Civic Story Database Project – Spring 2020

Collaborative Meeting 1

"Database Systems" and "Race, Gender and the News"

Due: February 3 by end of class

CS Students:

Name	TCNJ Email
Casey Futterman	futterc1@tcnj.edu
Joseph Candiano	candiaj1@tcnj.edu
Sam Hajnasrollahi	hajnass1@tcnj.edu
Babette Chao	chaob2@tcnj.edu
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Journalism Students:

Name	TCNJ Email
Naira Baltaian	baltain1@tcnj.edu
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Objective:

The objective of this exercise is for students in the two classes to get to know each other, develop a shared understanding of the goals of the Civic Story project, and begin to brainstorm ideas for the redesign of the database at the backend of the Civic Story website. Here is what we know about Civic Story's goals:

- They would like their website to be able to accommodate and highlight its growing media archive. This archive includes:
  - Video news reports that reflect its brand of solutions journalism.
  - Audio and video recordings of forums on the state of the

media.

- They would like to better understand the information needs of their audience and potential audiences.

- They want to provide appropriate access to what they hope will be a growing number of donors, supporters, volunteers, and media partners.

- They are interested in accommodating new kinds of content related to the state of New Jersey media, the need for the kind of the work they are doing, and the impact of their work. This might include such items as GIS data and interactive databases.

For the computer science class, these priorities might lead to questions about the kinds of users the database will need to accommodate, the level of access each type of user will need, the workflow that the database will need to facilitate, and the level of security that will be required. The journalism class will want to consider how to get the information that Civic Story and the database designers need.

Instructions:
You will work on this exercise in groups of six students. Each group will have four CSC students and two JPW students.

1. Using a browser such as Chrome, Safari, or Firefox, navigate to https://www.civicstory.org. Explore the site as thoroughly as possible.
2. Identify the functionality currently provided by Civic Story. List the functions and be as specific as possible. For each function or module, note whether it works as expected and any errors obtained.
3. Brainstorm ideas for how Civic Story can be organized to meet the needs of its range of stakeholders. As you discuss and brainstorm, jot down notes, ideas and responsibilities on this sheet.

Civic Story Database Project – Spring 2020

Deliverables:

Database Design

- Via Canvas, submit responses to the questions above in a .doc or .docx or .pdf file. One submission is required per group.

Race, Gender and the News

- Via Canvas, submit responses to the questions above in a .doc or .docx or .pdf file. One submission is required per group.

Purpose of the Project:

Currently the purpose of this project is to gain knowledge and understanding of a typical database development process. Then to apply concepts we learn in the course to work as a team a make a database for a real scenario. We will also work to strengthen skills in problems solving and critical thinking used throughout all our coursework to use in this development. In all this team work we will strengthen our communication, time management, and teamwork skills, especially as we work interdisciplinarily. Lastly by working with civicstory.org we will inevitably gain a better understanding of different social issues and how these issues are reported and shared through the abilities of the internet.

For CivicStory's website, those in the JPW321 course are looking to reorganize its database to create a better functionality and usability for both the journalists and the consumers. Through this project, we will be able to learn more about the technological aspects of a website and its content. Through interacting and reorganizing the database, we can gain a better understanding of how both consumers and reporters alike use archives to learn information on specific topics, beats and dates of publication.

Functionality Currently Available:

(Also note whether it works as expected, any errors obtained, whether the functionality you see is hosted on the site or embedded from elsewhere. For example, is media content hosted on site or on a site such as YouTube or Soundcloud? If the latter, does this pose concerns about persistence?)

- Search for stories: keyword search works fine
- Sign up for newsletters: Asks for the user's email address
- Contact: Contact page seems to be working perfectly
- Donate: The donation page seems to be working
- Blog: The Blog page is structured well and the functionality works
- Podcast: seems good, if there was a search functionality for the podcasts it would've been great

- Videos: Videos are embedded on the website using youtube (won't open youtube in a new tab)
- About Us: Not structured/organized as well but functionality wise, it is working
- Forums: functionality seems to be working, structured well, includes dates
- Home Page: Home page does not look organized

Civic Story Database Project – Spring 2020

What do you infer about the database schema? What functions should a database like this include, as a rule?

This is a current inference as to what the database schema could look like.

Home

Videos	Newsletters	Blog	About_CivicStory	Upcoming_Events	Support_Civic Story	Business_Sponsors

About

Mission	Brief_History	Creative_Team	Trustees_&_ Advisors	Supporters	News_Partners	Links

Videos

Forums	Cities	Environment	Arts	Humanities	Series

Podcast

Title	Length	Date	File

Blog

Title	Date	Image	Brief_Description

Forums

All_Forums	Ecology_&_Economy	News_&_Democracy	Renewable_ Energy	What_should_News_be?	Civic-Based_ News	Civics

Functions that a database like this should include are being able to add to the database, remove from the database, make calls to retrieve information from the database, and backing up the database.

Resources / Skills Needed:

- Civicstory.org
- PostgreSQL
- Moral understanding of both the problem and the solution to organizing a better, more efficient database.

Next Steps and Responsibilities:

Brainstorm about functionality and features to add to site

Prepare for Thursday's in-class project pitch by looking over the Civic Story website and view the video news reports, audio, video recordings, etc, to understand the information of the audience.

Additional Comments / Questions:
How can we take CivicStory's goal of sustainability reporting and service journalism and incorporate that into the process of this project? Something to think about.

Another thing to think about: which scenarios would occur to determine which users of the site need access to specific parts of it? What are the demographics of the people who access the database/back-end of the website?

What are other websites, similar in theme/design, doing both backend and content based.

Director had a large focus on sustainability and climate change. "Democracy is complicated, so you need complicated information and news". Which they then break down for more people to understand.

Stage II – Inception: Project Proposal and Specifications
Sam Hajnasrollahi, Matthew Izzo, Joseph Candiano, Babette Chao

Team members will research the problem domain, actively participate in meetings, brainstorm ideas, and collaboratively define an innovative module that will provide data and queries to meet the identified need. A suitable project module:

- Is large enough to require several persons' effort for it to be completed on time.
    - The project is large enough to require several persons' effort for it to be completed on time as users can search for either a municipality, or a whole county within New Jersey to query our database and give the user the sustainability statistics for that municipality or county. Based on the criteria in the project's document, this idea seems to be large enough and viable.
- Will implement a database with many entities and innovative queries.
    - We would like to use the dataset of New Jersey's municipalities and their respective sustainability numbers for users to search. We will research local restaurants with plant-based options to populate the other part of our database. In addition, users can search for either a municipality, or a whole county within New Jersey to query our database and give the user the sustainability statistics for that municipality or county.
- Has different types of users with different levels of access.
    - Yes, we will have a superuser, which bypasses all permission checks. Superusers can run commands that can destabilize or crash the database server. We will also have a database admin for managing the database. In addition we will have a read/write role/access.
- Will provide a simple and easy to use web-based user interface for the module.
    - We will try to keep the user-interface as consistent and as simple as possible for the users, for the best experience.
- Will capitalize on each team member's skills, interests, background, and experience.
    - Some of the team members have had experience with PostgreSQL. Those that are not as experienced will be learning on how to use it, in addition to that, we will be working with journalism students that will be helping up with the project and database specifically, while giving out ideas to the developers.
- Each team will pitch their project idea in class, and gain approval from me for the project idea and scope.
    - In addition to pitching our project idea in class, we followed up with an email to improve the project idea.

Food pitch idea:

- Users enter information about their food choices (relating to sustainability, plant based, etc.) and these will all be collected to a database.
- Possibly data can then be used to gather information about more sustainable options near them.
    - Maybe a main part of the website is actually collecting data from local sustainable options instead of getting info about what people are eating
- Possibly data can be used by anyone who wants to search what sort of food trends are appearing in different parts of New Jersey
- Possibly get data from local restaurants on vegan and plant-based items on their menu

Problem Statement

The issue we want to address is part of the larger issue of climate change. Eating foods involving animal products and other harmful elements has more of an impact on the environment than say vegan options. We want to solve the issue of some people not being aware of these options or being able to find that.

Objective

As the consequences and long-term effects of global CO2 emissions have become prominent, many companies and countries are trying to do their part by working toward climate control and carbon neutrality. Another big factor in helping climate change is making the change from meat-based food options to plant-based and vegan food options. Not only does this diet have a benefit for your personal health but the impact on the environment is just as great. Our module will allow for people who live in New Jersey, or are thinking about moving here, to see how we are doing in terms of sustainability and if there is a certain town or county that is leading the pack.

Desired End Product

Create a web page where users can search either a municipality, or a whole county within New Jersey to query our database and give the user the sustainability statistics for that certain municipality or the county. The query to our database should also return the local restaurants with plant-based food options within a certain radius of the initial search.

Importance and Need

In regards to working on the issue of certain foods causing more harm to the environment than others, our module should be important to a good amount of people. It is of course supposed to be more localized to New Jersey so it won't solve the entire issue of not eating a plant based diet, by it will help and there is a need for this type of module.

Research

Our group has and will be using some of civicstory.org's, along with srhub.org's, articles to gain knowledge on the sustainability issue. We would use the dataset of all of New Jersey's municipalities' sustainability numbers to return to users. We will also research some of the top restaurants in New Jersey with either an emphasis on their plant-based options and/or their plant-based options at the top of the menu.

Similar Systems

There are no similar applications that we could find pertaining to web pages that search a database of food options. However, there are applications like Yelp and Grubhub which let you search food options near you which could include vegan options. Our system is not being designed to work exactly like that though. Also there is a widespread effort on informing the general public and making the change to better the environment through dietary changes.

Other Possible Applications

This web-page could also be modified in the future to allow users to input their diet and learn more about the importance of a plant-based diet. Allow users and municipalities to interact with each other to offer ideas and feedback about improving a certain area. Could also be modified and scaled to support a wider range than just New Jersey, this would only be possible if the application becomes a larger effort.

Performance

Our current idea for this website is not going to truly focus on performance. We will of course make sure we follow proper coding standards to ensure our database and web page communicate as smoothly as possible. It is important that the search does not take too long as that will be annoying to any user, so we will try to avoid the basic mistakes of coding, and avoid nested if/for loops.

Security

Since users will enter information about their food choices, the database should be secured to protect the user identities and food choice. The data gathered is used to provide more sustainable options near them, so assuming the users will also enter information about their local address, the database would have to protect the users' locations. One way we can try to secure the information given by the user is by encoding the data before using the information to find more sustainable options near the user. We can also use access control, by only allowing the admin to access the information, and establish identity upfront, so make users log in, in order to enter / view information in the database.

Backup and Recovery

Backup and recovery will be handled using GitHub. We will make sure to actively push and pull updates to and from using Git commands to avoid any loss of data. Other data such as research could also be stored on the cloud using Google drive along with local copies on our separate machines.

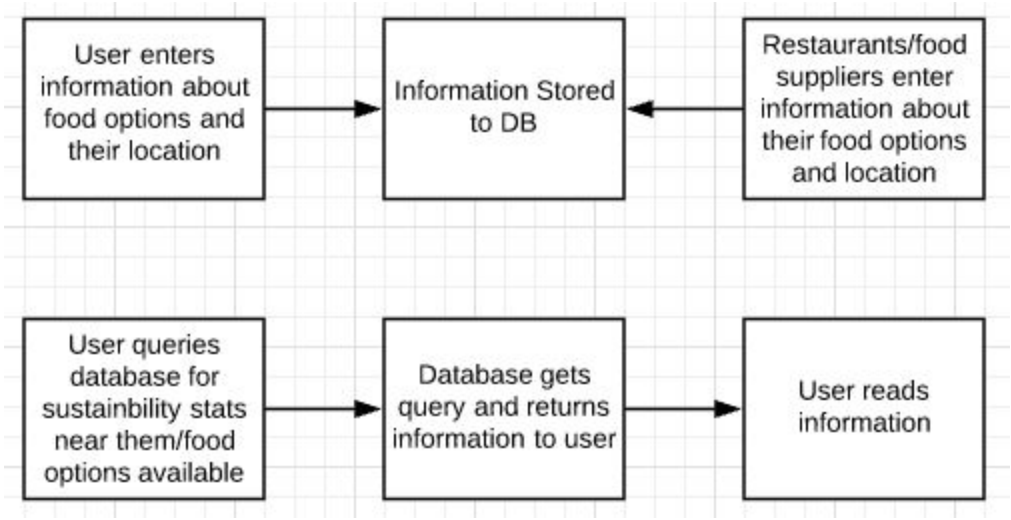
Technologies and Database Knowledge Needed

The team would need to learn PostgreSQL, while learning Python and PHP. Since most of us already have knowledge on Python and PHP, we would want to focus on learning PostgreSQL. To learn what was mentioned, we would watch some tutorials on Youtube online, while also finding credible and legitimate websites online that have information on learning PostgreSQL.

Some websites we could use:

- https://www.postgresqltutorial.com/
- https://www.postgresql.org/docs/8.0/tutorial.html
- https://www.tutorialspoint.com/postgresql/index.htm

Diagrammatic Representation



1-page quad chart

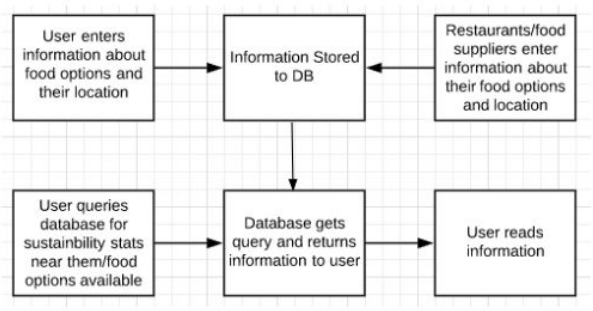
TCNJ THE COLLEGE OF NEW JERSEY

Sustainability Stats and Food Options DB

Sam Hajnasrollahi - Matthew Izzo - Joseph Candiano- Babette Chao

Objective

As the consequences and long-term effects of global CO2 emissions have become prominent, many companies and countries are trying to do their part by working toward climate control and carbon neutrality. We want to solve the issue of some people not being aware of these options or being able to find that.



Approach

Our module will allow for people who live in New Jersey, or are thinking about moving here, to see how we are doing in terms of sustainability and if there is a certain town or county that is leading the pack.

Key Milestones

• Research	03/15/20
• DB Model and Design	03/26/20
• Construction of DB	04/09/20
• Testing and Handover	05/04/20
• Presentation	05/04/20

02/12/20

Stage II – Inception: Project Proposal and Specifications
Sam Hajnasrollahi, Matthew Izzo, Joseph Candiano, Babette Chao
2-24-20

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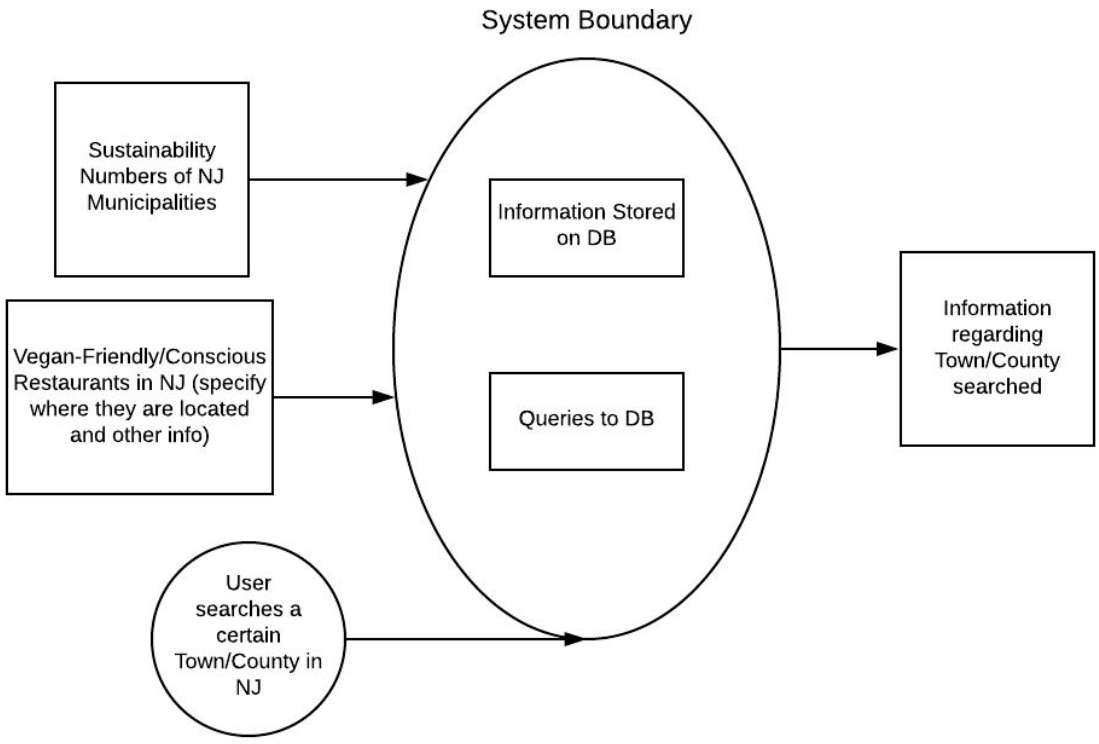
- https://www.tutorialspoint.com/postgresql/index.htm

Diagrammatic Representation of System Boundary



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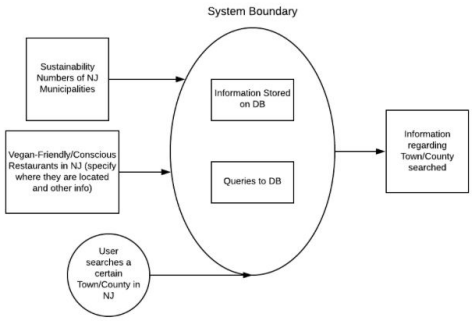

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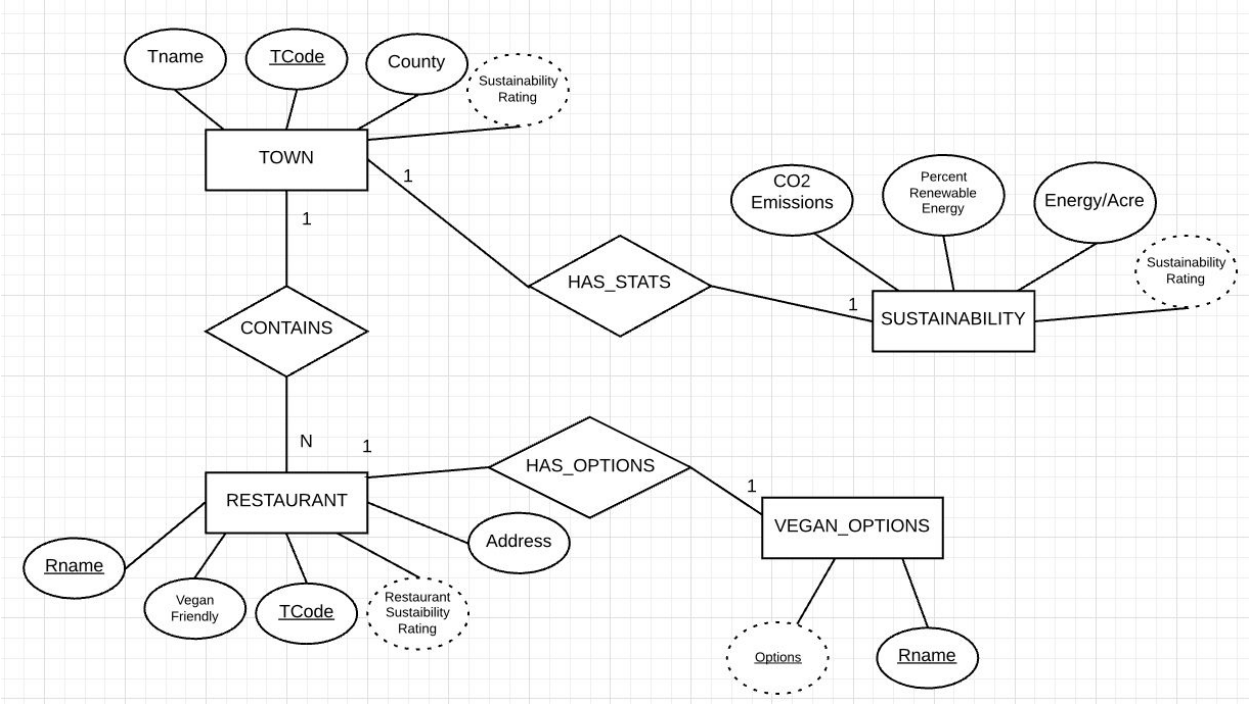
02/24/20

Team Roles

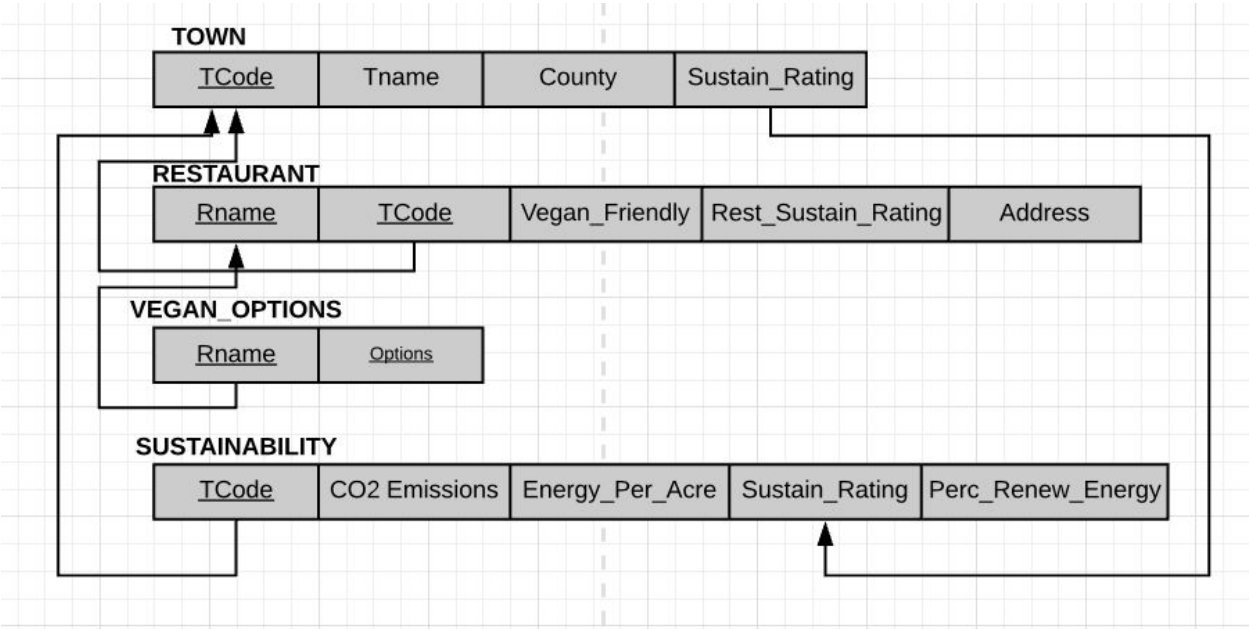
Our integration lead will be Joe Candiano . All members from the databases course will split time coding the project, helping to design and model, and assisting in integration as well. The journalism members will mostly focus on gathering research and data for the database.

CSC 315 Collaborative Project Stage III: Database Model
Joseph Candiano, Matthew Izzo, Sam Hajnasrollahi, Babette Chao

ER Diagram



Relational Model



Based on our research and understanding of the social issue addressed here, we are approximating there will be around 565 records in our database, one for each municipality in New Jersey. As for the types of searches, there will be queries to a certain municipality or a whole county in NJ; furthermore, a user can also search for a specific restaurant in NJ and see

what sustainable options they have to offer. Lastly, we approximate that the average number of searches will be anywhere from 10-100.

Stage IV – Elaboration: Design
Sam Hajnasrollahi, Matthew Izzo, Joseph Candiano, Babette Chao
Due: March 30, 2020

TOWN table

- This table is in BCNF because the attribute, Tcode, is the superkey for this relational schema. Each functional dependency from Tcode is trivial, meaning the resulting tuples from each Tcode are unique and are within the set of Tcode's values.

Tcode	Tname	County	Sustain_Rating
07430	Ringwood	Passaic	Average
08638	Ewing	Mercer	Average
07307	Jersey City	Hudson	Below Average

RESTAURANT table

- This table is in BCNF because it also contains the superkey for this relational schema, Tcode. However, the functional dependency is not trivial because there could be multiple restaurants that are vegan-friendly within the same Tcode.

Rname	TCode	Vegan_Friendly	Rest_Sustain_Rating	Address
Artemio's Prime & Proper	07430	Yes	High	1131 Greenwood Lake TPKE Ringwood, NJ 07456
The Hutton Restaurant & Bar	07307	Yes	High	225 Hutton St Jersey City, NJ 07307

VEGAN_OPTIONS table

- Although this table does not contain the superkey for this relational schema, it is still in BCNF. That is, because each restaurant in the table will have its own unique set of options, which makes the functional dependency trivial.

Rname	Options
Artemio's Prime & Proper	Salads, Substitute Tofu for most entrees, Cauliflower steak
The Hutton Restaurant & Bar	Small Cheese Plates, Chickpea pasta and vegetables, veggie burgers

SUSTAINABILITY table

- This table is in BCNF because it contains the superkey for this relational schema, Tcode, and each town in the table produces its own unique sustainability statistics. This shows that the functional dependency of Tcode is trivial.

Tcode	CO2_Emissions	Energy_Per_Acre_ Per_Year	Sustain_Rating	Perc_Renew_Energy
07430	20k - 40k	357 MWh	Average	25%
07307	70k - 5M	300 MWh	Below Average	16%

- Define the different views required. For each view list the data and transaction requirements. Give a few examples of queries, in English, to illustrate.

  town_sustain_view:

```
----
SELECT sustain_rating,
Tcode,
Tname,
County,
        ...
FROM Town
---------------------------------------------------------------------------------------
```

  restaurant_sustain_view:

```
----
SELECT Rname,
Tcode,
rest_sustain_rating,
Address,
        ...
FROM Restaurant
```

---

restaurant_sustain_vegan_view:

```
SELECT Rname,
Tcode,
rest_sustain_rating,
Address,
Options,
            ...
FROM Restaurant
  JOIN Vegan_Options
```

---

vegan_options_view:

```
SELECT Rname,
Tcode,
vegan_friendly,
Options,
            ...
FROM Restaurant
  JOIN Vegan_Options
```

---

sustainability_view:

```
SELECT Tcode,
CO2_Emissions,
Sustain_rating,
Options,
            ...
FROM Sustainability
```

---

town_sustainability_view:

```
SELECT Tcode,
CO2_Emissions,
Energy_Per_Acre_Per_Year,
Sustain_Rating,
Perc_Renew_Energy,
Tname,
County,
Sustain_Rating
            ...
FROM Town
  JOIN Sustainability
```

- Design a complete set of queries to satisfy the transaction requirements identified in the previous stages.
    - **TOWN Queries**
        - Retrieve all towns from TOWN and display info (Tcode, Tname, County, and/or Sustain_Rating).
        - Retrieve info (Tcode, Tname, County, and/or Sustain_Rating) on a town named ‘Specific Town’ from TOWN.
        - Retrieve info (Tcode, Tname, County, and/or Sustain_Rating) on a town in ‘Specific County’ from TOWN.
        - Retrieve info (Tcode, Tname, County, and/or Sustain_Rating) on a town with Tcode ‘Specific Tcode’ from TOWN.
        - Retrieve towns which have a (high, average, low) sustain ratings from TOWN and display info (Tcode, Tname, County, and/or Sustain_Rating).
    - **RESTAURANT Queries**
        - Retrieve all restaurants from RESTAURANT and display info (Rname, Tcode, Vegan_Friendly, Rest_Sustain_Rating, and/or Address).
        - Retrieve restaurants which have a (high, average, low) sustain ratings from RESTAURANT and display info (Rname, Tcode, Vegan_Friendly, Rest_Sustain_Rating, and/or Address).
        - Retrieve a restaurant named ‘Specific Restaurant from RESTAURANT and display info (Rname, Tcode, Vegan_Friendly, Rest_Sustain_Rating, and/or Address).
        - Retrieve restaurants located in Tcode ‘Specific Tcode’ from RESTAURANT and display info (Rname, Tcode, Vegan_Friendly, Rest_Sustain_Rating, and/or Address).
        - Retrieve restaurants which are vegan friendly from RESTAURANT and display info (Rname, Tcode, Vegan_Friendly, Rest_Sustain_Rating, and/or Address).
        - Retrieve restaurants located at address ‘Specific Address’ from RESTAURANT and display info (Rname, Tcode, Vegan_Friendly, Rest_Sustain_Rating, and/or Address).
    - **VEGAN_OPTIONS Queries**
        - Retrieve all vegan options from VEGAN_OPTIONS and display info (Rname and/or Options).
        - Retrieve list of vegan options from restaurant named ‘Specific Restaurant’ from VEGAN_OPTIONS and display info (Rname and/or Options).
        - Retrieve restaurants which have vegan option ‘Specific Vegan Option’ from VEGAN_OPTIONS and display info (Rname and/or Options).
    - **SUSTAINABILITY Queries**
        - Retrieve all sustainability stats from SUSTAINABILITY and display info (Tcode, CO2_Emissions, Energy_Per_Acre_Per_Year, Sustain_Rating, and/or Perc_Renew_Energy).
        - Retrieve sustainability stats from town with Tcode ‘Specific Tcode’ from SUSTAINABILITY and display info (Tcode, CO2_Emissions, Energy_Per_Acre_Per_Year, Sustain_Rating, and/or Perc_Renew_Energy).
        - Retrieve sustainability stats on town with CO2 Emissions </>/= ‘Specific Number’ from SUSTAINABILITY and display info (Tcode, CO2_Emissions, Energy_Per_Acre_Per_Year, Sustain_Rating, and/or Perc_Renew_Energy).

        - Retrieve sustainability stats on town with Energy_Per_Acre_Per_Year </>/= ‘Specific Number’ from SUSTAINABILITY and display info (Tcode, CO2_Emissions, Energy_Per_Acre_Per_Year, Sustain_Rating, and/or Perc_Renew_Energy).
        - Retrieve towns which have a (high, average, low) sustain ratings from SUSTAINABILITY and display info (Tcode, CO2_Emissions, Energy_Per_Acre_Per_Year, Sustain_Rating, and/or Perc_Renew_Energy).
        - Retrieve sustainability stats on town with Perc_Renew_Energy </>/= ‘Specific Number’ from SUSTAINABILITY and display info (Tcode, CO2_Emissions, Energy_Per_Acre_Per_Year, Sustain_Rating, and/or Perc_Renew_Energy).
    - **Examples of Queries Using Multiple Tables**
        - Retrieve towns which have a (high, average, or low) sustain ratings from SUSTAINABILITY and TOWN and display info (Tcode, CO2_Emissions, Energy_Per_Acre_Per_Year, Sustain_Rating, Perc_Renew_Energy, Tname, County, and/or Sustain_Rating).
        - Retrieve towns which have a restaurant with a (high, average, or low) from TOWN and RESTAURANT and display info (Rname, Tcode, Vegan_Friendly, Rest_Sustain_Rating, Address, Tname, County, and/or Sustain_Rating).
        - Retrieve all restaurants in the town named ‘Specific Town Name’ from TOWN and RESTAURANT and display info (Rname, Tcode, Vegan_Friendly, Rest_Sustain_Rating, Address, Tname, County, and/or Sustain_Rating).
        - Retrieve all restaurants in the county ‘Specific County’’ from TOWN and RESTAURANT and display info (Rname, Tcode, Vegan_Friendly, Rest_Sustain_Rating, Address, Tname, County, and/or Sustain_Rating).
        - Retrieve all restaurants with (high, average, or low) sustain ratings and vegan options from RESTAURANT and TOWN and display info (Rname, Tcode, Vegan_Friendly, Rest_Sustain_Rating, Address, and/or Vegan_Options).
        - Retrieve town named ‘Specific Town’ from TOWN and SUSTAINABILITY and display info (Tcode, CO2_Emissions, Energy_Per_Acre_Per_Year, Sustain_Rating, Perc_Renew_Energy, Tname, County, and/or Sustain_Rating).

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

Matt Izzo, Joe Candiano, Sam Hajnasrollahi, Babette Chao

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
```

```
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';
```

Stage V-B: User Interface
Matt Izzo, Joe Candiano, Sam Hajnasrollahi, Babette Chao

PHP Code for User Interface

```
<!-- CSC 315 - NJSus Database Final Project
Matthew Izzo, Joseph Candiano, Sam Hajnassrollahi, Babette Chao -->
<!DOCTYPE html>
<head>
	<title>Search the NJSus Database</title>
	<meta http-equiv="Content-Type" content="text/html; charset=utf-8"/>
	<style>
		li {
			list-style: none;
		}
		body {
			background-image:
url("https://www.toptal.com/designers/subtlepatterns/patterns/more-leaves-on-green.png");
			background-repeat: repeat;
			font-family: "Trebuchet MS", Helvetica, sans-serif;
		}
	</style>
</head>
<body>
	<h1 style="text-align:center">NJ Sustainability Stats Database</h1>
	<ul style="text-align:center">
		<form name="display" action="test.php" method="POST">
			<li>Enter column(s) to retrieve:</li><li><input type="text"
name="columnSelect" /></li>
			<li>From which table?:</li><li><select id="table" name="table">
				<option value="town">Towns</option>
				<option value="restaurant">Restaurants</option>
				<option value="vegan_options">Vegan Options</option>
				<option value="sustainability">Sustainability</option>
			</select></li>
			<li>What column to check?:</li><li><input type="text" name="columnWhere"
/></li>
			<li>What value to compare column to?:</li><li><input type="text"
name="value" /></li>
			<li>Enter your own query below:</li><li><input type="text" name="qry" /></li>
			<li><input type="submit" name="submit" value="submit" /></li>
		</form>
	</ul>
	<h4 style="text-align:center">Instructions</h4>
	<p style="text-align:center;">
		You can select from the following columns, in combination if desired (seperate by
commas): <br>
		- Towns: tcode (town code), tname (town name), county, sustain_rating (sustainability
rating) <br>
		- Restaurants: rname (restaurant name), tcode (town code), vegan_friendly (vegan
friendly?), rest_sustain_rating (restaurant sustainability rating), address <br>
		- Vegan Options: rname (restaurant name), options (list of vegan options) <br>
```

```
		- Sustainability: tcode (town code), co2_emissions, energy_per_acre, sustain_rating (sustainability rating), perc_renew_energy (percent renewable energy) <br>
		Make sure to surround Values in quotes. E.g. 'Blairstown'
	</p>
	<?php
		// Connect to database
		$db = pg_connect("host=localhost port=5432 dbname=njsus user=osc password=osc");
		// If user entered their own query, run it
		if($_POST[qry]){
			$result2 = pg_query($db, $_POST[qry]);
	?>
			<table align="center" border="1px" style="width:600px; line-height:40px; background-color: green;">
				<tr>
					<th colspan="4"><h2>Advanced Query Results</h2></th>
				</tr>
				<?php
					// Go through each resulting row and format/print results
					while($row = pg_fetch_row($result2))
					{
				?>
						<tr>
							<td><?php
							// Get name of each field and print in one row
							$j = pg_num_fields($result2);
							for ($i=0; $i<$j; $i++){
								echo(pg_field_name($result2, $i));
								echo "<br>";
							}
							?></td>
							<td><?php
							// Print values in other row
							echo '<pre>';
							print_r($row);
							echo '</pre>';
							?></td>
						</tr>
				<?php
					}
				?>
			</table>
	<?php
		//Check if a where is included
		}elseif($_POST[columnWhere] && !($_POST[qry])){
			$result = pg_query($db, "SELECT $_POST[columnSelect] FROM $_POST[table] WHERE $_POST[columnWhere] = $_POST[value];");
		// If just a select from query
		}elseif($_POST[table] && !($_POST[qry])){
			$result = pg_query($db, "SELECT $_POST[columnSelect] FROM $_POST[table];");
		}
		// If submit is clicked then we start making tables
		if (isset($_POST['submit'])){
```

```
	?>

	<table align="center" border="1px" style="width:600px; line-height:40px; background-color: green;">
		<?php
			// If town is the table
			if($_POST[table]=="town" && !($_POST[qry])){
		?>
			<tr>
				<th colspan="4"><h2>Towns</h2></th>
			</tr>
			<t>
					<th> Town Code </th>
					<th> Town Name </th>
					<th> County </th>
					<th> Sustainability Rating </th>
			</t>
			<?php
				// Go through each row and print results
				while($row = pg_fetch_assoc($result))
				{
			?>
					<tr>
						<td><?php echo $row['tcode']; ?></td>
						<td><?php echo $row['tname']; ?></td>
						<td><?php echo $row['county']; ?></td>
						<td><?php echo $row['sustain_rating']; ?></td>
					</tr>
				<?php
					}
				?>

		<?php
			// If restaurant is the table
			}elseif($_POST[table]=="restaurant"){
		?>
			<tr>
				<th colspan="5"><h2>Restaurants</h2></th>
			</tr>
			<t>
					<th> Restaurant Name </th>
					<th> Town Code </th>
					<th> Vegan Friendly </th>
					<th> Restaurant Sustainability Rating </th>
					<th> Address </th>
			</t>
			<?php
				// Go through each row and print results
				while($row = pg_fetch_assoc($result))
				{
			?>
					<tr>
						<td><?php echo $row['rname']; ?></td>
```

```
                        <td><?php echo $row['tcode']; ?></td>
                        <td><?php echo $row['vegan_friendly']; ?></td>
                        <td><?php echo $row['rest_sustain_rating']; ?></td>
                        <td><?php echo $row['address']; ?></td>
                </tr>
        <?php
                }
        ?>
<?php
        // If vegan options is the table
        }elseif($_POST[table]=="vegan_options"){
?>
        <tr>
                <th colspan="2"><h2>Vegan Options</h2></th>
        </tr>
        <t>
                        <th> Restaurant Name </th>
                        <th> Options </th>
        </t>
        <?php
                // Go through each row and print results
                while($row = pg_fetch_assoc($result))
                {
        ?>
                <tr>
                        <td><?php echo $row['rname']; ?></td>
                        <td><?php echo $row['options']; ?></td>
                </tr>
        <?php
                }
        ?>
<?php
        // If sustainability is the table
        }elseif($_POST[table]=="sustainability"){
?>
        <tr>
                <th colspan="5"><h2>Sustainability</h2></th>
        </tr>
        <t>
                        <th> Town Code </th>
                        <th> CO2 Emissions </th>
                        <th> Energy Per Acre </th>
                        <th> Sustainability Rating </th>
                        <th> Percent Renewable Energy </th>
        </t>
        <?php
                // Go through each row and print results
                while($row = pg_fetch_assoc($result))
                {
        ?>
                <tr>
                        <td><?php echo $row['tcode']; ?></td>
                        <td><?php echo $row['co2_emissions']; ?></td>
```

```
                                        <td><?php echo $row['energy_per_acre']; ?></td>
                                        <td><?php echo $row['sustain_rating']; ?></td>
                                        <td><?php echo $row['perc_renew_energy']; ?></td>
                                    </tr>
                                <?php
                                    }
                                ?>
                        <?php
                            }
                        }
                        ?>
                </table>
</body>
</html>
```