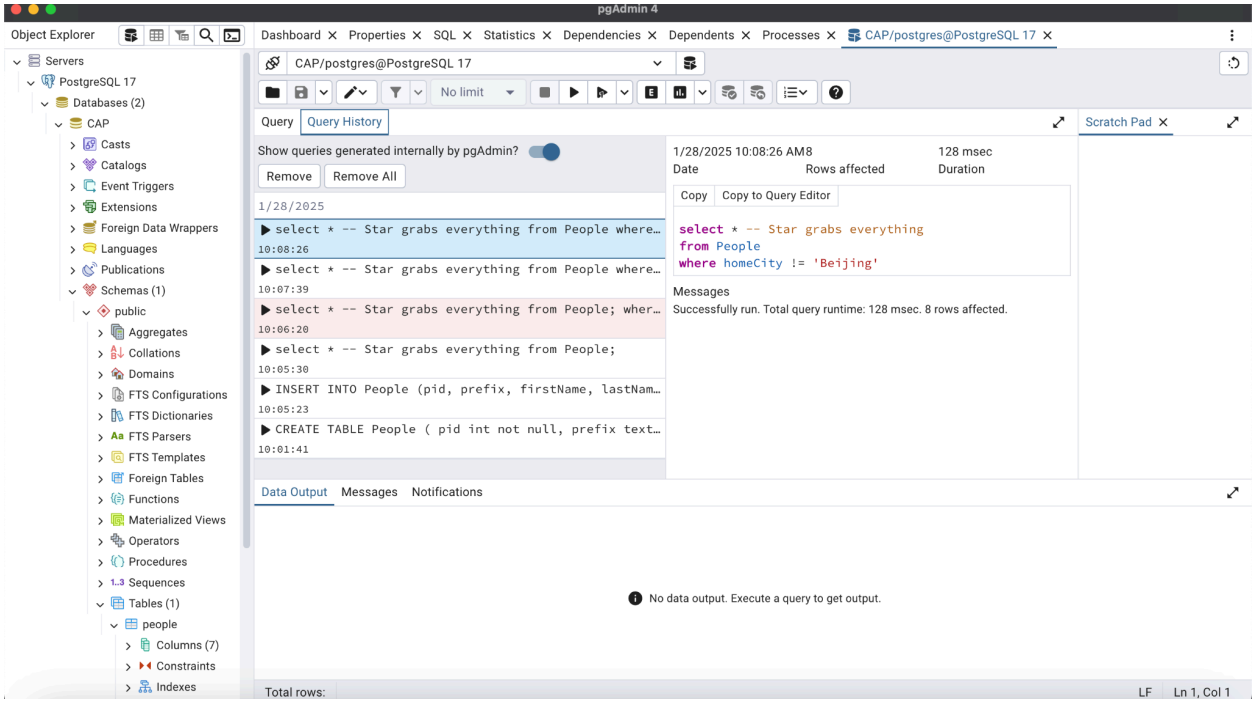
1. Download PostgreSQL from http://www.postgresql.org and install it on your computer.



2. Short essay: Data vs. Information - Select a database in use today (real or imagined) and identify the elements of "data" stored therein and describe how the database organizes the "data" into "information". Give contrasting examples of "data" and "information" that illustrate the meaninglessness of "data" without context and organization. Talk about the value the "information" provides once the component data is given context.

Let's take a look into healthcare databases. Some examples of data that may be included in this particular database would be a patient ID number, their medications, surgical history (or other types of medical history), demographics, and many other things that could be of importance for a patient to have on record. These data examples are all organized for healthcare providers to use as information to (hopefully) try and give their patients the best care possible based on their specific conditions. Healthcare data can also be turned into information by identifying patterns within these large databases for medical research, so that these providers can gain insights on what may be needed for an entire population.

Now, let's think about a "meaningless" set of data. Say we have a database that includes social media usernames, a post that they made, and the sentiment (i.e positive, negative, neutral), and you are chronically offline. You would probably have little to no clue what you are looking at, as it is not apparent what these posts may be about, nor do you have the platform that these were posted on. A situation like this would make it very difficult to turn the data into information, and if I were in this person's shoes, I definitely would not know what to do with the data. Say now that you were told that these were twitter (or X) posts regarding user reactions to an internet rap beef, and the sentiment demonstrates a user's positive or negative reaction. Now

that context has been provided, connections can start being made, and you can begin to draw insights on how this population feels about the situation. These contrasting situations can show just how important it is to know what data you are looking at, because it would be quite useless to start doing work without knowing the context for it.

3. Short Essay: Data Models - Briefly describe the hierarchical and network pre-relational data models. Explain their shortcomings in relation to the relational model. Considering this, what do you think of XML as a model for data storage?

A hierarchical data model is essentially a continuous tree of various objects within a database relating to one another, depending on what they are connected to. Let's use the game of pokemon for example. Say we have two players, where one player has a poke ball and a potion, where player two has a great ball and also a potion. Each item that a player has would be connected to that player alone. The network database has similarities when it comes to the tree of connecting objects, but takes it a step further. Looking back at the pokemon example, the two players both contain a potion, allowing the players to be connected within the database.

Relational databases take everything to an even further step, by organizing data into tables. This alone is a big reason as to why the network and hierarchical models have their disadvantages in comparison to the relational model. The table structure allows for more complex relationships to exist, as it is both more organized and easier to read when comparing it to a ginormous tree of data. Relational databases are also what we use in SQL, demonstrating that it is a much more modern use for data storage and maintenance.

With all of this in mind, I feel that XML can be a pretty decent model for a smaller amount of data storage, as it is a version of a hierarchical model. I don't think that it compares to a relational model when it comes to a pretty large database, but when it comes to smaller amounts of data, as well as quick and easy data transformation, I think it can be a useful model for data storage.