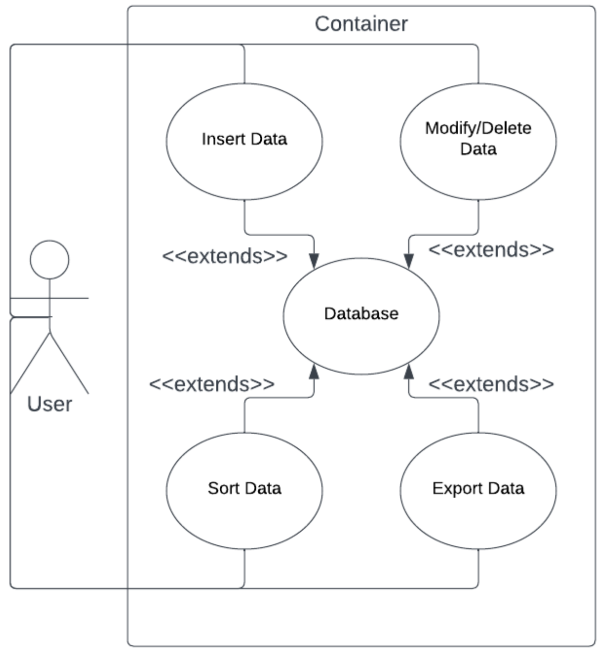
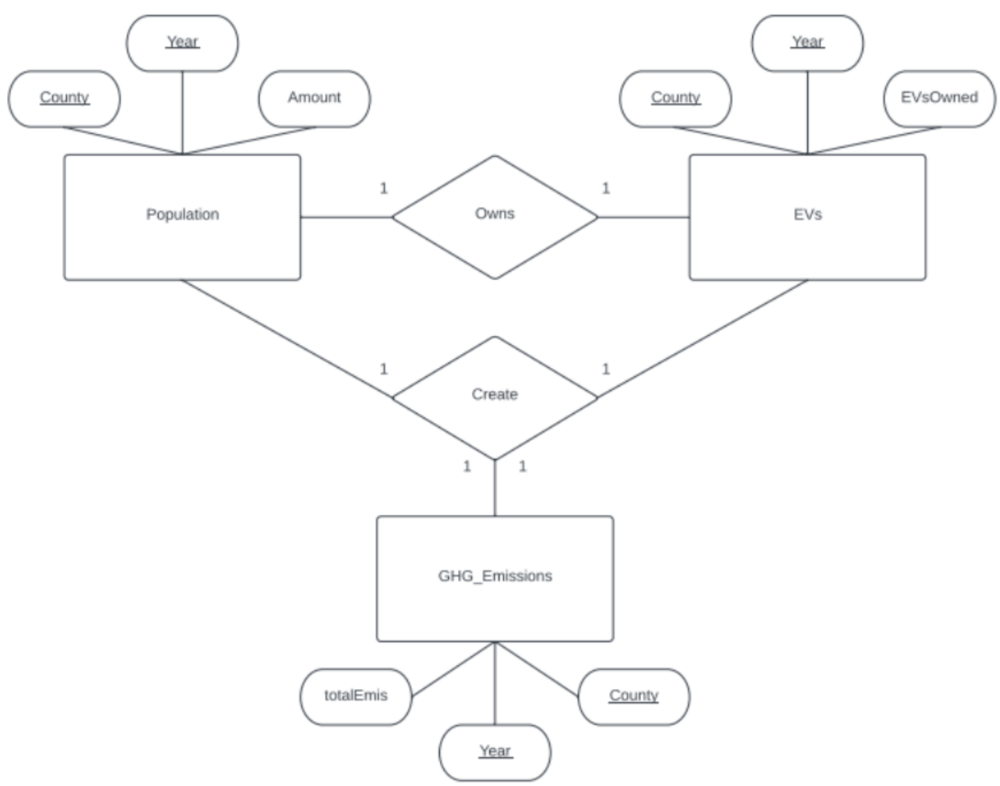
Phase III: The Database Model Explained

A relational database is a collection of data points whose relationship has already been predetermined by the administrators. Relational databases have been in use since the 1970s and are still the most widely accepted model for databases today. The model used for these types of databases stores the logical data structures (the data tables, views, indexes, etc.) separate from the physical storage structures. This allows database administrators to manage the storage of the physical structure without affecting the data itself (renaming a file without renaming the tables within that file). A variety of organizations utilize the relational model to, among other things, track inventories, process transactions, and manage information.

Relational databases are consistent across copies, as well as applications. For example, you can make a change to a document on your phone using Google Docs and instantly see that change reflected on your computer. Another benefit of the relational model is that change is permanently in existence. It is the reason you can hit the undo and redo buttons. This is obviously a lot more intricate and, frankly, complicated, as a relational database won’t commit to one thing unless it knows it can commit to all the things. This is called atomicity. Atomicity is what keeps the data in the base accurate and in line with rules, regulations, and policies set by the business. This is another benefit of a relational database. These are just some of the most valuable parts of using a relational model and part of the reason for its longevity and undisputed preference.

Within the diagram provided, population, electric vehicle usage and green gas house emissions are taken into account. For population data is categorized by county, year, and the number of people in each county. This is then linked to the amount of the population that owns electric vehicles. Electric vehicle data is then specified by county, year, and ownership. Both Population and electric vehicles correlate with green gas house emissions whether they increase or decrease them depending on the total emissions per year within each county. Population, electric vehicle ownership, and greenhouse gas emissions are all being compared on a yearly basis based on the information provided to gain an understanding of the effect that electric vehicles have on the environment and prove that they have lowered greenhouse gas emissions over time in specific counties such as Hudson county, Bergen county, etc. The reason why this is important is that all three variables will be used in order to track counties that will benefit from improving the use of electric vehicles and can predict the amount of greenhouse gas emissions that will decrease based on the increase of electric vehicle owners within yearly increments. With the use of relational databases information from extracted data sets will be arranged specifically according to census data, EV usage, and GHG emissions and stored the data accordingly which then allows users to easily access data according to the county.


Container
Insert Data
Modify/Delete Data
<<extends>>
<<extends>>
Database
User
<<extends>>
<<extends>>
Sort Data
Export Data


Year
County
Amount
Year
County
EVsOwned
Population
1
Owns
1
EVs
1
Create
1
1
1
GHG_Emissions
totalEmis
County
Year

Sources

https://nj.gov/health/fhs/primarycare/documents/Rural%20NJ%20density2015-revised%20municpalities.pdf

https://www.sustainablejersey.com/resources/data-center/sustainable-jersey-data-resources/

What is a relational database? Oracle. (n.d.). Retrieved March 8, 2023, from https://www.oracle.com/database/what-is-a-relational-database/