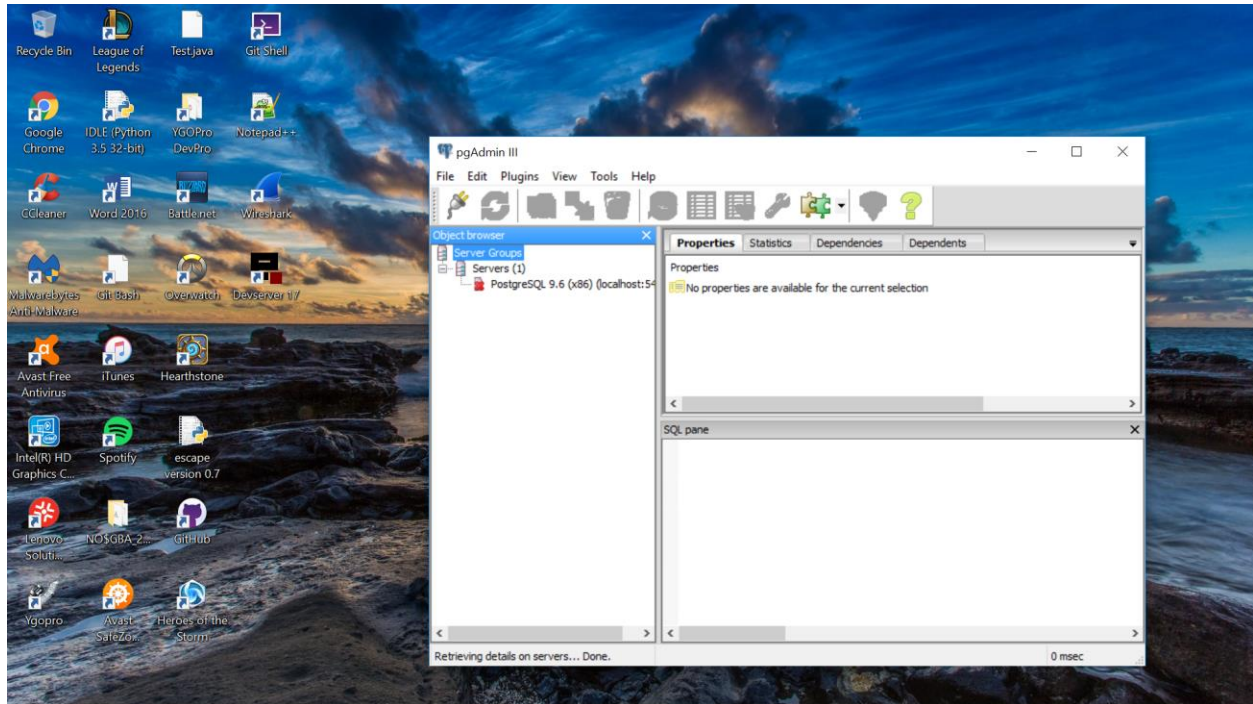


Jake Litts

9/10/17

## Database Management Lab 1



### Short Essay Question 1:

In a database used by banks, “data” is organized into information by giving it context. In the instance of a bank database, numbers such as 2.94, 10831.00, 9729.99, etc. are given context by changing them into dollar amounts. Additional context can be given like + and – signs, that would allow the database to interpret this “information” as transactions made by a certain customer in the database. If this additional context is not given, the database would have no idea what the numbers mean. Without a + or – sign, the banking database would not know whether to add or subtract money from the user’s account when she makes a purchase. As a result, this data becomes meaningless, as the database has no idea how to interpret data without proper context. Once the component data is given context, the value of this new information is massive. In the case of the bank database, the information of transactions made by a certain customer can allow said customer to keep better track of their purchases. In addition, the customer can find out if someone else is making transactions on their account. Finally, an accounting consultant can use the information from the bank database in order to help their customer adjust their spending habits.

### Short Essay Question 2:

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?

The hierarchical database model is a data model in which the data is organized into a tree-like structure. Data in this model is stored in records and are connected links. This model also demands that each child record can only have one parent, whereas each parent record can have one or more child records. In relation to the relational model, this model has many disadvantages, with the major one being that it requires data to be repetitively stored in different entities. In addition, it is very slow in searching for information on the lower entities, many to many relationships are not supported, and in order to retrieve data from this type of database, the entire tree must be searched, starting from the root record.

The network pre-relational model is a data model conceived as a flexible way of representing objects and their relationships. Its distinguishing features are that the schema, view as a graph where the object types are viewed as nodes and relationship types are arcs. In addition, it is not restricted by any hierarchy. However, there are still shortcomings with this model in relation to the relational model. This model is not only complex, but its structural independence makes structural changes very difficult. Finally, operational anomalies require a large number of pointer adjustments.

As for the XML model, it mainly takes the hierarchical and network pre-relational models and combines them together. As a result, it shares some of the disadvantages of the previously stated models, such as the fact that it requires data to be repetitively stored in different entities, it takes longer for data to be found in lower entities, expressing overlapping relationships (aka the network model aspect of this model) requires extra effort.

#### Bibliography

[http://databasemanagement.wikia.com/wiki/Category:Hierarchical\\_Data\\_Model](http://databasemanagement.wikia.com/wiki/Category:Hierarchical_Data_Model)

<http://dbmsenotes.blogspot.com/2014/03/comparison-of-data-models-data-models.html>