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Lab 1: PostgreSQL

Short essay: Data vs Information:

A database that is used today is one for inputting patients in a hospital. The elements of "data" stored in a database like this would be patient name, date of birth, control number, medical record number, address, and billing charges. The database organizes this data into information because it assigns values to each patient. A control number is meaningless unless it is assigned to a patient. A billing charge is meaningless if someone does not know who it belongs to and the currency it is in. Without the context of a hospital database, a charge would just be a random number. Databases are very valuable because they compile data to make it useful. They turn data into important information once context is added. It is important to remove as much ambiguity as possible.

Short essay: Data Models:

The hierarchical data model is organized into a hierarchy. Data is thought about abstractly. Data are stored in records and are connected to each other from top to bottom. Problems with this hierarchical model is that it is not flexible enough, it forces us into a particular way of thinking, and it violates the law of least establishment. A problem with this model is that there is duplication, which leads to inconsistency and is bad. The network pre-relational data model is more flexible, and solves the duplication problem and physical

independence. This model is not restricted to being a hierarchy. However, a problem with this model are that it still is programming based, meaning everything needs to be programmed which is a source for bugs. The relational model fixes these problems, and data is grouped into relations. These relations can either be one to one, one to many, many to one, or many to many. XML as a model for data storage contains both data and the informative relationship of structuring the data. Therefore, machines and people can read. On the other hand, relational databases are better handling larger volumes of data within the system.