert into sustainability table in form of a psql query
            cur.execute("INSERT INTO SUSTAINABILITY VALUES('%s', '%s', '%s', '%s', '%s');" %(one,
two, three, four, five))
    # Close file
```

```
    f.close()

    print('All data succesfully loaded and inserted.')

    # Close connection to db
    cur.close()
```

Queries

```
SELECT * FROM TOWN;


SELECT * FROM TOWN
WHERE Tname = 'Atlantic City';


SELECT Tcode, Tname, Sustain_rating FROM TOWN
WHERE County = 'Bergen';


SELECT Tname, County, Sustain_rating FROM TOWN
WHERE Tcode = '08601';


SELECT * FROM TOWN
WHERE Sustain_rating = 'High';


SELECT * FROM RESTAURANT;


SELECT Rname, Tcode, Address FROM RESTAURANT
WHERE Rest_sustain_rating = 'Average';


SELECT Rname, Tcode, Address FROM RESTAURANT
WHERE Rname = 'Greens and Grains';


SELECT Rname, Tcode, Rest_sustain_rating, Address FROM RESTAURANT
WHERE Tcode = '08723';


SELECT * FROM RESTAURANT
```

```
WHERE Vegan_friendly = 't';


SELECT * FROM RESTAURANT
WHERE Address = '4 Hamburg Ave (at Loomis), Sussex, New Jersey';


SELECT * FROM VEGAN_OPTIONS;


SELECT * FROM VEGAN_OPTIONS
WHERE Rname = 'Leatherhead Pub';


SELECT Rname FROM VEGAN_OPTIONS
WHERE Options = 'hummus plate, cauliflower pizza, fried artichoke plus salads, veggie sandwiches';


SELECT * FROM SUSTAINABILITY;


SELECT * FROM SUSTAINABILITY
WHERE Tcode = '08043';


SELECT * FROM SUSTAINABILITY
WHERE CO2_Emissions <= 38;


SELECT Tcode, Energy_per_acre FROM SUSTAINABILITY
WHERE Energy_per_acre >= 15;


SELECT Tcode, Sustain_rating FROM SUSTAINABILITY
WHERE Sustain_rating = 'Average';


SELECT Tcode, Perc_renew_energy FROM SUSTAINABILITY
WHERE Perc_renew_energy >= 25;


SELECT Tname, County, SUSTAINABILITY.*
FROM TOWN JOIN SUSTAINABILITY on TOWN.Tcode = SUSTAINABILITY.Tcode
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```
WHERE TOWN.Sustain_rating = 'Average';


SELECT RESTAURANT.Rname, Tcode, Vegan_Friendly, Vegan_options
FROM RESTAURANT JOIN VEGAN_OPTIONS ON RESTAURANT.Rname =
VEGAN_OPTIONS.Rname
WHERE Vegan_Friendly = 't';


SELECT Tname, Sustain_Rating, Rname, Address
FROM TOWN JOIN RESTAURANT ON RESTAURANT.Tcode = TOWN.Tcode
WHERE Sustain_rating = 'Low';

SELECT COUNT(TOWN.Tcode) AS COUNT_TOWNS_OVER_15_EPA
FROM TOWN JOIN SUSTAINABILITY ON TOWN.Tcode = SUSTAINABILITY.Tcode
WHERE Energy_per_acre > 15;

SELECT Tname, Rname, SUSTAINABILITY.Sustain_rating, CO2_Emissions
FROM
(SELECT TOWN.Tname, RESTAURANT.*
FROM TOWN JOIN RESTAURANT on RESTAURANT.Tcode = TOWN.Tcode
WHERE Sustain_rating = 'Low') AS TOWN_RESTAURANT_LOW
JOIN SUSTAINABILITY ON SUSTAINABILITY.Tcode = TOWN_RESTAURANT_LOW.Tcode
WHERE CO2_Emissions < 35;

SELECT Tname, Rname, Vegan_Options
FROM
(SELECT Vegan_Options, RESTAURANT.Rname, Tcode
FROM VEGAN_OPTIONS JOIN RESTAURANT on RESTAURANT.Rname =
VEGAN_OPTIONS.Rname)
AS RESTAURANT_VEGAN_OPTIONS
JOIN TOWN ON TOWN.Tcode = RESTAURANT_VEGAN_OPTIONS.Tcode
WHERE County = 'Bergen';
```